

# MARYLAND

UNDERGRADUATE CATALOG 1990-1991  
UNIVERSITY OF MARYLAND AT COLLEGE PARK



# MARYLAND


## GOALS

An education at the University of Maryland at College Park strives to cultivate intellect by teaching students to extend principles and ideas to new situations and to new groups of people. It aims to provide students with a sense of identity and purpose, a concern for others, a sense of responsibility for the quality of life around them, a continuing eagerness for knowledge and understanding, and a foundation for a lifetime of personal enrichment. It enlivens students to enlarge the common understanding, to develop humane values, to celebrate tolerance and fairness, to contribute to the social conscience, to monitor and assess private and collective assumptions, and to recognize the glory, tragedy, and humor of the human condition. Specifically, undergraduate education at College Park seeks to enable students to develop and expand their use of basic academic and intellectual tools. Students are educated to be able to read with perception and pleasure, write and speak with clarity and verve, handle numbers and computation proficiently, reason mathematically, generate clear questions and find probable arguments, reach substantiated conclusions, and accept ambiguity. Students also study in depth and acquire a substantial competence in a coherent academic discipline. A College Park education helps students to become aware of the variety of ways of knowing, the complexity of being human, and to understand their place in history and in the contemporary world. Students learn to analyze and appreciate artistic creations, to identify and evaluate moral questions, to synthesize and integrate knowledge, and to become intellectually flexible, inventive, and creative.

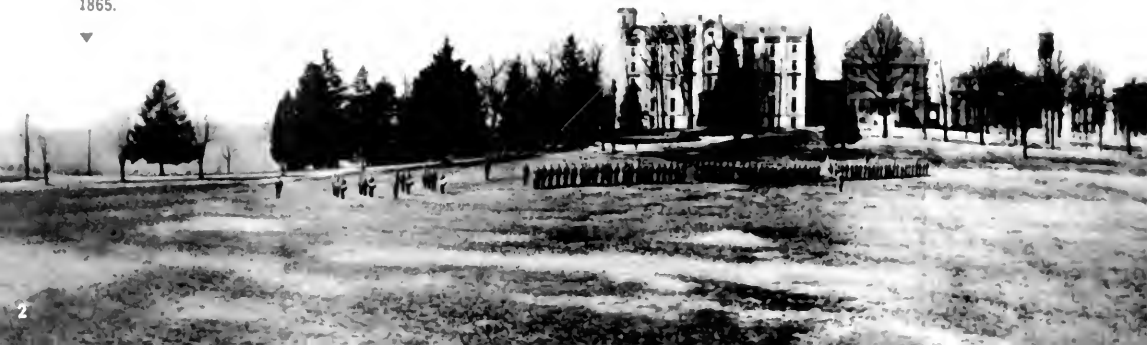


## HISTORY

Just after the American Revolution, the state of Maryland established its first two colleges at Chestertown and Annapolis. By the 1850s, at least thirty little colleges had sprung up over the state, many with state support, but many of them disappearing within a few years. Then, in 1859 a different kind of institution appeared at College Park—the Maryland Agricultural College, the third such college in the world, created mainly for farmers' sons. The college was established by Charles Benedict Calvert, a wealthy planter from nearby Riversdale—now Riverdale—and later a congressman. Calvert built a handsome Gothic dormitory-classroom structure located in a grove of trees near the present Morrill Hall, and he divided the land down to the Baltimore-Washington Turnpike into small plots where each of the 50-or-so students experimented with a different agricultural crop. After the Civil War the institution became a land-grant college, with small appropriations from Washington. The little college began to grow about 1900 when agricultural experiments began to bring prosperity to Maryland, and when the college expanded its offerings into engineering, business, and the



In 1888, the campus consisted of an administration building, a classroom building, and a laboratory. As the Maryland Agricultural College, it became one of the nation's first land-grant institutions in 1865.



liberal arts. In 1912 the old Gothic building burned, and the state provided modern structures. Women were admitted to the campus, and graduate work began. In 1920 the college combined with the long-established professional schools of Baltimore and changed its name to the University of Maryland. Growth accelerated after 1935 when the politically astute football coach, H.C. 'Curley' Byrd became president, added scores of new programs, and won national football championships. In the 1950s and 1960s, President Wilson H. Elkins maintained the rapid growth, and College Park became one of the largest campuses in the nation. President Elkins, a Rhodes Scholar, transformed the institution's public image from that of a party school to one of academic integrity. In the 1970s and 1980s, the university's graduate and research programs have especially flourished. In 1988, the General Assembly of Maryland combined six state colleges with the five campuses of the University of Maryland, and specifically charged College Park with the role of leadership. The University of Maryland at College Park recognizes its special responsibility as the flagship and the largest of the eleven institutions within the statewide university system to lead the University of Maryland's quest



for excellence. To this end, College Park offers broad coverage in the traditional arts and sciences as well as in a wide range of professional and pre-professional programs. The institution is organized into fourteen colleges and schools encompassing over 100 departments and campus-wide programs of study. A growing number of these departments and programs rank among the best in the nation. Today the University of Maryland at College Park stands, by any measure, as one of the leading institutions of higher education in the world.

◀ The university's close links to Baltimore, Annapolis, and Washington, D.C. provide exciting opportunities for internships, research, cultural activities, and recreation.



## RESEARCH

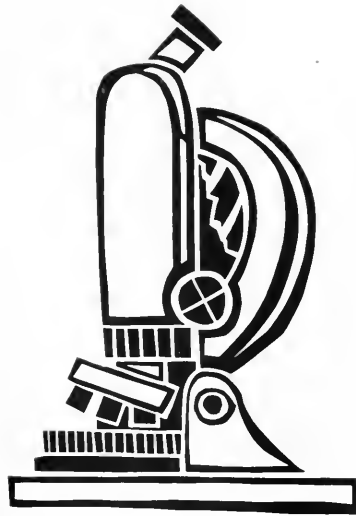


▲ Undergraduate students are encouraged to begin their own explorations through access to state-of-the-art facilities and resources.

Opportunities for conducting research abound at the University of Maryland College Park and in the surrounding area, both for faculty to advance their own expertise and bring their insights back into the classroom, and for students to begin the exploration of their special interests with hands-on experience. On campus, special facilities and a number of organized research bureaus, centers, and institutes promote the acquisition and analysis of new knowledge in the arts, sciences, and applied fields. A sampling of such facilities includes a computer vision laboratory, a full-scale low-velocity wind tunnel, computer-assisted cartographic laboratories, a psycholinguistics laboratory, a Superconductivity Research Center, the Laboratory for Plasma and Fusion Studies, the Developmental Psychology Laboratory, the Center on Aging, the Systems Research Center, the Engineering Research Center, the Center for Renaissance and Baroque Studies, and the Agricultural Experiment Station. Off campus, University of Maryland at College Park scientists placed a Low Energy Charged Particle experiment on board Voyager 2, which passed Neptune in August, 1989; others are involved in the development of the world's largest array of radio telescopes housed at the Hat Creek Observatory of the University of California at Berkeley. UMCP is leading a multi-institutional excavation of the ruined city of Caesarea Maritima in Israel, where Pontius Pilate lived while serving as Roman governor of Judea. Aid-

ed by the Maryland Sea Grant, College Park zoologists and microbiologists study the fisheries of the Chesapeake Bay. The university's unique location—just 10 miles from downtown Washington, D.C., and approximately 30 miles from both Annapolis and Baltimore—enhances the research of its faculty and students because of its access to some of the finest libraries and research centers in the country. These include the National Institutes of Health, the Smithsonian Institution, the USDA Beltsville National Agricultural Research Center and National Agricultural Library, the Library of Congress, the National Archives, the Folger Shakespeare Library, and many other academic and special libraries. In the Baltimore area, in addition to the university's own libraries at Baltimore County and on the professional campus in Baltimore City, are the Enoch Pratt Free Library and the Maryland Historical Association Library. The state capital at Annapolis is the site of the Maryland Hall of Records.

A major research university attracts top faculty who bring their research interests and insights to the classroom.



## ACCREDITATION

The University of Maryland is accredited by the Middle States Association of Colleges and Secondary Schools and is a member of the Association of American Universities. In addition, individual colleges, schools, and departments are accredited by such groups as the American Association of Collegiate Schools of Business, the American Chemical Society, the National Association of Schools of Music, the Section of Legal Education and Admissions to the Bar of the American Bar Association, the Accrediting Council on Education in Journalism and Mass Communications, the American Council on Pharmaceutical Education, the Council on Dental Education of the American Dental Association, the Committee on Accreditation of the American Library Association, the American Psychological Association, the Commission on Accreditation of the Council on Social Work Education, the Council on Medical Education of the American Medical Association, the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology (see College of Engineering for a listing of accredited engineering programs), the National Council for Accreditation of Teacher Education, the National League for Nursing, and the National Architectural Accrediting Board. In addition, all programs in the Department of Human Nutrition and Food Systems have been approved by the American Dietetic Association.



## LIBRARIES



Seven libraries and numerous special collections provide rich material and technical support for teaching and research.



The seven libraries which make up the University of Maryland at College Park library system offer outstanding resources and services. The holdings of the libraries include almost 2 million volumes, approximately 4 million microform units, 22,526 current periodical and newspaper subscriptions as well as over 666,000 government documents, 181,000 maps, and extensive holdings of phonorecords, films and filmstrips, slides, prints, and music scores. The libraries also feature a Technical Reports Center collection of nearly 2 million items—one of the most outstanding collections of its kind in the nation. Hornbake Library is the undergraduate library, providing reference, circulation and reserve services in all subject areas to undergraduate students. A late-night study room is open 24 hours during the fall and spring terms.

Nonprint Media Services, located on the fourth floor of Hornbake, is the central audio-visual department for the UMCP libraries. The collection consists primarily of videocassettes, films, audiocassettes, and the equipment and facilities to use them. The Theodore R. McKeldin Library is the main research library of the UMCP library system. The combined on-line and card catalogs at McKeldin include records of holdings for the entire UMCP library system. In addition, McKeldin's reference works, periodicals, circulating books, special collections and other materials provide support for research and teaching throughout the university, with special emphasis on the humanities, the social sciences, and the life sciences. The five specialized branch libraries on campus offer extensive resources which provide essential support for study, research, and teaching. These include the Architecture Library, the Art Library, the Engineering and Physical Sciences Library, the Music Library, and the White Memorial (Chemistry) Library. Included among the most outstanding special holdings of the libraries are the International Piano Archives at Maryland, a world-renowned collection of piano performance materials; the National Trust for Historic Preservation Library, located in the Architecture Library; the Maryland Room—a major center for Maryland studies; the Gordon W. Prange Collection of Japanese-language publications, 1945-49; the U.S. Patent Depository Library; the Government Document and Maps Room, featuring U.S. government publications as well as publications of the United Nations, the League of Nations and other international organizations, maps from the U.S. Army Map Service and the U.S. Geological Survey; the Katherine Anne Porter Collection; and the East Asia Collection.





Touch-sensitive computers are part of a campus-wide network of workstation and micro-computer laboratories.



## COMPUTER SCIENCE CENTER

The Computer Science Center supports on-campus computing through a full range of quality computing services. It offers many training courses in popular microcomputer and mainframe software packages, as well as consulting and 'firstaid' services. The center supports advanced workstation and microcomputer laboratories across campus for day and evening self-study and class projects. To support teaching and research, the center offers networked computer resources, including IBM and Unisys mainframes and special purpose scientific computers. Qualified researchers at College Park may also access off-campus supercomputers. The center houses a Program Library, operates a computer store, which sells microcomputers and provides low cost service and maintenance to members of the campus community, and maintains the campus network backbone (UMDNET).



Effective July 5, 1989, any student, faculty, or staff member with a currently validated Identification card at one of the following Maryland colleges and universities is entitled to direct borrowing privileges at any of them: the eleven Institutions of the University of Maryland System; Morgan State University; St. Mary's College of Maryland; and the UM Center for Environmental Estuarine Studies. For more information, please contact the library circulation desk at your home institution.

## UNDERGRADUATE PROGRAMS OF STUDY

### COLLEGE OF AGRICULTURE

Agricultural Chemistry  
Agricultural Engineering  
Agriculture  
Agriculture Veterinary (combined)  
Agricultural and Extension Education  
Agricultural and Resource Economics  
Agronomy  
Animal Sciences  
Food Science  
Horticulture  
Natural Resources Management Program

### SCHOOL OF ARCHITECTURE

Architecture  
Architecture/Urban Studies

### COLLEGE OF ARTS AND HUMANITIES

Advertising Design  
American Studies  
Art  
Art History  
Classical Languages and Literatures  
Dance  
East Asian Languages and Literatures  
English Language and Literature  
French Language and Literature  
Germanic Languages and Literatures  
History  
Housing  
Interior Design  
Jewish Studies  
Linguistics  
Music  
Philosophy  
Radio Television Film  
Romance Languages  
Russian Area Studies  
Russian Languages and Literature  
Spanish Languages and Literature  
Speech Communication  
Theatre

### COLLEGE OF BEHAVIORAL AND SOCIAL SCIENCES

Afro-American Studies  
Anthropology  
Criminal Justice  
Criminology  
Economics  
Geography  
Government and Politics  
Hearing and Speech Science  
Psychology  
Sociology  
Urban Studies

### COLLEGE OF BUSINESS AND MANAGEMENT

Accounting  
Business Law  
Finance  
General Business Administration  
Management Science and Statistics  
Marketing  
Personnel and Labor Relations  
Production Management  
Transportation



### COLLEGE OF COMPUTER, MATHEMATICAL, AND PHYSICAL SCIENCES

Astronomy  
Computer Science  
Geology  
Mathematics  
Physical Sciences  
Physics

### COLLEGE OF EDUCATION

Early Childhood Education  
Elementary Education  
Industrial Arts  
Industrial Technology  
Secondary Education  
Art  
English  
Language Arts  
Foreign Language  
General Business  
Home Economics  
Marketing and Distribution  
Mathematics  
Music  
Science  
Secretarial  
Social Studies  
Speech and English  
Theatre and English  
Special Education  
Vocational/Technical Education

### COLLEGE OF ENGINEERING

Aerospace Engineering  
Agricultural Engineering  
Chemical and Nuclear Engineering  
Civil Engineering  
Electrical Engineering  
Engineering  
Fire Protection Engineering  
Mechanical Engineering

### COLLEGE OF HEALTH AND HUMAN PERFORMANCE

Health Education  
Kinesiology  
Physical Education  
Recreation

### COLLEGE OF HUMAN ECOLOGY

Apparel Design  
Community Studies  
Consumer Economics  
Dietetics  
Experimental Foods  
Family Studies  
Foodservice Administration  
Human Nutrition and Foods  
Management and Consumer Studies  
Textile Marketing Fashion Merchandising  
Textile Science

### COLLEGE OF JOURNALISM

### COLLEGE OF LIFE SCIENCES

Biochemistry  
Biological Sciences  
Botany  
Chemistry  
Entomology  
Microbiology  
Zoology

### UNDERGRADUATE STUDIES

Allied Health Professions Pre-professional Options  
Pre-Dental Hygiene  
Pre-Medical Technology  
Pre-Nursing  
Pre-Pharmacy  
Pre-Physical Therapy  
Pre-Dentistry\*  
Pre-Law\*  
Pre-Medicine\*  
Pre-Optometry\*  
Pre-Osteopathic Medicine\*  
Pre-Podiatric Medicine\*  
Pre-Veterinary Medicine\*  
\*Advising available

### UNIVERSITY HONORS PROGRAM

Individual Studies  
Undecided Undergraduate Studies

### CAMPUS-WIDE CERTIFICATES

Afro-American Studies  
East Asian Studies  
Liberal Arts in Business  
Women's Studies



▲  
Cultural and ethnic diversity are part of the educational tradition at Maryland.

## POLICY STATEMENT

The University of Maryland is an equal opportunity institution with respect to both education and employment. The university's policies, programs and activities are in compliance with pertinent federal and state laws and regulations on non-discrimination regarding race, color, religion, age, national origin, sex and handicap. Inquiries regarding compliance with Title VI of the Civil Rights Act of 1964, as amended, Title IX of the 1972 Educational Amendments, Section 504, of the Rehabilitation Act of 1973, or related legal requirements should be directed to:

Director,  
Office of Human Relations  
1107 Hornbake Library  
The University of Maryland  
College Park, MD 20742.

(Complete texts of the University Human Relations Code and the Campus Policies and Procedures on Sexual Harassment are printed in Appendix A and Appendix B.)

Inquiries concerning the application of Section 504 and part 4 of C.F.R. to the University of Maryland, College Park MD may be directed to:

Disabled Student Services  
0126 Shoemaker Hall  
University of Maryland  
College Park, MD 20742.

**Disclaimer:** The provisions of this publication are not to be regarded as a contract between the student and the University of Maryland. Changes are effected from time to time in the general regulations and in the academic requirements. There are established procedures for making changes, procedures which protect the institution's integrity and the individual student's interest and welfare. A curriculum or graduation requirement, when

altered, is not made retroactive unless the alteration is to the student's advantage and can be accommodated within the span of years normally required for graduation. *The university cannot give assurance that all students will be able to take all courses required to complete the academic program of their choice within eight semesters. Additionally, because of space limitations in selective admission programs, College Park may not be able to offer admission to all qualified students applying to these programs.*

When the actions of a student are judged by competent authority, using established procedure, to be detrimental to the interests of the university community, that person may be required to withdraw from the University. (For the complete University of Maryland Code of Student Conduct, see Appendix C.)

**Important Information on Fees and Expenses:** *All Students Who Pre-register Incur a Financial Obligation to the University.* Those students who pre-register and subsequently decide not to attend must notify the Registrations Office, 1130A Mitchell Building (formerly North Administration Building), in writing, prior to the first day of classes. If this office has not received a request for cancellation by 4:30 p.m. of the last day before classes begin, the university will assume the student plans to attend and accepts his or her financial obligation.

After classes begin, students who wish to terminate their registration must follow the withdrawal procedures and are liable for charges applicable at the time of withdrawal.

**State of Maryland** legislation has established a State Central Collections Unit, and in accordance with state law, the university is required to turn over all delinquent accounts to it for collection and legal follow-up. This is done automatically on a month-to-month basis by computer read-out.

**Collection Costs:** Collection costs incurred in collecting delinquent accounts will be charged to the student. The minimum collection fee is 15%, plus any attorney and/or court costs.

**Gender Reference:** The masculine gender whenever used in this document is intended to include the feminine gender as well.

**Smoking Policy:** It is hereby established as the policy of the University of Maryland at College Park to achieve a public environment as close to smoke-free as practicably possible. (See Appendix E of this catalog for the complete "Smoking Policy and Guidelines.")

For the purposes of this publication the term University of Maryland refers only to the campuses existing prior to July 1, 1988. This includes the campuses at Baltimore, Baltimore County, College Park, Eastern Shore and University College.

### DISCLOSURE OF INFORMATION:

In accordance with "The Family Educational Rights and Privacy Act of 1974" (P.L. 93-380), popularly referred to as the "Buckley Amendment," disclosure of student information, including financial and academic, is restricted. Release to anyone other than the student requires a written waiver from the student. (For complete University policy on access to and release of student data/information, see Appendix D.)

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**Departmental Brochures:** Small brochures describing many of the departments and programs at the University of Maryland at College Park are available free. Write to the Office of Undergraduate Admissions, Mitchell Building, University of Maryland, College Park, MD 20742, or contact the department directly.

**Graduate Catalog/Graduate Bulletin:** For information about obtaining the *Graduate Catalog* or *Graduate Bulletin*, call 301/454-3198, or write to the Graduate Office, Lee Building, University of Maryland, College Park, MD 20742.

**Prelude:** College Park publishes a free mini-catalog and application packet, *Prelude*, for prospective undergraduate students. For a copy of this booklet, call 301/454-5550, or write to the Office of Undergraduate Admissions, Mitchell Building, University of Maryland, College Park, MD 20742.

**Schedule of Classes:** The *Schedule of Classes* lists course offerings and class times and room assignments, registration dates and procedures, deadlines, fees, and general information. The schedule is published four times a year, twice each semester. The first edition is available prior to early registration for the spring and fall semesters. The second edition, published a few weeks before the beginning of each semester, updates course offerings and registration procedures. The schedule is available to all students free of charge and can be picked up at the Mitchell Building, Stamp Student Union, Hornbake Library and McKeldin Library.

**Undergraduate Catalog:** The *Undergraduate Catalog* is sent to all students admitted to College Park, and is available free to all undergraduates and faculty at College Park with a valid ID. Copies are available for consultation in libraries and in high schools in Maryland, the District of Columbia, and Virginia. Copies are on sale to the general public for \$2.50 to cover postage and handling. Send a check (payable to University Book Center) to the University Book Center, Stamp Student Union, University of Maryland, College Park, MD 20742. Write "Catalog" on the check. Please allow four weeks for delivery.

**1990-91 ACADEMIC CALENDAR****SUMMER SESSION I, 1990**

First Day of Classes.....	June 4
Last Day of Classes.....	July 13

**SUMMER SESSION II, 1990**

First Day of Classes.....	July 16
Last Day of Classes.....	August 24

**FALL SEMESTER, 1990**

First Day of Classes.....	September 4
Thanksgiving Recess.....	November 22-25
Last Day of Classes.....	December 11
Final Examinations.....	December 13-20
Commencement.....	December 21

**SPRING SEMESTER, 1991**

First Day of Classes.....	January 22
Spring Recess.....	March 25-31
Last Day of Classes.....	May 13
Final Exams.....	May 15-22
Commencement.....	May 23

**FREQUENTLY CALLED NUMBERS (Area code: 301)**

Advising.....	454-2733
Campus Parking.....	454-4242
General Information.....	454-3311
Off-Campus Housing.....	454-3645
On-Campus Housing.....	454-2711
Orientation.....	454-5752
Student Accounts.....	454-4832
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# ADMISSIONS REQUIREMENTS AND APPLICATION PROCEDURES

## FRESHMAN ADMISSION CRITERIA

The University of Maryland is a publicly-supported, land grant institution dedicated primarily to the educational needs of Maryland residents. Within its responsibilities as a state institution, the university attracts a cosmopolitan student body and each year offers admission to a number of promising students from other states and jurisdictions. Currently, fifty states, the District of Columbia, two territories, and 100 foreign countries are represented in the undergraduate population. Admission policies for the upcoming semesters are determined by the Board of Regents.

The University of Maryland at College Park maintains a competitive admission policy, with priority given to those students with the most outstanding academic credentials, and seeks to enroll students who demonstrate the potential for academic success.

That potential is typically assessed by examination of high school course work and Scholastic Aptitude Test (SAT) scores. In general, all entering students should have completed four years of high school English; three years of history or social science; two years of science, both of which will involve laboratory work; and three years of mathematics courses equivalent at least to Algebra I, Algebra II, and Plane Geometry; and beginning in fall 1991, one year of a foreign language, with two years of a foreign language required in fall 1992. In addition, students are strongly encouraged to take a fourth year of mathematics.

## High School Transcripts

In general, the University of Maryland at College Park requires freshman applicants to earn a high school diploma prior to their first registration at the university. Applicants should make sure that final high school transcripts are sent to the Office of Undergraduate Admissions prior to enrolling. All offers of admission are contingent upon satisfactory completion of current work.

## Use of Mid-Year Grades

The university will reserve a decision on the applications of Maryland residents who do not meet the criteria outlined above until mid-year grades are available for the senior year in high school. The University of Maryland at College Park is unable to utilize the final high school marks in rendering decisions for applicants who are applying for admission directly from high school.

If mid-year grades for the senior year in high school are available when an application is initially considered by the University of Maryland at College Park admissions staff, they will be used in determining eligibility for admission.

## Subjects Used for Computation of the High School Academic Grade-Point Average

Because of variations in course titles in the secondary school systems, this listing is not inclusive. It does, however, provide examples of the types of courses the University of Maryland at College Park includes when computing the high school academic grade-point average (GPA).

<b>English:</b>	Communications, Composition, Conversational Language, Creative Writing, Debate, Expressive Writing, Journalism, Language Arts, Literature, Public Speaking, World Literature
<b>Foreign Language:</b>	French, German, Greek, Hebrew, Italian, Latin, Russian, Spanish, Other
<b>Mathematics:</b>	Advanced Topics, Algebra I, Algebra II, Analysis or Elementary Analysis, Analytic Geometry, Calculus, Computer Math, Functions, Geometry, Mathematics II, Mathematics III, Mathematics IV, Matrices, Probabilities, Modern Geometry, Modern Math, Probability and Statistics, E.A.M. (Rev. Acad. Math), S.M.S.G., Trigonometry
<b>Science:</b>	Advanced Biology, Advanced Chemistry, Biology, Chemistry, Earth Science, General Science, Genetics, Geology, Laboratory Science, Physical Science, Physics, Space Science, Zoology
<b>Social Studies:</b>	Afro-American Studies, American History, Ancient History, Anthropology, Child Development, Civics-Citizenship, Contemporary Issues (C.I.S.S.), Cultural Areas, Cultural Heritage, Economics, Economic Citizenship, Ethics (not including Religion courses), European History, European History and Survey, Family Living, Far East, Geography, Government, Humanities, International Affairs, Medieval History, Modern History, Modern Problems, National Government, Pan American, Philosophy, Political Science, Problems of Democracy, Problems of 20th Century, Psychology, Sociology, State History, U.S. History, World Civilization, World Cultures

## Scholastic Aptitude Test (SAT) Scores

The SAT is required of all freshman applicants. Test results must be submitted directly to the University of Maryland at College Park by the Educational Testing Service. The applicant is strongly urged to include his/her social security number when registering for the SAT. The social security number will expedite processing of the application for admission by this campus. The reporting code for the University of Maryland at College Park is 5814. The university strongly recommends that the SAT be taken as early as possible. The January test is generally the latest acceptable examination for fall applicants. Further information on the SAT may be obtained from high school guidance offices or directly from the Educational Testing Service, Princeton, New Jersey 08540.

While SAT scores and grade-point averages play an important role in the admissions process, they are not the sole factors in determining a candidate's admissibility. The Admissions Committee may review a student in light of his or her unique talents and abilities. Students with accomplishments in other realms, such as fine arts, leadership, and athletics, should make this information available to the Admissions Office.

To help students evaluate their chances for admission to the University of Maryland at College Park, a profile of students enrolled in the Fall 1989 freshman class is provided

Total Freshman Class	
SAT Score	% Enrolled
1200 or above	20
1000 to 1199	55
900 to 999	12
899 or below	11
No Scores	2
Academic Grade Point Average	
	% Enrolled
3.5 or above	17
3.0 to 3.49	38
2.5 to 2.99	31
2.49 or below	13
No GPA	1

### Criteria for Out-of-State Applicants

The university is committed to developing a cosmopolitan student body. Therefore, applications from students residing in jurisdictions other than Maryland are welcome. Generally, a successful out-of-state applicant must have higher than average SAT scores and high school grades.

### Special Admission Options

To serve students who are not typical freshmen, the University of Maryland at College Park has developed special options for admission:

#### Admission Options for High Achieving High School Students

- Concurrent Enrollment:** Talented high school seniors have the opportunity to enroll at the University of Maryland at College Park for two courses, or seven credits, each semester. Successful applicants will have pursued a rigorous high school program and will have indicated exceptional performance and ability achieved over time. To apply, students must submit a) the completed application and fee, and b) high school transcript, c) an essay explaining why they are interested in the program, d) a letter of recommendation from the high school, and e) a letter of permission from the parents or guardian. Students must live within commuting distance. Tuition and fees are assessed on a per-credit-hour basis.
- Summer Enrollment:** High school students with a minimum 3.00 grade-point average may enroll for courses during the summer preceding their junior or senior year. They must file a regular application and transcript. Tuition and fees are assessed on a per-credit hour basis.
- Early Admission:** Although the University of Maryland at College Park generally requires applicants to earn a high school diploma prior to their first full-time registration, the university will admit a limited number of well-qualified students without high school diplomas. Successful applicants will have pursued a rigorous high school program and will have indicated exceptional performance and ability achieved over time. Students must be within two credits of high school graduation and have the commitment of the high school to award a diploma after successful completion of the freshman year at Maryland. To apply, students must submit a) the completed application and fee, b) high school transcript and SAT results, c) an essay explaining how they will benefit from the program, d) a letter of permission from the parents or guardian.

Early admission students are eligible for on-campus housing, scholarships based on academic achievement, and the University Honors Program. Early application is advised.

- Gifted Student Admission:** The university admits a limited number of gifted students who have completed at least the seventh grade, have an SAT combined score of 1200, or the equivalent on a nationally accepted college entrance exam, and have a superior academic record. Students must have an initial conference with a member of the Undergraduate Admissions staff. The Admissions staff may, if it is deemed helpful to the admission decision, make referrals for further assessment to campus counseling services.

### High School Equivalence Examination (GED)

Maryland residents who are at least 16 years of age and who have not received a high school diploma may be considered for admission, pro-

vided they have earned the high school General Education Equivalency (GED) certificate. In order to be admitted, the applicant must present an above average total score, as well as above average scores on each of the five parts of the test.

### Non-Accredited/Non-Approved Maryland High School

There are specific academic requirements for applicants from non-accredited/non-approved Maryland high schools. Students from non-accredited/non-approved high schools who seek admission to the University of Maryland at College Park should contact the Office of Undergraduate Admissions for information.

### Modified Rolling Admission Plan

The University of Maryland at College Park uses a modified rolling admission process. The following chart describes the notification procedures for fall 1991 applicants. Spring 1992 applicants are handled on a rolling admission basis and should submit their completed applications by December 15, 1991.

### Important Dates for Fall 1991 Freshmen Applicants

Date	Action
December 1, 1990	Applications completed by this date Priority deadline for will be reviewed for admission. The most on-campus housing and talented students will be admitted and scholarships others will be encouraged to send new SATs and senior midyear grades for further consideration. Decisions released on December 21, 1990.
February 15, 1991**	Applications completed by this date and those deferred from December 1st will be reviewed for admission. Admission, denial, or wait list decisions will be released March 15, 1991.
March 15, 1991**	Applications completed by this date will be reviewed. Decisions will be released on April 1, 1991.
April 30, 1991**	Estimated freshman application deadline. All applications completed between March 15 and April 30, 1991 will be reviewed on a rolling basis.
May 1, 1991	Enrollment confirmation deadline: All admitted students must confirm their intention to enroll in writing with \$100 deposit.
June 1, 1991	Students who were initially wait listed will be notified of decisions no later than this date.

\*A completed application received by Undergraduate Admissions will include official high school transcript and SAT report, application and \$25 fee.

\*\*Because of space limitations, the University of Maryland at College Park may not be able to accommodate all qualified students who apply before the published deadlines. We urge students to apply significantly earlier than the deadlines noted above.

### Advanced Placement (AP) Credit

The University of Maryland at College Park encourages applicants to seek AP credit so that academically successful students may move forward in their programs at an appropriate pace. However, credit is not granted for all exams offered by the College Board. Credits are accepted and courses are exempted, based on departmental approval, according to the chart that follows. Students should arrange to have their scores sent directly to the University of Maryland at College Park from the Educational Testing Service; the code is 5814. Students should also inform their advisors at Orientation that they anticipate receiving AP credit, because this information may affect their placement in subject-matter courses.

### Assignment of Credit

If a student has already received AP credit at another institution, this credit will be reevaluated. The score received must be equivalent to the minimum score the University of Maryland at College Park accepted at the time the test was taken; otherwise, the credit will not be eligible for transfer. AP credits that are accepted are recorded as transfer credit on University

## 14 Admission Requirements and Application Procedures

AP EXAM	SCORE	CREDITS AWARDED	EQUIVALENT RELATED COURSES	APPLICABILITY			NOTES																																																																																																																																																																																	
				MAJOR	CORE	USP																																																																																																																																																																																		
<b>ART HISTORY</b> History of Art	3	3 Credits	ARTH 100 ARTH 200 & 201	Yes	No	Yes	Students may use AP ARTH credit to fulfill one of the two USP Area C requirements. Students with scores of 4 or 5 may not take ARTH 100, 200, or 201 for credit. Consult department, 454-3431.																																																																																																																																																																																	
	4 or 5	6 Credits		Yes	No	Yes		<b>ART STUDIO</b> Studio Art-Drawing Studio Art-General	3, 4, or 5	3 Credits	LL Elective	No	No	No	Students interested in establishing credit for specific courses must submit portfolio to department for evaluation, 454-0344.	3, 4, or 5	3 Credits	LL Elective	No	No	No	<b>BIOLOGY</b>	3	4 Credits	LL Elective BIOL 105 and LL Elective	No	No	Yes	AP BIOL 105 fulfills requirement for all majors in the College of Life Science; also fulfills lab science requirement (CORE and USP). AP LL elective fulfills USP Area B nonlab requirement. Consult department for proper placement, 454-5257.	4 or 5	8 Credits	Yes	Yes	Yes	<b>CHEMISTRY</b>	3	4 Credits	CHEM 103 CHEM 103/ 113 and CHEM 105/ 115	Yes	Yes	Yes	Students with score of 3 may not take CHEM 101, 102, 103, or 105 for credit; with score of 4 or 5 also may not take 113 or 115 for credit. AP Chemistry fulfills requirements for all Life Science majors; also fulfills lab science requirement (CORE and USP). Consult department for proper placement, 454-5257.	4 or 5	8 Credits	Yes	Yes	Yes			Yes	Yes	Yes	<b>COMPUTER SCIENCE</b> Comp. Sci. A Comps Sci. AB	4 or 5	4 Credits	None	No	No	No	Credit will be given for either the A or the AB exam, not both. Students are exempt from CMSC 112 and may not take CMSC 112 or CMSC 120 for credit. Consult department for proper placement, 454-2002.	4	4 Credits	None	No	No	No	5	6 Credits	None	No	No	No	<b>ECONOMICS</b> Macroeconomics Microeconomics	3 or 4	3 Credits	ECON 205	No	Yes	Yes	Economics majors must score 5 in order to receive credit which counts toward the major. AP ECON fulfills USP Area D or CORE Social Science category. Consult Department for proper placement, 454-6353.	5	3 Credits	ECON 201	Yes	Yes	Yes	3 or 4	3 Credits	ECON 105	No	Yes	Yes	5	3 Credits	ECON 203	Yes	Yes	Yes	<b>ENGLISH</b> Literature and Composition	3	3 Credits	LL Elective ENGL 101 & LL Elective	No	No	No	Students with score of 4 or 5 on either English examination satisfy the Fundamental Studies freshman writing requirement (ENGL 101). Students with credit for the Language examination may not receive credit for ENGL 291 or its equivalent. Consult department for proper placement, 454-4160.	4 or 5	6 Credits	No	Yes	Yes			No	No	No	Language and Composition	3	3 Credits	LL Elective ENGL 101 & LL Elective	No	No	No		4 or 5	6 Credits	No	Yes	Yes	<b>FRENCH</b> Language	3	3 Credits	FREN 203	No	No	Yes	Students with score of 3 on Language exam who wish to continue must enroll in FREN 204 or higher; with score of 4 or 5 must enroll in 300 level courses; with score of 3, 4, or 5 on Literature exam must enroll in 300 level courses. AP FREN 203 fulfills one Area A USP requirement; AP FREN 250 fulfills one of two Area C USP's or CORE requirement. Students continuing French study should consult department for proper placement, 454-4303.	4 or 5	6 Credits	FREN 204 & FREN 211	Yes	No	No				Yes	No	No	Literature	3	3 Credits	FREN 250	Yes	Yes	Yes		4 or 5	6 Credits	FREN 250 & FREN 204	Yes	Yes	Yes				Yes	No	No	<b>GERMAN</b> Language	3, 4, or 5	3 Credits	LL Elective	No	No	No	Students usually placed in GERM 220 or 301; no credit for lower level courses. Consult department for proper placement (454-4301).	<b>GOVERNMENT AND POLITICS</b> United States Comparative	3, 4, or 5	3 Credits	GVPT 170 GVPT 280	No	No	No
<b>ART STUDIO</b> Studio Art-Drawing Studio Art-General	3, 4, or 5	3 Credits	LL Elective	No	No	No	Students interested in establishing credit for specific courses must submit portfolio to department for evaluation, 454-0344.																																																																																																																																																																																	
	3, 4, or 5	3 Credits	LL Elective	No	No	No		<b>BIOLOGY</b>	3	4 Credits	LL Elective BIOL 105 and LL Elective	No	No	Yes	AP BIOL 105 fulfills requirement for all majors in the College of Life Science; also fulfills lab science requirement (CORE and USP). AP LL elective fulfills USP Area B nonlab requirement. Consult department for proper placement, 454-5257.	4 or 5	8 Credits	Yes	Yes	Yes	<b>CHEMISTRY</b>	3	4 Credits	CHEM 103 CHEM 103/ 113 and CHEM 105/ 115	Yes	Yes	Yes	Students with score of 3 may not take CHEM 101, 102, 103, or 105 for credit; with score of 4 or 5 also may not take 113 or 115 for credit. AP Chemistry fulfills requirements for all Life Science majors; also fulfills lab science requirement (CORE and USP). Consult department for proper placement, 454-5257.	4 or 5	8 Credits	Yes	Yes	Yes				Yes		Yes	Yes	<b>COMPUTER SCIENCE</b> Comp. Sci. A Comps Sci. AB		4 or 5	4 Credits	None	No	No	No	Credit will be given for either the A or the AB exam, not both. Students are exempt from CMSC 112 and may not take CMSC 112 or CMSC 120 for credit. Consult department for proper placement, 454-2002.	4	4 Credits	None		No	No	No	5	6 Credits	None		No	No	No	<b>ECONOMICS</b> Macroeconomics Microeconomics	3 or 4	3 Credits	ECON 205	No	Yes	Yes	Economics majors must score 5 in order to receive credit which counts toward the major. AP ECON fulfills USP Area D or CORE Social Science category. Consult Department for proper placement, 454-6353.	5		3 Credits	ECON 201	Yes	Yes	Yes	3 or 4		3 Credits	ECON 105	No	Yes	Yes	5	3 Credits	ECON 203	Yes	Yes	Yes	<b>ENGLISH</b> Literature and Composition	3	3 Credits	LL Elective ENGL 101 & LL Elective	No	No	No		Students with score of 4 or 5 on either English examination satisfy the Fundamental Studies freshman writing requirement (ENGL 101). Students with credit for the Language examination may not receive credit for ENGL 291 or its equivalent. Consult department for proper placement, 454-4160.	4 or 5		6 Credits	No	Yes		Yes			No	No	No	Language and Composition	3	3 Credits	LL Elective ENGL 101 & LL Elective	No	No	No		4 or 5	6 Credits	No	Yes	Yes	<b>FRENCH</b> Language	3	3 Credits	FREN 203		No	No	Yes	Students with score of 3 on Language exam who wish to continue must enroll in FREN 204 or higher; with score of 4 or 5 must enroll in 300 level courses; with score of 3, 4, or 5 on Literature exam must enroll in 300 level courses. AP FREN 203 fulfills one Area A USP requirement; AP FREN 250 fulfills one of two Area C USP's or CORE requirement. Students continuing French study should consult department for proper placement, 454-4303.	4 or 5	6 Credits		FREN 204 & FREN 211	Yes	No	No				Yes	No	No	Literature	3		3 Credits	FREN 250	Yes	Yes	Yes			4 or 5	6 Credits	FREN 250 & FREN 204	Yes	Yes	Yes				Yes	No	No	<b>GERMAN</b> Language	3, 4, or 5	3 Credits	LL Elective	No	No	No	Students usually placed in GERM 220 or 301; no credit for lower level courses. Consult department for proper placement (454-4301).	<b>GOVERNMENT AND POLITICS</b> United States Comparative	3, 4, or 5	3 Credits	GVPT 170 GVPT 280	No	No	No
<b>BIOLOGY</b>	3	4 Credits	LL Elective BIOL 105 and LL Elective	No	No	Yes	AP BIOL 105 fulfills requirement for all majors in the College of Life Science; also fulfills lab science requirement (CORE and USP). AP LL elective fulfills USP Area B nonlab requirement. Consult department for proper placement, 454-5257.																																																																																																																																																																																	
	4 or 5	8 Credits		Yes	Yes	Yes		<b>CHEMISTRY</b>	3	4 Credits	CHEM 103 CHEM 103/ 113 and CHEM 105/ 115	Yes	Yes	Yes	Students with score of 3 may not take CHEM 101, 102, 103, or 105 for credit; with score of 4 or 5 also may not take 113 or 115 for credit. AP Chemistry fulfills requirements for all Life Science majors; also fulfills lab science requirement (CORE and USP). Consult department for proper placement, 454-5257.	4 or 5	8 Credits	Yes	Yes	Yes					Yes	Yes	Yes		<b>COMPUTER SCIENCE</b> Comp. Sci. A Comps Sci. AB	4 or 5	4 Credits	None	No	No	No	Credit will be given for either the A or the AB exam, not both. Students are exempt from CMSC 112 and may not take CMSC 112 or CMSC 120 for credit. Consult department for proper placement, 454-2002.	4	4 Credits	None	No		No	No	5	6 Credits	None	No	No		No	<b>ECONOMICS</b> Macroeconomics Microeconomics	3 or 4	3 Credits	ECON 205	No	Yes	Yes	Economics majors must score 5 in order to receive credit which counts toward the major. AP ECON fulfills USP Area D or CORE Social Science category. Consult Department for proper placement, 454-6353.	5	3 Credits	ECON 201	Yes	Yes		Yes	3 or 4	3 Credits	ECON 105	No	Yes		Yes	5	3 Credits	ECON 203	Yes	Yes	Yes	<b>ENGLISH</b> Literature and Composition	3	3 Credits	LL Elective ENGL 101 & LL Elective	No	No	No	Students with score of 4 or 5 on either English examination satisfy the Fundamental Studies freshman writing requirement (ENGL 101). Students with credit for the Language examination may not receive credit for ENGL 291 or its equivalent. Consult department for proper placement, 454-4160.	4 or 5	6 Credits	No	Yes	Yes					No	No	No	Language and Composition		3	3 Credits	LL Elective ENGL 101 & LL Elective	No	No	No		4 or 5	6 Credits	No	Yes	Yes	<b>FRENCH</b> Language	3	3 Credits	FREN 203	No	No	Yes	Students with score of 3 on Language exam who wish to continue must enroll in FREN 204 or higher; with score of 4 or 5 must enroll in 300 level courses; with score of 3, 4, or 5 on Literature exam must enroll in 300 level courses. AP FREN 203 fulfills one Area A USP requirement; AP FREN 250 fulfills one of two Area C USP's or CORE requirement. Students continuing French study should consult department for proper placement, 454-4303.	4 or 5	6 Credits	FREN 204 & FREN 211	Yes	No		No				Yes	No	No		Literature	3	3 Credits	FREN 250	Yes	Yes	Yes		4 or 5	6 Credits	FREN 250 & FREN 204	Yes	Yes		Yes				Yes	No	No		<b>GERMAN</b> Language	3, 4, or 5	3 Credits	LL Elective	No	No	No	Students usually placed in GERM 220 or 301; no credit for lower level courses. Consult department for proper placement (454-4301).	<b>GOVERNMENT AND POLITICS</b> United States Comparative	3, 4, or 5	3 Credits	GVPT 170 GVPT 280	No	No	No	AP GVPT 170 fulfills one Area D USP requirement. Consult department for proper placement, 454-6748.	3, 4, or 5	3 Credits										
<b>CHEMISTRY</b>	3	4 Credits	CHEM 103 CHEM 103/ 113 and CHEM 105/ 115	Yes	Yes	Yes	Students with score of 3 may not take CHEM 101, 102, 103, or 105 for credit; with score of 4 or 5 also may not take 113 or 115 for credit. AP Chemistry fulfills requirements for all Life Science majors; also fulfills lab science requirement (CORE and USP). Consult department for proper placement, 454-5257.																																																																																																																																																																																	
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<b>COMPUTER SCIENCE</b> Comp. Sci. A Comps Sci. AB	4 or 5	4 Credits	None	No	No	No	Credit will be given for either the A or the AB exam, not both. Students are exempt from CMSC 112 and may not take CMSC 112 or CMSC 120 for credit. Consult department for proper placement, 454-2002.																																																																																																																																																																																	
	4	4 Credits	None	No	No	No																																																																																																																																																																																		
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<b>ECONOMICS</b> Macroeconomics Microeconomics	3 or 4	3 Credits	ECON 205	No	Yes	Yes	Economics majors must score 5 in order to receive credit which counts toward the major. AP ECON fulfills USP Area D or CORE Social Science category. Consult Department for proper placement, 454-6353.																																																																																																																																																																																	
	5	3 Credits	ECON 201	Yes	Yes	Yes																																																																																																																																																																																		
	3 or 4	3 Credits	ECON 105	No	Yes	Yes																																																																																																																																																																																		
	5	3 Credits	ECON 203	Yes	Yes	Yes																																																																																																																																																																																		
<b>ENGLISH</b> Literature and Composition	3	3 Credits	LL Elective ENGL 101 & LL Elective	No	No	No	Students with score of 4 or 5 on either English examination satisfy the Fundamental Studies freshman writing requirement (ENGL 101). Students with credit for the Language examination may not receive credit for ENGL 291 or its equivalent. Consult department for proper placement, 454-4160.																																																																																																																																																																																	
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Language and Composition	3	3 Credits	LL Elective ENGL 101 & LL Elective	No	No	No																																																																																																																																																																																		
	4 or 5	6 Credits		No	Yes	Yes																																																																																																																																																																																		
<b>FRENCH</b> Language	3	3 Credits	FREN 203	No	No	Yes	Students with score of 3 on Language exam who wish to continue must enroll in FREN 204 or higher; with score of 4 or 5 must enroll in 300 level courses; with score of 3, 4, or 5 on Literature exam must enroll in 300 level courses. AP FREN 203 fulfills one Area A USP requirement; AP FREN 250 fulfills one of two Area C USP's or CORE requirement. Students continuing French study should consult department for proper placement, 454-4303.																																																																																																																																																																																	
	4 or 5	6 Credits	FREN 204 & FREN 211	Yes	No	No																																																																																																																																																																																		
				Yes	No	No																																																																																																																																																																																		
Literature	3	3 Credits	FREN 250	Yes	Yes	Yes																																																																																																																																																																																		
	4 or 5	6 Credits	FREN 250 & FREN 204	Yes	Yes	Yes																																																																																																																																																																																		
				Yes	No	No																																																																																																																																																																																		
<b>GERMAN</b> Language	3, 4, or 5	3 Credits	LL Elective	No	No	No	Students usually placed in GERM 220 or 301; no credit for lower level courses. Consult department for proper placement (454-4301).																																																																																																																																																																																	
<b>GOVERNMENT AND POLITICS</b> United States Comparative	3, 4, or 5	3 Credits	GVPT 170 GVPT 280	No	No	No	AP GVPT 170 fulfills one Area D USP requirement. Consult department for proper placement, 454-6748.																																																																																																																																																																																	
	3, 4, or 5	3 Credits																																																																																																																																																																																						



<b>HISTORY</b>							
United States	3	3 Credits	HIST 156 or 157	No	No	Yes	AP HIST 156 fulfills one Area A and 157 fulfills one Area D USP requirements. Students with scored of 3 on European exam receive credit for one of four courses listed; each course fulfills on AREA A USP or 3 credits in either Humanities or Social Sciences CORE requirement. Students with a score of 4 or 5 on European exam receive credit for two of four courses listed; they fulfill both Area A USP or 3 credits in both Humanities and Social Sciences CORE requirements. Consult department for proper placement, 454-2846.
	4 or 5	6 Credits	HIST 156 and 157	No	No	Yes	
European	3	3 Credits	HIST 110,	No	Yes	Yes	
<b>LATIN</b>							
Vergil	4 or 5	3 Credits	LATN 201	Yes	No	No	Students with score of 4 or 5 may not take LATN 201 or lower for credit. LATN 201 counts for majors in "Classical Humanities" or "Greek and Latin." Consult department for proper placement, 454-2510.
Catullus & Horace	4 or 5	3 Credits	LL Elective	No	No	No	
<b>MATHEMATICS</b>							
Calculus AB	3	4 Credits	MATH 140	Yes	Yes	Yes	Students who receive credit have fulfilled both Fundamental Studies in math and a non-laboratory science requirement (CORE & USP). Students who receive credit for MATH 140 and/or 141 may not receive credit for MATH 220 and/or 221. Consult department for proper placement, 454-2746.
	4 or 5	8 Credits	MATH 140 & 141	Yes	Yes	Yes	
Calculus BC	3, 4, or 5	8 Credits	MATH 140 & 141	Yes	Yes	Yes	
<b>MUSIC</b>							
Listening & Literature	3, 4, or 5	3 Credits	MUSC 130	No	No	Yes	Music majors with score of 4 on Theory exam take MUSC 151; majors with score of 5 receive credit for MUSC 150 and 151. Consult department for proper placement, 454-6554.
Theory (Non-Majors)	4 or 5	3 Credits	MUSC 140	No	No	Yes	
Theory (Majors)	4 or 5	3 Credits	MUSC 150/151				
<b>PHYSICS</b>							
Physics B	4 or 5	6 Credits	PHYS 121 & 122	No	Yes	Yes	Credit is given for only lecture part of PHYS 121 and 122; student must enroll in the laboratory for PHYS 121 and 122 equivalents by special arrangement with department. Credit for PHYS 121 and 122 (provided lab taken at UMCP) or PHYS 141 and 142 generally satisfy the requirements of professional schools, such as dental and medical schools; credit for PHYS 161 and 262 satisfy two of the three introductory requirements for engineering schools. AP PHYS 121 or 122 fulfill the non-laboratory science requirement (CORE and USP); if take lab at UMCP, PHYS 121 or 122 now fulfill the laboratory requirement (CORE and USP). AP PHYS 141, 142, or 262 also fulfill the laboratory requirement (CORE and USP). Students interested in majoring in Physics should contact the associate chair of the department for proper placement, 454-3403.
Physics C	3, 4, or 5	3 Credits	PHYS 121	No	Yes	Yes	
Mechanics Elect. & Magnetism	3, 4, or 5	3 Credits	PHYS 122	No	Yes	Yes	
Physics C (Mechanics) and Calculus BC or place in MATH 240 OR 240	4 or 5 4 or 5	4 Credits	PHYS 141 or PHYS 161	No	Yes	Yes	
Physics C (Elec. & Magnet.) and Calculus BC or place in MATH 240 or 241	4 or 5 4 or 5	4 Credits	PHYS 142 or PHY1 262	No	Yes	Yes	
				No	Yes	Yes	
<b>SPANISH</b>							
Language	3	3 Credits	SPAN 203	Yes	No	Yes	Students with score of 3 on Language exam who wish to continue must enroll in SPAN 204, 205, or 221; with score of 4 or 5 must enroll in 300 level courses. Students with score of 3, 4, or 5 on Literature exam must enroll in 300 level courses. AP SPAN 203, 204, and 205 fulfill an Area A USP requirement. AP SPAN 221 fulfills one of two Area C USP requirements. Students continuing Spanish study should consult department for proper placement, 454-4305.
	4 or 5	6 Credits	SPAN 204 & SPAN 205	Yes	No	Yes	
				No	No	Yes	
Literature	3	3 Credits	SPAN 221	Yes	No	Yes	
	4 or 5	6 Credits	SPAN 204 & SPAN 221	Yes	No	Yes	

**Please Note:** LL refers to courses at the lower (100 and 200) level. Students may not receive credit both for AP courses and for equivalent UMCP or transfer courses. AP credit will be deleted in such cases. Decisions about applicability of courses to CORE are being updated weekly. Consult Schedule of Classes for most recent information. Native speakers may not earn AP credit for the French, German, or Spanish language exams.

## 16 Admission Requirements and Application Procedures

of Maryland at College Park records, and figure in the total number of credits earned toward graduation. Students may not receive credit for AP and satisfactorily completing an equivalent course at the University of Maryland at College Park or elsewhere. If students earn credit in a course equivalent to an AP exam for which they also earned credit, the AP credit will be deleted from their records. Students should check with their advisors for detailed information on the assignment of AP credit.

Please note that Table I (see chart) represents a general outline of AP credit. In all cases, credit is available for grades of 3 or higher only, subject to departmental reevaluation to take place in the summer of 1990. All departments reserve the right to reevaluate the content of exams and to change the assignment of credit and course equivalences. Any new exams offered after February 15, 1990 may or may not be evaluated by the appropriate department. Students should check with their advisor at orientation.

Certain departments, particularly Math and Physics, have separate criteria for placement in courses and the assignment of credit. Students should check with those departments for additional information. All entering freshmen will be placed in math courses according to the University of Maryland at College Park math placement exam.

### Transfer Admission Criteria

A student who has attended any regionally accredited institution of higher education following graduation from high school and attempted nine or more credits will be considered for admission as a transfer student. In calculating eligibility, the university will use the average stated on the transcript by the sending institution. When an applicant has attended more than one institution, a cumulative average for all previous college work attempted will be used. Transfer applicants must be in good academic and disciplinary standing at their previous institutions to be eligible for transfer to the University of Maryland at College Park.

Where the number of students desiring admission exceeds the number that can be accommodated on the campus, or in a particular professional or specialized program, admission will be based on overall grade-point average and the strength of the academic program the student has pursued.

### Requirements

Admission for transfer applicants is primarily based on the number of credits a student has earned and the cumulative grade-point average for all college-level work. To be considered, course work must have been completed at a regionally accredited college or university. The grade-point average requirement can vary, depending on the availability of space, but should not be lower than 3.0. All students with grade-point averages below 3.0 will be considered on a space available basis. In accordance with Maryland Higher Education Commission transfer policies, applicants from Maryland community colleges are, in some instances, given special consideration, and, when qualified, can be admitted with a cumulative grade-point average of 2.0 or better. Students who were not admissible as high school seniors must complete at least twenty-eight semester hours with the grade-point average as stated above.

### Undergraduate Students Transferring from Within the University System

A student seeking to move from one institution of the university to another must have been a regular degree-seeking student eligible to return to his or her original campus. Students who were special or non-degree students must contact the admissions office of the receiving campus. Undergraduate students who are not eligible to return to their original campus must be reinstated there before being considered for admission to the University of Maryland at College Park.

Students must comply with the normal deadlines and, where space is limited, admission to the new campus will be based on criteria designed to select the best qualified students.

### Transfer Students from Maryland Community Colleges

Currently, Maryland residents who attend Maryland public community colleges may be admitted in accordance with the criteria outlined in the general statement above. The university subscribes to the policies set forth in the Maryland Higher Education Commission transfer policies. Where the number of students desiring admission exceeds the number

that can be accommodated in a particular professional or specialized program, admission will be based on criteria developed by the university to select the best qualified students.

### Transfer of Credits

In general, credit from academic courses taken at institutions of higher education accredited by a regional accrediting association will transfer, provided that the appropriate academic officials at this campus consider such courses part of the student's curricular program and that the student earned at least grades of C in those courses. An academic advisor will discuss this and other matters during the period of registration.

**Maryland Public Colleges and Universities.** Transfer of course work completed at Maryland public colleges and universities is covered by the Maryland Higher Education Commission transfer policies.

**Maryland Community College Articulated Programs.** An articulated transfer program is a list of community college courses that best prepare the applicant for a particular course of study at the University of Maryland at College Park. If the applicant takes appropriate courses that are specified in the articulated program guide, and earns an acceptable grade, he/she is guaranteed transfer with no loss of credit. Articulated career program guides help students plan their new programs after changing career objectives. The guides are available at the Office of Undergraduate Admissions at the University of Maryland at College Park and in the transfer advisor's office at each of the community colleges. Applicants can eliminate all doubt concerning transfer of courses by following programs outlined in the guide.

**University of Maryland System.** Credits for undergraduate courses will transfer to the University of Maryland at College Park from other University of Maryland institutions. The applicability of these courses to the particular program chosen at the University of Maryland at College Park will be determined by an academic advisor/evaluator in the office of the dean (see Orientation Programs, below).

**Other Universities and Colleges.** In most cases credit will transfer from institutions of higher education accredited by a regional accrediting association (e.g., Middle States Association of Colleges and Schools; New England Association of Schools and Colleges; North Central Association of Colleges and Schools; Northwest Association of Colleges and Schools; Southern Association of Colleges and Schools; Western Association of Colleges and Schools), provided that the course is completed with at least a grade of C and the course is similar in content and level to work offered at the University of Maryland at College Park. The applicability of these courses to the particular course of study chosen at the University of Maryland at College Park will be determined by an academic advisor/evaluator in the office of the appropriate dean.

**Foreign Language Credit.** Transfer of foreign language credit is acceptable in meeting requirements. Prospective students should consult the appropriate sections of this catalog to determine the specific requirements of various colleges and curricula.

**Advanced Placement Credit.** If Advanced Placement credits are already on a student record from an institution outside the University of Maryland System, the score must be equivalent to a minimum university score or the credit will not be considered for transfer. Students must have an official score report sent to the University of Maryland at College Park in order to be considered for AP credit.

### Maryland Higher Education Commission Transfer Policies

These policies are currently under review. Students are advised to consult with the transfer coordinator or advisor. The University of Maryland fully subscribes to the Maryland Higher Education Commission transfer policies. A complete text of the policy follows.

**These Student Transfer Policies, developed by a special task force of the Segmental Advisory Committee, were adopted by the Maryland State Board for Higher Education on November 1, 1979. In view of the Board's sensitivity to the need of the institutions and segment boards to have sufficient lead time to make these policies operational, the new policies shall be effective and applicable to students enrolling in Maryland's public postsecondary education institutions in fall, 1980, and thereafter. At that time they will supersede SBHE student transfer policies in effect since 1972.**

## Preamble

The major objective of these policies is to relate in operational ways the undergraduate programs offered in the public sector of higher education in Maryland. These policies aim at equal treatment of native and transfer students. The effectiveness of these policies, since their promulgation in December 1972, has been confirmed by the minimal loss of credits experienced by students transferring within the public sector, by the apparent satisfaction of these students, and by the absence of appeals concerning the transferring of credits.

The intended principal benefactor is the student, who is best served by current information about programs and protected by firm arrangements among the public segments of higher education in Maryland that permit him to plan a total degree program from the outset. With successful academic performance, he or she can make uninterrupted progress even though transfer is involved. The measures of the effectiveness of the plan is maximum transferability of college level credits within the parameters of this agreement. Essentially, transfer and native students are to be governed by the same academic rules and regulations.

In a complementary way the state's interests are served by having its higher education resources used optimally by reducing the time taken to complete a degree through the avoidance of repeated class experience.

The institutional interests are protected also by the systematic approach; institutions are relieved of the uncertainties of unplanned articulation without becoming production line enterprises.

The dynamics of higher education preclude one-and-for-all time curricula and perpetual grading and retention systems. However, within the general structure of this plan there is opportunity for continual updating of the details.

In more specific ways this document's purpose is (1) to recommend specific areas of agreement among the public two-year and four-year institutions of higher education pertaining to facilitating the transfer of students within these segments; (2) to provide for a continuous evaluation and review of programs, policies, procedures, and relationships affecting transfer of students; (3) to recommend such revisions as are needed to promote the academic success and general well-being of the transfer student; and (4) to provide a system for appeals.

## Policies

1. Public four-year colleges and universities shall require attainment of an overall 2.0 average on a four-point scale by Maryland resident transfer students as one standard for admission. If the student has attended two or more institutions, the overall 2.0 will be computed on grades received in courses earned at all institutions attended unless the student presents an Associate in Arts degree.
  - a) Each public institution of higher education shall designate a person responsible for coordinating transferability to assist in accomplishing the policies and procedures outlined in this plan. The State Board for Higher Education will support requests by a public institution of higher education to establish the position of transfer coordinator.
  - b) Efforts shall be intensified among the sending institutions, based on shared information, to counsel students on the basis of their likelihood of success in various programs and at various institutions. (See par. 1 (c) and par. 9).
  - c) Procedures for reporting the progress of students who transfer within the state shall be developed as one means of improving the counseling of prospective transfer students.
2. Admission requirements and curriculum prerequisites shall be stated explicitly in institutional publications. Students who enroll at Maryland Community Colleges shall be encouraged to complete the Associate in Arts degree or to complete fifty-six hours in a planned sequence of courses that relate to general education and the selection of a major before transfer. Subsequent graduation from the receiving four-year institution is not assured within a two-year period of full-time study.
  - a) Students from Maryland Community Colleges who were admissible to the four-year institution as high school seniors and who have attained an overall 2.0 average in college and university parallel courses shall be eligible for transfer at any time, regardless of the number of credits. Those students who have been awarded the Associate in Arts degree or who have successfully completed fifty-six hours of credit with an overall 2.0 average in college and university parallel courses in either case shall not be denied transfer to an institution. If the number of students desiring admission exceeds the number that can be accommodated in a

particular professional or specialized program or certain circumstances exist that require a limitation being placed on the size of an upper division program or on the total enrollment, admission will be on criteria developed and published by the receiving institution, which provides equal treatment for native and transfer students.

- b) Course semester hour requirements that students must meet to transfer with upper division standing shall be clearly stated by the receiving institution.
  - c) The establishment of articulated programs is required in professional and specialized curricula.
3. Information about transfer students who are capable of honors work or independent study shall be transmitted to the receiving institution.
  4. Transfer students from newly established public colleges that are functioning with the approval of the State Board for Higher Education shall be admitted on the same basis as applicants from regionally accredited colleges.
  5. a) Credit earned at any other public institution in Maryland shall be transferable to any other public institution provided:
    1. the credit is from a college or university parallel program;
    2. the grades in the block of courses transferred average 2.0 or higher; and
    3. the acceptance of the credit is consistent with the policies of the receiving institution governing students following the same program.
  - b) Credit for the CLEP general examinations will be considered for transfer only for scores at the 50th percentile, and above, of the combined national men-women sophomore norms. The exact number of credits awarded, if any, in transfer will be determined by the same regulations that pertain to native students in the receiving institution. The percentile needed to transfer credit for the CLEP subject examination will be determined by the receiving institution. Segmental/Institutional governing boards shall submit to the State Board for Higher Education by December 1st of each year data collected from the institutions concerning the credit given, minimum scores and equivalent courses of the CLEP subject examinations. This data will be distributed annually by the State Board for Higher Education to transfer advisors at all institutions. To facilitate the transfer of Advanced Placement and CLEP credit, the achievement score for Advanced Placement and the scaled score, percentile rank, and the type of examinations (General or Subject) for the CLEP shall be reported on the transcript when credit is awarded.
  - c) The Associate in Arts degree shall serve the equivalent of the lower division general education requirements at the receiving institution where the total number of credits required in the general education program in the sending institution is equal to or more than that required in the receiving institution and where the credits are distributed among the arts and sciences disciplines.
  - d) The determination of the major program requirements for a baccalaureate degree, including courses in the major taken in the lower division, shall be the responsibility of the institution awarding the degree.
6. Transfer of credits from the following areas shall be consistent with the state minimum standards and shall be evaluated by the receiving institution on a course-by-course basis:
    - a) Courses from technical and career programs.
    - b) Orientation courses.
    - c) Remedial courses.
    - d) Courses credited by a university or college that has no direct academic and administrative control over the students or the faculty involved in the courses.
    - e) Credit for work experiences.
  7. Credit earned in or transferred from a community college shall normally be limited to approximately half the baccalaureate degree program requirement, but in no case more than 70 credits, and to the first two years of the undergraduate educational experience.
  8. Transfer students shall be given the option of satisfying graduation requirements that were in effect at the receiving institution at the time they enrolled as freshmen at the sending institution, subject to conditions or qualifications that apply to native students.
  9. Institutions shall notify each other as soon as possible of impending curricular changes that may affect transferring students. When a change made by one institution necessitates some type of change at another institution, sufficient lead time shall be provided to effect the change with minimum disruption.
  10. Community college students are encouraged to choose as early as possible the institution and program into which they expect to transfer.
  11. The Segmental Advisory Committee shall continue to review articulation issues and shall recommend policy changes as needed to the State Board for Higher Education.
  12. In the event a transfer student believes he or she has not been accorded the consideration presented in this policy statement, the

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student shall have the opportunity to have the situation explained or reconciled

Initially, differences of interpretation regarding the award of transfer credit shall be resolved between the student and the institution to which he is transferring. If a difference remains unresolved, the student shall present his/her evaluation of the situation to the institution from which the student is transferring. Representatives from the two institutions shall then have the opportunity to resolve the differences.

The sending institution has the right to present an unresolved case to the Segmental Advisory Committee through a written appeal to the State Board for Higher Education. The SAC shall receive relevant documentation, opinions, and interpretations in written form from the sending and receiving institutions and from the student. The Segmental Advisory Committee will send the written documentation to a pre-established articulation committee which, after review, will submit its recommendations to the Segmental Advisory Committee.

Copies of the recommendation shall be forwarded by the State Board for Higher Education to the segments for distribution to the appropriate institutions.

A complaint on transfer status must be initiated by the student within one calendar year of his/her enrollment in the receiving institution.

### APPLICATION PROCEDURES

#### Application Forms

Application forms may be obtained by writing to the Office of Undergraduate Admissions, Mitchell Building, University of Maryland, College Park, MD 20742, or by calling 454-5550. Application forms may be obtained in many high school guidance offices.

#### Application Fee

A non-refundable \$25.00 application fee is required with each application.

#### Application Deadlines

The University of Maryland at College Park strongly urges that all applicants apply early before stated deadlines to assure consideration for admission. Because of space limitations, the institution may not be able to offer admission to all qualified applicants.

For each term, applications will be processed on a space-available basis.

#### Fall 1990 Matriculation

March 1, 1990—International students' deadline for submission of applications and all other required documents.

July 30, 1990—Transfer applicants' deadline for submission of applications and all other required documents.

#### Spring 1991 Matriculation

August 1, 1990—International students' deadline for submission of applications and all other required documents.

December 15, 1990—Undergraduate applicants' deadline for receipt of applications and all other required documents.

#### Fall 1991 Matriculation

December 1, 1990—Applications, transcripts and, for freshmen only, SAT results must be received for freshman and transfer students who are eligible for admission and wish to receive first consideration for housing within their own priority group for Fall 1990.

February 1, 1991—Architecture applicants must apply by this date to be assured of consideration.

March 1, 1991—International students' deadline for submission of applications and all other required documents.

April 30, 1991—Estimated freshman applicants' deadline for receipt of applications and all other required documents. Please note: space may not be available to accommodate all qualified freshmen who apply by this date.

July 30, 1991—Transfer applicants' deadline for submission of applications and all other required documents.

\*Transfer applicants who are enrolled as first-semester freshmen in a college or university for the first time during the Fall 1990 semester are eligible to receive first consideration for housing within their own priority group if: 1) the application and high school transcript are received in the Office of Undergraduate Admissions (OUA) by December 1, 1990 and 2) the applicant's college or university transcript reflecting Fall 1990 grades is received in the OUA by January 1, 1991.

### Admission to Limited-Enrollment Majors

Certain colleges, schools, and departments within the university have taken steps to limit their enrollment in order to maintain quality programs. These include to: **School of Architecture, College of Business and Management, Department of Aerospace Engineering, Department of Computer Science, Department of Consumer Economics, Department of Economics, Department of Electrical Engineering, College of Engineering, Department of Housing and Design, College of Journalism, Department of Radio-Television-Film, Department of Special Education and all teacher education majors.** Enrollment is competitive, and except for a select number of outstanding freshmen, students must complete a particular set of requirements before admission.

Students not admitted directly as freshmen may still enroll on the campus as pre-business, pre-computer science, pre-engineering, or other pre-majors. However, admission as a preprofessional student does not guarantee subsequent admission to any of the majors. To assess your chances of being admitted at a later date, contact an academic advisor within the appropriate program.

For specific requirements not detailed in the following sections, see the individual school, college (Chapter 7) or department entries (Chapter 8).

#### Architecture

Admission to the School of Architecture is generally limited to students who enroll as juniors.

To be considered for admission, all applicants whether they are currently enrolled at the University of Maryland at College Park or transfer students must submit a portfolio. The portfolio should be organized in an 8-1/2" x 11" loose leaf notebook, and it must demonstrate strong creative ability. In addition, students in all level work should have at least a 3.0 grade point average (GPA) overall. They should have completed freshman English and appropriate course work in calculus and physics. Architecture survey and history courses are recommended.

#### Business and Management

Admission to the College of Business and Management is generally limited to students who enroll as juniors.

To be eligible for admission to the college in the junior year, students must satisfy the current competitive GPA; have completed 56 semester hours; and have completed the necessary course work, including six hours each of Accounting and Economics, and three hours each of Calculus, Statistics, and Speech.

#### Computer Science

Admission to the Department of Computer Science is competitive. A small number of academically talented, entering freshmen will be offered admission; however, admission is generally limited to students who have met the following requirements:

- Successful completion of CMSC 150, CMSC 113, MATH 140 and 141, and
- Completion of a minimum of 28 college credits, and
- Achievement of a grade-point average (GPA) that meets the competitive requirements in effect for the semester of anticipated enrollment in the department.

Information on the current GPA requirements may be obtained from the Office of Undergraduate Admissions.

A few potentially qualified students who are unable to meet these criteria will be considered on a case-by-case basis by a special committee within the department.

Applicants to the Department of Computer Science, who are eligible for admission to the University of Maryland at College Park but who do not meet the department's requirements, will be offered admission to the university as pre-computer science majors. Designation as a pre-computer science major does not assure eventual admission to the Department of Computer Science.

Because of space limitations, the University of Maryland at College Park may not be able to offer admission to all qualified applicants. Interested students are urged to apply early.

## Consumer Economics

Direct enrollment in Consumer Economics will be limited to a relatively few highly qualified entering freshmen. Generally, students are admitted who meet the following requirements:

- a. Completion of 28 credits with a minimum cumulative grade-point average (GPA) of 2.50. The GPA requirement is reviewed each semester and is subject to change.
- b. Completion of three required courses with a grade of C or better in each: ECON 201, Macroeconomics; ECON 203, Microeconomics; and MATH 220, Elementary Calculus I.

## Economics

Direct enrollment in Economics is limited to a small number of academically talented freshmen. Generally, students are admitted who meet the following requirements:

- a. Completion of 56 credits with a minimum cumulative grade-point average (GPA) of 2.5. The GPA requirement is reviewed each semester and is subject to change.
- b. Completion of three required courses with a grade of C or better in each: ECON 201, Macroeconomics; ECON 203, Microeconomics; and MATH 220, Elementary Calculus I.

## Engineering

The College of Engineering admits a larger number of qualified freshmen than the other programs described in this section. Still, enrollment is limited and competition for available openings is stiff, especially in Aerospace Engineering and Electrical Engineering. All applications will be reviewed on a space-available basis.

Freshmen will be considered on the basis of their academic grade-point average (GPA) and SAT score. Particular emphasis is placed on the mathematics section of the SAT. The requirements for direct admission to Aerospace Engineering and Electrical Engineering are more stringent than for other engineering majors.

All transfer students, as well as students currently enrolled at the University of Maryland at College Park, must meet the competitive grade-point average in effect for the semester during which the student anticipates initial enrollment. In addition, applicants must have completed at least twenty-eight semester hours including eight hours each of calculus and chemistry and three hours of physics. Engineering science and statistics are also strongly recommended.

Transfer students wishing to major in Aerospace Engineering or Electrical Engineering will encounter additional course requirements and a higher GPA requirement. Prospective applicants to this major should contact the Undergraduate Admissions, (301) 454-4009 or Student Affairs, College of Engineering, (301) 454-2421 for details.

## Housing and Design

A change in admissions criteria for the Design major is currently under consideration. Students should check with the department for the latest information on the status of this proposed change.

Admission to the programs of Interior Design and Advertising Design is competitive. A small number of academically talented, entering freshmen will be admitted to these programs. To be admitted, a freshman must have a 3.00 high school grade-point average (GPA) and a combined SAT score of 1200.

Admission to these programs is generally limited to students who will enroll at the sophomore level and who have met the following requirements:

- a. Completion of a minimum of twenty-nine college credits; and
- b. Successful completion of four required courses (APDS 101A, APDS 102, APDS 103, and EDIT 160); and
- c. Submission of a Design Work Portfolio for review. Qualified freshmen do not need to submit a portfolio.

All transfer students and currently enrolled pre-design majors must submit a Design Work Portfolio. A portfolio may be submitted to the department at the time of application for admission to the university or later, but no later than the application deadline set by the department.

Potentially talented students who are unable to meet the above criteria may be admitted after special review by the department.

Eligible applicants who do not meet the requirements for the programs of interior design and advertising design will be offered admission as pre-design majors. While this designation does not assure eventual admission to the design major, pre-design students will be given preferential treatment when registering for departmental courses in which there is an enrollment limitation.

## Journalism

Admission to the College of Journalism is competitive, and generally limited to students who enroll as sophomores. A small number of academically talented freshmen will be admitted directly into the College if they have a 3.00 cumulative grade-point average (GPA) in high school academic subjects and a combined SAT score of at least 1200.

To qualify for provisional admission as a sophomore, students must:

- a. Complete at least 28 credits and achieve a cumulative GPA that meets the requirement in effect for the semester of anticipated enrollment in the College.
- b. Complete ENGL 101 or its equivalent with at least a grade of C, unless students are exempt from ENGL 101.
- c. Complete satisfactorily a standardized test of grammar.

To qualify for full admission to the major, students must:

- a. Complete JOUR 201 with a grade of C or better (30 wpm typing ability is required for this course).
- b. Maintain at least the same cumulative GPA required when they received provisional admission.

Transfer students will be treated in the same way as native students. However, if they have completed the equivalent of JOUR 201 at an institution not included by ACEJMC a special proficiency exam will be required for admission to the major.

## Radio-Television-Film

The Department of Radio-Television-Film admits a limited number of academically talented freshmen. Generally, enrollment is limited to students who have completed the following:

- a. At least twenty-eight credits with a minimum grade-point average (GPA) of 2.60. The GPA requirement is reviewed each semester and is subject to change.
- b. Three required courses with a grade of C or better in each: ENGL 101, Introduction to Writing; MATH 110, Introduction to Mathematics; and RTVF 222, Introduction to Radio-Television-Film.

## Special Education

Admission to the Department of Special Education is generally limited to students who enroll as sophomores.

To be eligible for admission, currently enrolled the University of Maryland at College Park students must have a 2.0 grade point average and have completed approximately thirty credit hours, including the following: introductory psychology, sociology, statistics, mathematics, hearing and speech sciences, and six hours of specified education courses. minimum grade of "C" in EDSP 210 is required.

Applicants must submit an application specific for the selective admissions program and each will be reviewed on the basis of academic record, experiences with handicapped persons, and the appropriateness and clarity of a professional goal statement. An appeals process has been established for students who do not meet the competitive grade point average for admission but who are applying in connection with special university programs such as affirmative action or selection for academic promise.

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Transfer students from Maryland community colleges or Northern Virginia Community College should contact their transfer coordinator for specific information. All other students should contact the Department of Special Education.

### Teacher Education

Admission to teacher education majors is limited for both freshmen and transfer applicants. A small number of academically talented freshmen who have a 3.0 or better academic grade-point average (GPA) and a total score of 1200 or more on the Scholastic Aptitude Test will be admitted directly. All transfer students, as well as students currently enrolled at UMCP, must 1) complete the six-credit USP Fundamental Studies requirements; 2) earn 45 semester hours at UMCP or other institutions with an overall cumulative GPA of at least 2.5 on a 4.0 scale in all course work prior to enrollment in EDHD 300; and 3) have satisfactory scores on the Language and mathematics segments of the California Achievement Test Level 20.

Individuals who do not initially meet the criteria for admission to teacher education will be given an additional semester in which to become eligible. During that semester the student will follow a plan for attaining eligibility developed by the student and the department advisor. New requirements for the elementary education teacher preparation programs have been adopted. For further information, please contact the College of Education.

## SPECIAL APPLICANTS

### Minority Students

In keeping with the University Affirmative Action Program, special consideration will be given to minority students who demonstrate the potential for academic success. Minority students are urged to contact both an admissions counselor and Minority Student Education, 1101 Hornbake Library, (301) 454-4901.

### Returning Students and Veterans

Maryland residents who have not attended school for more than five years, or who have had military experience, may find that the published standards for freshman and transfer admissions do not apply to their situation. To discuss educational plans, returning students and veterans should contact both an admissions counselor and the Returning Students Program, 454-2935.

Students returning to the University of Maryland at College Park after a separation of five calendar years may petition their appropriate dean to have a number of grades and credits from courses previously taken at the University of Maryland at College Park removed from the calculation of their cumulative grade-point averages and from the credits applied toward graduation requirements. For more information, consult the section on Academic Regulations and Requirements.

### International Students

The University of Maryland values the contribution international students make to the College Park campus. Therefore, applications from the international community are welcomed. However, due to the differences between foreign educational systems and education in the United States, international students will face a number of challenges in adapting to study at the university. Students who have received, throughout their secondary school and university level work, marks or examination results considered to be "very good" to "excellent" are those who are most likely to succeed at our institution. Admission for international students is competitive and offered only to those who are considered by the university to be better than average in their own educational setting. Students also have to demonstrate, in their secondary level studies, that they have successfully completed a diversity of subjects representing language, mathematics, physical or biological science and social sciences. Because of the keen competition at the University of Maryland, we suggest applicants apply early.

Those who will hold the following visa types, A, E, F, G, H, I, J, and L, will be admitted on the basis of their academic backgrounds and must present records with marks of "very good" to "excellent". However, non-immigrants, other than F or J visa holders, who have completed four years of U.S. secondary education (grades 9 through 12), will be evaluated on the same basis as U.S. Citizens and Permanent Residents/Immigrants.

International applicants who present one full year of acceptable university level credit will be considered for admission as transfer students. Those with less than one full year of acceptable credit must also meet the freshman admission requirements for international applicants.

International students applying for admission to undergraduate programs at the University of Maryland at College Park must submit: 1) an application and fee for admission; 2) copies of official secondary school records, including any secondary external examinations, such as the G.C.E. "Ordinary" level examinations, or the Baccalaureate; 3) transcripts of any university level studies completed in the United States or elsewhere. Original documents written in a language other than English must be accompanied by certified English translations.

International students who have completed grades 10, 11, and 12 in a United States high school must also take the Scholastic Aptitude Test (SAT) and submit the results. All freshman applicants to the College of Engineering, regardless of where they have studied, must present SAT scores. Admission to limited-enrollment majors (see "Admissions to Limited-Enrollment Majors" for identification of these majors) requires international students to have marks of no less than "excellent" in previous education.

International students on F-1 Student visas accepted for admission to the university will receive the I-20 form from the office of International Education Services (IES); this form is needed to secure, transfer, and extend the Student visa after applicants have certified their financial support and submitted evidence of satisfactory English proficiency to the IES office.

International students accepted for admission will be expected to plan their arrival sufficiently in advance of the registration period to secure housing and attend the special orientation program for international students that is held the week prior to registration.

### English Proficiency

All applicants must demonstrate a satisfactory level of English proficiency. Such proficiency is necessary to pursue a full course of study at the University of Maryland at College Park. All non-native speakers of English must submit a score report from the Test of English as a Foreign Language (TOEFL) during the application process. Non-native speakers who have received a degree from a tertiary level institution in the U.S., English-speaking Canada, United Kingdom, Ireland, Australia, New Zealand, or Commonwealth Caribbean are exempt from the TOEFL requirement. Native speakers of English are defined as those educated entirely in the U.S., English-speaking Canada, United Kingdom, Ireland, Australia, New Zealand, or Commonwealth Caribbean. Applicants who are unsure as to whether or not they need to take the TOEFL should contact the office of International Education Services. Non-native speakers of English who have graduated from U.S. high schools must submit TOEFL examination results. For information and a TOEFL application brochure, write to: TOEFL, Box 2896, Princeton, NJ 08540.

### Application Deadlines

1. Those applicants who would be studying under F (Student) or J (Exchange Visitor) visas must meet the following application deadlines:

Fall semester—March 1  
Spring semester—August 1

2. Non-Immigrants (A, E, G, H, I, L visas) must have complete applications submitted by the following deadlines. Complete applications include all academic records and transcripts for work completed, and TOEFL scores if the applicant is a non-native speaker of English:

Fall semester—March 1  
Spring semester—August 1

3. All applicants must submit all foreign educational credentials, and certified English translations of such records in languages other than English at least three months in advance of the first day of classes to be given full consideration for admission.

### Return of Foreign Records

Transcripts records and mark sheets of applicants with foreign credentials are maintained by the office of Undergraduate Admissions for two years. If these documents are original copies, the student must request their

return within two years of application. At the end of this period, the records are destroyed.

## Immigrant Students

Immigrant applicants for admission at the undergraduate level are admissible under the same guidelines as U.S. citizens EXCEPT that applicants, including transfer applicants, whose native language is other than English must ALSO demonstrate a satisfactory level of English proficiency to pursue an approved course of study.

## Non-Degree (Special) Students

Applicants who qualify for admission but do not desire to work toward a baccalaureate degree may be admitted as non-degree-seeking (special) students.

Special students who have received a baccalaureate degree are advised that no credit earned while enrolled as special students may be applied at a later date to a graduate program. These post-baccalaureate students may enroll in undergraduate courses for which they possess the necessary prerequisites, but may not enroll in courses restricted to graduate students only. Students who wish to take courses at the graduate level (600 and above) must contact the Graduate School for information concerning admission requirements for Advanced Special Student status.

Non-degree seeking (special) students who do not have a baccalaureate degree must submit transcripts and meet regular admission standards. Transcripts are not required from students with baccalaureate degrees. Because of space limitation, several departments require permission be given in advance to enroll as a non-degree student. Please contact Undergraduate Admissions for further information.

## Preprofessional Programs and Options

The University of Maryland at College Park offers preprofessional advising in Dental Hygiene, Dentistry, Law, Medical Technology, Medicine, Nursing, Optometry, Osteopathy, Pharmacy, Physical Therapy, Podiatry, and Veterinary Medicine. This advising will guide the student to the best preparation for advanced study and training in these fields. For additional information, see Campus-wide Programs in Chapter 8.

Participation in a preprofessional program at the University of Maryland at College Park does not guarantee admission to another branch of the university or to another institution.

The Radiologic Technology program previously offered at the University of Maryland at Baltimore (UMAB) is no longer available. Students choosing the preprofessional program in this field will receive training that should prepare them for transfer to other institutions.

Students who have already earned more than thirty semester hours at another college-level institution, and who seek admission to preprofessional programs in Nursing, Pharmacy, Dental Hygiene, Physical Therapy, and Medical Technology, should contact the academic advisor for the preprofessional programs at the University of Maryland at College Park before filing an application for the University of Maryland at College Park. Please address correspondence to the academic advisor of the specific preprofessional program to which you are applying; for example, Advisor for Pre-Nursing Program, 3103 Turner Laboratory, University of Maryland, College Park, MD 20742.

## Golden Identification Card Program

The University of Maryland at College Park participates in the University of Maryland's Golden Identification Card Program. The institution will make available courses and various services to persons who are 60 years of age or older, who are legal residents of the State of Maryland, and who are retired (not engaged in gainful employment for more than 20 hours per week). When persons eligible for this program are admitted to the university, they register on a space-available basis for credit courses as regular or special students in any session, and receive a Golden Identification card. Golden ID students must meet all course pre-requisite and co-requisite requirements. Golden ID students are not eligible for Consortium courses with the waiver of fees. The University of Maryland at College Park tuition and most other fees are waived. Golden ID students may register for a maximum of three courses per term. The Golden Identification Card will entitle eligible persons to certain academic services, including the use of the libraries, as well as certain other non-academic services. Such services will be available during any session only to persons who have

registered for one or more courses for that session. Golden ID students also have the opportunity to become involved with the Golden ID Student Association which provides cultural and social events, course recommendations, and peer advising. Additional information may be obtained from Undergraduate Admissions, Mitchell Building, 454-5550, or the Golden ID Student Program, 0119 Hornbake Library, 454-4767.

## ORIENTATION PROGRAMS

Upon final admission to the university the new student will receive materials about the Orientation and Registrar Program. This program is offered by the Orientation Office, and all entering students are encouraged to attend. The primary goals of the program are to inform the student about the university and to help the student register for the first semester. Through this program the entering student receives a personalized and individual introduction to the university plus individual advising concerning course selection for the first semester. During this Orientation Program, new students register for courses for their initial semester on campus.

Parents also have an opportunity to learn about university life through the Parent Orientation Program. More information about this program may be found under "Orientation," elsewhere in this catalog.

For more information, contact the Orientation Office, 1195 Stamp Student Union, (301) 454-5752.

## DETERMINATION OF IN-STATE STATUS FOR ADMISSION, TUITION, AND CHARGE DIFFERENTIAL PURPOSES

See Appendix H for the complete text of this policy.

An initial determination of in-state status for admission, tuition, and charge-differential purposes will be made by the university at the time a student's application for admission is under consideration. The determination made at that time, and any determination made thereafter shall prevail in each semester until the determination is successfully challenged. Students may challenge their classification by submitting a petition. Petitions are available in the office of Undergraduate Admissions. The deadline for meeting all requirements for in-state status and for submitting all documents for reclassification is the last day of late registration for the semester if the student wishes to be classified as an in-state student.

The volume of requests for reclassification may necessitate a delay in completing the review process. It is hoped that a decision in each case will be made within ninety days of receipt of a request for redetermination and all necessary documentation. During this period of time, or any further period of time required by the university, fees and charges based on the previous determination must be paid. If the determination is changed, any excess fees and charges will be refunded.

Petitions, related documents and questions concerning the policy of the University of Maryland for the determination of in-state status should be directed to the Campus Classification Office, 1116 Francis Scott Key Hall, University of Maryland, College Park, MD 20742, (301) 454-3977.

## Students Classified as In-State for Admission, Tuition, and Charge-Differential Purposes

Students classified as in-state for admission, tuition, and charge-differential purposes are responsible for notifying the office of Undergraduate Admissions in writing within fifteen days of any change in their circumstances what might in any way affect their classification at the College Park campus.

The written notice of change in circumstances or questions concerning the policy of the University of Maryland for the determination of in-state status should be directed to Undergraduate Admissions, Ground Floor, Mitchell Building.

## Graduate Student Admission

Those who have earned or will earn a bachelor's degree at a regionally accredited college or university in the United States, or the equivalent of

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this degree as determined by the University of Maryland at College Park in another country, will be considered for admission to the graduate school at the College Park campus. Criteria are listed in the Graduate School's Application Brochure obtainable from the graduate school. Requests for information about graduate programs or correspondence concerning application for admission to the graduate school at the University of Maryland at College Park should be addressed to Admissions Office, University of Maryland Graduate School, Lee Building, College Park, MD 20742.

### Readmission and Reinstatement

Students who do not maintain continuous registration must apply for readmission or reinstatement if they intend to reenroll at the university. A student who was previously admitted and did not register for that semester must apply again for admission. A student who was previously admitted, registered, and cancelled this registration, must also apply for admission.

#### Readmission

Students must apply for readmission if they interrupt registration for one or more semesters and were not academically dismissed at the conclusion of the last semester of attendance.

#### Reinstatement

Students who withdraw or who are academically dismissed from the university must apply for reinstatement. All applications for reinstatement are reviewed by a Faculty Petition Board. Students may apply for reinstatement for the semester immediately following withdrawal/dismissal or for any subsequent semester. The Board members are empowered to grant reinstatement if circumstances warrant such action.

Student whose petitions for reinstatement are denied may apply for future reinstatement in accordance with published deadlines. Students may be required to comply with specific recommendations made by the Faculty Petition Board in order to qualify for reinstatement.

#### Deadlines

There are no deadlines for readmission. However, students are encouraged to apply early in order to take advantage of early registration.

Students applying for reinstatement must observe the following deadlines:

Fall Semester—June 15  
Spring Semester—November 1  
Summer Session I—April 15  
Summer Session II—May 15

These deadlines are strictly enforced.

### Summer School

Fall dismissals who are denied reinstatement for the spring semester are not eligible to attend summer sessions unless they are approved for reinstatement in the interim. Students dismissed at the end of the spring semester may attend the first or second summer sessions prior to reinstatement. However, these students must be approved for reinstatement in order to attend during the fall semester.

### Clearances

Clearances from Judicial Affairs, the Bursar's office, Health Center, or International Education Services may be requested of the applicant.

### Applications

Applications for readmission and reinstatement are available at the Information Counter, Undergraduate Admissions, Ground Floor, Mitchell Building. Applications may also be requested by phone.

### Additional Information

For additional information contact Reenrollment Office, 0117 Mitchell Building, University of Maryland, College Park, MD 20742, 454-2734.



## CHAPTER 3

# FEES, EXPENSES AND FINANCIAL AID

## FEES AND EXPENSES

### Student Accounts Office

1103 Lee Building, 454-4832

Tuition and fees for the University of Maryland at College Park are listed below. The university requires that all deposits and fees be paid by stated deadlines, or penalties must be imposed. Many potential administrative difficulties can be avoided if students carefully follow published procedures and notify the appropriate office(s) of any changes that might affect their financial obligation to the university. This includes notifying the university of changes of address, so that mail affecting the student's financial relationship with the university will not be delayed or returned.

The University of Maryland does not have a deferred payment plan. Charges incurred during a semester are payable immediately. Returning students will not be permitted to complete registration until all financial obligations to the university including library fines, parking violations, and other penalty fees and service charges are paid in full.

Payment for past due balances and current semester fees are due on or before the first day of classes. Students who register in advance must pay their bills in full prior to the general registration period. Students who register after the initial registration period are required to make full payment by the close of business the following working day to avoid cancellation of their enrollment and loss of their classroom seats to other students.

It is the policy of the university not to defer payment on the basis of a pending application for financial assistance to an outside agency, including Veterans Administration benefits, bank loans, Stafford student loan programs, etc.

Although the university regularly mails bills to students, it cannot assume responsibility for their receipt. Students are reminded that it is their responsibility to notify the university of any change in address, or to correct an address. If a student bill is not received on or before the beginning of each semester, it is the student's responsibility to obtain a copy of the bill, 1103 Lee Building, Monday through Friday, 8:30 a.m. to 4:15 p.m.

All checks or money orders should be made payable to the University of Maryland for the exact amount due. **Student name and student social security number should be written on the front side of the check.** University grants, scholarships, or workshop awards will be deducted on the bill, which is mailed approximately one month after the start of the semester. However, the first bill mailed prior to the beginning of each semester may not include these deductions.

Students are urged to check their residence hall and dining service agreements for procedures for cancellation of reservations, and for deadlines for receiving refunds of deposits. Refunds cannot be made after these deadlines, even if the student decides not to attend the University of Maryland at College Park.

Students will be severed from university services and incur a late payment fee in the event of failure to pay a balance on their student account by its due date. In the event that severance occurs, the individual may make payment during the semester in which services were severed and services will be restored. **A \$25.00 severance fee and a late payment fee of \$5.00 or 5%, whichever is higher, will be assessed in addition to payment for the total past due amount.**

Students removed from housing because of delinquent indebtedness will be required to reapply for housing after they have satisfied their financial obligation. Students who are severed from university services and who fail to pay the indebtedness during the semester in which severance occurs will be ineligible to preregister for subsequent semesters until the debt and the penalty fees are cleared.

In the event of actual registration for a subsequent semester by a severed student who has not settled his or her student account prior to that semester, such registration will be cancelled and no credit will be earned for the semester.

The state has established, under legislative mandate, a Central Collections Unit (CCU) within the Department of Budget and Fiscal Planning. The university is required by state law to refer all delinquent accounts to the State Collections Unit. Please note that Maryland law allows the Central Collections Unit to intercept state income tax refunds for individuals with delinquent accounts, and that failure to make timely payment in response to CCU collection efforts may impair a credit rating.

**All Accounts Due from Students, Faculty, Staff, Non-Students, etc., are included within these guidelines.**

Collection costs incurred in collecting delinquent accounts will be charged to the student. The minimum collection fee is 15% plus attorney and/or court costs.

No degrees, grades, diplomas, certificates, or transcripts of records will be issued to students who have not made satisfactory settlement of their accounts.

**An Important Fee Notice:** Although changes in fees and charges ordinarily will be announced in advance, the university reserves the right to make such changes without prior announcement.

**Note:** Additional Information on Student Financial Obligations, Disclosure of Information, Delinquent Accounts, and Special Fees, can be found on page 2.

### Payment of Fees

All checks, money orders, or postal notes should be made payable to the University of Maryland. The student's Social Security number must be written on the front of the check. VISA and Master-Card credit cards are accepted.

## A. Undergraduate Fees

### 1. Full-time Undergraduate Students 1990-91 Academic Year

a. Maryland Residents	
Total Academic Year Cost	
Tuition	\$1,852.00
Registration Fee	10.00
Mandatory Fees (see Explanation of Fees below)	403.00
Board Contract (FY 89-90)*	
1) Point Plan	1,939.00
Lodging (FY 89-90)*	2,390.00

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- b. Residents of the District of Columbia, other states, and other countries:

	Total Academic Year Cost
Tuition	5,908.00
Registration Fee	10.00
Mandatory Fees (see Explanation of Fees below)	403.00
Board Contract (FY89-90)*	
1) Point Plan	1,939.00
Lodging (FY89-90)	2,390.00

\*Increases in board and lodging for 1990-91 are under consideration by the Board of Regents at the time of this printing.

### 2. Fees for Part-Time Undergraduate Students

Tuition (per credit hour)	\$108.00
Registration Fee (per semester)	5.00
Mandatory Fees (per semester)	95.00

**Note:** The term "part-time undergraduate student" is interpreted to mean an undergraduate student taking eight semester credit hours or less. Students carrying nine semester hours or more are considered to be full-time and must pay the regular full-time fees.

## B. Graduate Fees

1. Maryland Residents (fee per credit hour)	128.00
2. Residents of the District of Columbia, other states other countries (fee per credit hour)	229.00
3. Registration Fee (per semester)	5.00
4. Mandatory Fees (per semester)	
Full-time (9 or more credit hours per semester)	117.00
Part-time (8 or less credit hours per semester)	86.00

## Explanation of Fees

### Mandatory Fees

**Registration Fee (Non-Refundable).** The Registration Fee is charged to all registrants each semester.

**Instructional Materials Fee (Refundable).** Charged to all students for instructional materials and/or laboratory supplies furnished to students.

**Student Activities Fee (Refundable).** Charged to all undergraduate students at the request of the Student Government Association. It is used in sponsoring various student activities, student publications, and cultural programs.

**Auxiliary Facilities Fee (Refundable).** Charged to all students. This fee is paid into a fund that is used for capital improvement, expansion, and construction of various campus facilities such as open recreation areas (tennis courts, basketball courts, etc.), transportation alternatives (shuttle buses), and the Stamp Student Union. These capital projects are not funded or are funded only in part from other sources.

**Athletic Fee (Refundable).** Charged to all students for the support of the Department of Intercollegiate Athletics. All students are encouraged to participate in all of the activities of this department, or to attend the contests if they do not participate.

**Student Health Fee (Refundable).** Charged to all students for the support of the Health Service facility.

**Shuttle Bus Fee (Refundable).** Charged to all students for the support of the Shuttle Bus transportation system.

**Stamp Student Union and Recreational Fee (Refundable).** Charged to all students and is used to expand recreational facilities and Stamp Student Union services.

### Other Fees

**Application Fee (Non-Refundable).** \$26.00. Charged to all new undergraduate students.

**Enrollment Confirmation Deposit (Non-Refundable).** \$100.00. All newly accepted undergraduate students who intend to matriculate in the fall or spring semester must submit a \$100 fee which is credited to their tuition charges when they enroll. Should the student decide not to enroll for the specific semester of application the \$100 fee is forfeited, and cannot be used to offset any charges the student may incur.

Students admitted for the fall term by April 1 must submit this deposit by May 1; students admitted for the spring term prior to December 1 must submit this deposit within 30 days. Students admitted after December 1 for the spring term must submit this deposit within 14 days.

**Pre-College Orientation Program Registration Fee.** \$78.00 (two-day program); \$54.00 (one-day program); \$27.00 (one parent); \$54.00 (two parents)

**Late Registration Fee.** \$20.00. All students are expected to complete their registration including the filing of Schedule Adjustment Forms on the regular registration days. Those who do not complete their registration during the prescribed days must pay this fee.

**Special Fee for students requiring additional preparation in mathematics (MATH 001 and MATH 002) per Semester.** \$135.00. (Required of students whose curriculum calls for MATH 110 or 115 and who do not pass the qualifying examination for these courses.) This Special Math Fee is in addition to course charge. Students enrolled in this course and concurrently enrolled for six or more credit hours will be considered as full-time students for purposes of assessing fees. Students taking only MATH 001 pay for three credits plus \$135.00. A three-credit course plus MATH 001 results in a charge for 6 credits plus \$135.00. A full-time student pays full-time fees plus \$135.00. This course does not carry credit towards any degree at the university.

**Special Fee for Students Requiring Additional Preparation in Chemistry (CHEM 001) per Semester.** \$100.00. CHEM 001 is recommended for students who do not qualify for MATH 110 or higher, or who have no high school chemistry and must take CHEM 103. This course does not carry credit towards any degree at the university. This Special Chemistry Fee is in addition to course charge.

**Cooperative Education in Liberal Arts, Business and Science (CO-OP 098-099) Per Semester.** \$65.00

**Engineering COOP Program (ENCO 098-099) Per Semester.** \$65.00

**Fees for Auditors** and courses taken for audit are the same as those charged for courses taken for credit at both the undergraduate and graduate levels. Audited credit hours will be added to hours taken for credit to determine full-time or part-time status for fee assessment purposes. Special Students are assessed fees in accordance with the schedule for the comparable undergraduate or graduate classification.

**Change of Registration Fee.** \$2.00 for each course dropped or added after the schedule adjustment period. A \$4.00 fee is charged for each section change (\$2.00 for the section added; \$2.00 for the section dropped) after the schedule adjustment period.

**Graduation Application Fee for Bachelor's Degree.** \$15.00. The Graduation Application Fee is a one-time, non-refundable charge. If a subsequent application is submitted for the same degree, the fee will not be charged a second time.

**Special Examination Fee (Credit-by-Exam).** \$30.00 per course for all undergraduates and full-time graduate students; credit-hour for part-time graduate students.

**Vehicle Registration Fees.** Vehicles must be registered each academic year by all students enrolled for classes on the College Park campus and who drive or park a vehicle anywhere or anytime on the campus. For additional information, please refer to the entry for Department of Campus Parking in Chapter 4.

**Textbooks and Supplies.** Textbooks and classroom supplies vary with the course pursued, but will average \$450.00 per year (two semesters).

**Service Charges for Dishonored Checks.** Payable for each check which is returned unpaid by the drawee bank on initial presentation because of insufficient funds, payment stopped, post-dating, drawn against uncollected items, etc.

For checks up to \$100.00:	\$10.00
For checks from \$100.01 to \$500.00:	\$25.00
For checks over \$500.00:	\$50.00

When a check is returned unpaid, the student must redeem the check and pay any outstanding balance in the account within 10 days or all university services may be severed and the account transferred to the State Central Collection Unit for legal follow-up. Additionally, a minimum 15% collection charge is added to the charges posted to the student's account at the time the transfer is made. When a check is returned unpaid due to an error

made by the student's bank, the student must obtain a letter from the branch manager of the bank or a person of equivalent status admitting the error. This letter must be submitted to the Office of the Bursar to have the service charged waived.

**Overdue Library Charges.** For items from the library's main circulating collections, charges are 35 cents per day per item, and recalled item fines are \$1.50 per day. If an item is lost or mutilated, the borrower is charged the estimated cost of the item plus a processing fee to cover acquisition and cataloging costs. Different line rates may apply for other library collections, such as reserve collections.

**Maryland English Institute Fee.** Semi-intensive, \$1,291.00; Intensive, \$2,582.00: Students enrolled with the Maryland English Institute pay this fee in support of the institute. Students enrolled in the semi-intensive program may also enroll for regular academic courses and pay the tuition and fees associated with those offerings. The program also offers non-credit courses: English Pronunciation, \$220.00, and Workshop for Foreign Teaching Assistants, \$220.00.

**Property Damage Charge.** Students will be charged for damage to property or equipment. Where responsibility for the damage can be fixed, the individual student will be billed for it; where responsibility cannot be fixed, the cost of repairing the damage or replacing equipment will be prorated among the individuals involved.

**Late Payment Fee.** Students who fail to pay the balance due on their accounts are subject to a late fee of 5% of the outstanding balance or \$5.00, whichever is greater.

**Severance of Services Fee.** \$25.00. Students who fail to pay the balance due on their accounts will have their university services severed and will be required to pay the total amount due plus a \$25.00 severance fee.

**Withdrawal or Refund Fees.** Students compelled to leave the university at any time during the academic year should secure a form for withdrawal from the Records and Registrations Office. The completed form and the semester Identification/Registration Card are to be submitted to the Records and Registrations Office. Students will forfeit their right to refund if the withdrawal action described above is not adhered to. The effective date used in computing refunds is the date the withdrawal form is filed in the Records and Registrations Office. Stop Payment on a check, failure to pay the semester bill, failure to attend classes, does not constitute withdrawal. A request for a refund must be processed by students with the Office of the Bursar; otherwise any credit on student accounts will automatically be carried over to the next semester. **Cancellation of Registration — Submitted to the Withdrawal/Reenrollment Office before the official first day of classes entitles students to full credit of semester tuition.**

Undergraduate students withdrawing from the university will be credited for tuition and fees (except the registration fee) in accordance with the following schedule:

Prior to 1st day of classes	100%
1st 5 days of classes	80%
2nd and 3rd weeks	60%
4th week	40%
5th week	20%
After 5th week	No Refund

**Prior to the first day of classes,** if full-time undergraduate students drop a course or courses, thereby changing the total number of credits for which they are preregistered to eight or less, charges for the semester will be assessed on the basis of the per credit hour fee for part-time students. However, if students later add a course or courses thereby changing the total number of credits for which they are registered to nine or more, they will be billed for the difference between per credit hour fees paid and the general fees for full-time undergraduates.

**If during the first five days of classes** full-time undergraduates drops a course or courses thereby changing the total number of credits for which they are registered to eight or less, charges for the semester will be assessed on the basis of part-time charges plus 20% of the difference between the full-time fees and appropriate part-time charges. After the first five days of classes, there is no refund for changing from full-time to part-time status.

Students who register as part-time undergraduate students and apply for a refund for courses dropped during the first week of classes will be given a refund. No refund will be made for courses dropped thereafter.

No part of the charges for room and board is refundable except when students officially withdraw from the university or when they are given permission by the appropriate officials of the university to move from the residence halls and/or to discontinue dining hall privileges. In these cases, the room refund will be computed by multiplying the number of periods remaining by the pro rata weekly rate after adjusting for a service charge. Refunds to students having full board contracts will be calculated in a similar manner. No room and/or board refunds will be made after the fourteenth week of the semester. Students are reminded that reservations for room and board must be cancelled by the date published in the residence hall and dining services agreement(s).

In computing refunds to students who have received the benefit of scholarships and loans from university funds, the computation will be made to return the maximum amount to the scholarship and loan accounts without loss to the university.

## FINANCIAL AID

### Office of Student Financial Aid 2130 Mitchell Building, 454-3046

Applying for financial aid, receiving financial aid, and keeping financial aid do not happen automatically. Students have to make it happen!

The Office of Student Financial Aid (OSFA) provides advice and assistance in the formulation of student financial plans and, in cooperation with other university offices, participates in the awarding of scholarships and grants to deserving students. The primary responsibility of financing attendance at the University of Maryland at College Park lies with students and families.

Scholarships, grants, loans, and work-study positions are awarded on the basis of academic ability and financial need determined by a federal needs analysis system. It is the intent of the committee on Financial Aid to provide awards to those qualified students who might not otherwise be able to pursue college studies.

Financial aid funds are limited; therefore, all new, readmitted, and returning students must follow these steps to receive priority consideration for financial aid:

1. Submit admissions applications and all necessary supporting documents to the Office of Admission by the appropriate deadlines.
2. Complete a Financial Aid Form (FAF) after January 1. FAF forms are available from OSFA. **A new FAF is required for each academic year of the student's enrollment.**

**New students should not wait to be admitted before filing the FAF.** A financial aid application has no bearing on a student's admission application. However, students will not receive final consideration for aid until they are admitted to a degree program.

3. Mail the form to the College Scholarship Service no later than January 15, so that the service's analysis of the FAF is received in the Office of Student Financial Aid by February 15. **Income for the previous year may be estimated initially,** and corrected later on the Student Aid Report.

Applications received after February 15, 1989 will be reviewed after on-time applications in order of receipt as long as funds are available. All transfer students and new graduate students must provide a financial aid transcript from all post-secondary schools attended, **whether aid was received or not.**

### General Regulations Applicable to All Forms of Aid Full-time Status

**Full-time Status.** For most types of aid, students must register for and maintain at least 12 credit hours each semester in order to receive the full financial aid award and maintain that award.

**Citizenship Status.** Students must be United States citizens or eligible non-citizens in order to be eligible for federal, state, or university financial assistance.

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**Default/Owe Refund.** To receive federal financial aid, you cannot be in default on an educational loan, nor can you owe any refund on a Pell Grant or Supplemental Educational Opportunity Grant (SEOG) previously awarded at any post-secondary institution.

**Degree Seeking.** To receive federal financial aid, students must be working toward a degree or certificate. Students must be admitted to the university as "degree-seeking."

**Satisfactory Progress.** To receive federal financial aid, students must be making satisfactory progress toward a degree or certificate according to the Standards for Satisfactory Academic Progress printed at the end of this chapter.

**Selective Service.** To receive federal financial aid, students must be registered with Selective Service if they are male, at least 18 years old and born after December 31, 1959, unless they are not required to be registered. Compliance with the registration requirement will be verified by the federal government. The names of those students whose status cannot be verified will be referred to the U.S. Department of Justice for possible prosecution.

**Anti-Drug Abuse Act.** All Pell Grant recipients must sign an Anti-Drug Abuse Act certification form stating that they will not engage in the unlawful manufacture, distribution, dispensation, possession or use of a controlled substance during the period covered by the Pell Grant.

**Receiving a Non-University Award.** If students receive assistance (scholarship or loan) from a non-university source, the university will normally reduce the financial aid awarded by the university. It is the student's responsibility to notify the Director of Financial Aid of all outside awards. Unless otherwise directed by the donor, outside non-university awards will be credited to students' accounts, one half each semester of the academic year.

**Change in Financial Situation.** It is students responsibility to notify the Office of Student Financial Aid of any changes in their financial situation during the year.

**Reapplication Requirement.** No form of assistance is automatically renewed from year to year. All students requesting aid must reapply by submitting a new FAF annually. Such reapplication must indicate continued financial need as well as Satisfactory Academic Progress.

**Award Policy.** Financial aid is normally a combination of grant funds, loan funds, and employment. The financial aid "package" is determined by the availability of the various types of financial aid and the individual circumstances of the students. It is not necessary to make any special application for university grants. The Office of Student Financial Aid will determine awards which best fit the needs and qualifications of the candidates.

### Estimating Educational Cost

A budget of average educational costs is used in determining how much aid a student is awarded during the academic year. The typical budget for an in-state undergraduate at the University of Maryland for the 1989-90 academic year was as follows:

Dependent Student Living on Campus		
Tuition (in-state)	\$2097.00	out-of-state: \$5754.00
Room	2390.00	
Board	1939.00	
Incidentals	1500.00	
Books	395.00	
	\$8321.00	\$11,978.00

- Notes:**
1. The above budget is subject to change for the 1990-91 academic year.
  2. To determine 1990-91 budget, add approximately 4%-5% to costs.

### Merit-Based Financial Assistance

#### Scholarships

There are increasing numbers of merit-based scholarships available to academically talented students attending the University of Maryland at College Park. The following is a list of such awards, several of which are dependent upon a particular major, academic standing, and/or in some

cases, financial need, as determined by the Financial Aid Form (FAF). Students applying for merit awards may be eligible for more than one of these scholarships. For more information about these awards, students are encouraged to contact the department or office responsible for the selection.

**Benjamin Banneker Scholarship.** Merit awards are available to academically talented black students. Awards are made to entering freshmen and are renewable for up to four years of undergraduate study. The award provides funds to cover full-time tuition, mandatory fees, room, board, and a book allowance. December 1 is the deadline for receipt of both the application for admission and awards. Automatic consideration is given to all National Achievement Finalists. Banneker Scholars are also admitted to the University Honors Program if they choose to participate. Contact Office of Admissions. Awards are made in March or early April.

**Full University Scholarship.** This four-year award covers the recipient's room, board, tuition, and mandatory fees charged at the University of Maryland at College Park. Those eligible for consideration must be incoming freshmen with a grade point average of 3.5 or better, combined SAT scores of 1100 or higher, and must demonstrate extreme need as determined by the Financial Aid Form (FAF) and the Office of Student Financial Aid. Approximately 15 Full Scholarships are awarded each year. Candidates will be selected from among those eligible freshmen admitted by March 1st. Contact Office of Student Financial Aid. Awards are made in early April.

**Francis Scott Key Scholars Program.** Scholarships, renewable for four years of undergraduate study, are awarded on the basis of merit to incoming freshmen. The awardees are known as Key Scholars. The awards provide funds to cover full-time tuition, mandatory fees, room, board, and a book allowance. In addition, Key Scholars receive preferential housing. Recipients are designated by the president upon the recommendation of a committee that screens nominations submitted by high school guidance counselors and administrators of the university. For consideration, students must submit an application for admission to the university and be nominated for this award by December 1st. Automatic consideration is given to all National Merit Finalists and Semi-Finalists, all Distinguished Scholar Finalists and Semi-Finalists, and Honorable Mentions. Contact the Office of Admissions. Awards are made in March or early April.

**Regents Scholars Program.** Each year, the University of Maryland selects from the brightest high school graduates in the nation a small number of Regents Scholars to continue their education at the University of Maryland at College Park, Baltimore County, or Eastern Shore. The president of each institution selects from among the applicants nominees for consideration by the chancellor and Board of Regents of the university. Scholarships are based on academic achievement and leadership potential. Each scholar will receive an annual award to cover in-state tuition, mandatory fees, room, board, and books over a four-year baccalaureate program. Final selection and official appointment to the Regents Scholars program is by the Board of Regents. Contact the Office of Admissions. Awards are made in early spring.

**University Sponsored Scholarships.** Most scholarships are awarded to students before they enter the university. However, students who have completed one or more semesters, have a 3.0 GPA or better, and have not received such an award are eligible to apply. Applicants will receive consideration for all scholarships administered by the Office of Student Financial Aid, for which they are eligible. Students must submit an FAF by February 15, including all supporting documents, and must submit a scholarship application by May 1st, in order to be considered for scholarship assistance for the ensuing year. Contact the Office of Student Financial Aid. Scholarship awards will be made by July 1st.

Regulations and procedures for the awarding of scholarships are formulated by the Committee on Financial Aid. All recipients are subject to the academic and non-academic regulations and requirements of the university.

The committee reserves the right to review the scholarship program annually and to make adjustments in the amounts and the recipients of the awards in accordance with the funds available and the scholastic achievement of the recipients.

**College and Departmental Scholarships.** Questions about any award that is recommended by a college/school or department should be directed to the chair or dean. Refer to the Chapter 7 or Chapter 8, or contact the department or college directly.

**Maryland State Scholarships.** The General Assembly of Maryland has created several programs of scholarships for Maryland residents who

need financial help to obtain a college education. The undergraduate programs include (1) General State scholarships, (2) Senatorial scholarships, and (3) House of Delegates scholarships. High school seniors wishing to apply for these scholarships should contact their guidance counselors. Students presently attending the University of Maryland at College Park should contact the Office of Student Financial Aid. Students who are entering college for the first time must take the Scholastic Aptitude Test in November or December of their senior year. A Maryland State Financial Aid form must be mailed to the College Scholarship Service in Princeton, New Jersey. The deadline for applying for these scholarships is March 1 each year. For additional information, contact the Maryland State Scholarship Administration, 16 Francis Street, 2nd Floor, Annapolis, MD 21401; (301) 974-5370.

**Local and National Scholarships.** In addition to the scholarships provided by the University of Maryland, a student should give careful consideration to scholarship aid provided by local and national scholarship programs. The university maintains a database of these scholarships and will perform a scholarship search for students. Contact the Office of Student Financial Aid for details.

**Out-of-State Scholarship Programs.** Several states have scholarship and grant programs which permit students to use the state scholarship or grant at an out-of-state institution. Students should contact the awarding agency in their home states.

## Need-Based Financial Assistance

### Grants

Students at the University of Maryland at College Park will be considered for grant funds when they complete the Financial Aid Form by our priority deadline. Grant awards are made to undergraduate students from the federal Pell and SEOG programs and from limited university funds. These awards are generally based on financial need and vary in value.

**Pell Grant.** The federal government provides grant assistance to eligible students who need it to attend post-secondary institutions. Each applicant receives a Student Aid Report (SAR) from the federal Pell Grant processor. Students must submit the SAR to the institution in which they plan to enroll. Eligible students may receive a Pell Grant for each year of undergraduate study to a maximum of 5 years full-time. Eligibility for the program ends once the first undergraduate degree is received.

**Supplemental Educational Opportunity Grant (SEOG).** The federal SEOG program is administered by the university and provides grants to students who have exceptional financial need. Eligible students must enroll in twelve (12) credit hours per semester. Eligibility for this program ends once the first undergraduate degree is completed.

**University Grant.** The university administers this need-based program to students. Applicants who have at least a 3.0 GPA and whose FAF is processed by February 15th are considered for this grant.

**UMCP Grant.** This need-based grant is administered by the university. To be considered, students must have their FAF processed by February 15, the priority deadline for OFSA.

### Self-Help

The university administers a number of student loan programs which provide low-interest, long-term loans to undergraduate students with financial need. Only students who complete a FAF are considered for these programs. Loans are becoming a very important part of the financial aid package. It is imperative to plan carefully for a college education, so that the amount of indebtedness upon leaving school does not exceed ability to repay the loans.

**Perkins Loans.** The Perkins program was designed to make low-interest loans to students with demonstrated financial need. The borrower must sign a promissory note. Repayment, at an interest rate of 5 per cent, begins six or nine months after a student graduates, withdraws, or drops below half-time status.

**Stafford Loans.** The federal Stafford Loan program allows students to borrow funds directly from banks, credit unions, savings and loans, or other participating lenders. The commercial lending institution, not the university, makes the loan to the student. Undergraduates may borrow up to \$2,625 per year for their first two years of study, or \$4,000 per year after completing two years of study, depending on their need and lender policies. Need is determined by completion of an FAF. The interest rate

is 8% during the first four years of repayment, and increases to 10% beginning with the fifth year of repayment

Applications for Maryland lenders are sent with OSFA award letters. The FAF is required. Loans will not be processed until a processed FAF has been received from CSS and all Financial Aid transcripts from previous institutions have been received. Forms should be completed at least three months before the funds are required.

**Parent Loans (PLUS) or Supplemental Loans for Students (SLS).** Some banks or lending institutions currently participate in the Parent Loan (PLUS) or Supplemental Loan (SLS) programs. These loans are available to parents or dependent students and to independent students. The maximum that parents and independent students may borrow in a year is \$4,000. The interest rate is variable, but will not exceed 12%. Repayment begins 60 days after disbursement of the loan. In all cases, the key to obtaining one of these loans is finding a bank or lender willing to make the loan. The recommended application filing deadline is July 31st. NOTE: Effective August 17, 1988, students must complete an FAF before a Supplemental Loan can be processed.

### Part-time Employment

Working during college years may offer advantages in addition to the obvious one of financing a college education. A job can provide valuable work experience and enhance skills that will contribute to a student's educational and personal development.

### College Work-Study Program

Under provisions of the Educational Amendments of 1976, employment may be awarded as a means of financial aid to students who (1) are in need of earnings from such employment to pursue a course of study at a college or university, and (2) are capable of maintaining good standing in the course of study while employed. Under the Work-Study Program, students may work up to twenty hours per week during the school year and a maximum of forty hours per week during the summer. The amount of money that may be earned is determined by the student's demonstrated need.

### Dining Hall Workshop Program

Under the Dining Hall Workshop Program, students may earn their board by working approximately twelve hours per week. After a successful semester, the workload may be increased at the student's request. Students normally cannot make arrangement for employment until they are on campus at the beginning of the semester. Application must be made in person and the applicants should have a schedule of classes and study hours so that they can seek employment best suited to their free time. Contact Dining Services, 454-2904.

### Library Workshop Program

Students may be awarded jobs under the Library Workshop program through the Office of Student Financial Aid. Students must follow the usual financial aid application procedures and show financial need. The amount of the award (generally about \$1,200 per year) is credited to the student's account. Application must be made in person, and applicants should have a schedule of classes and study hours so that they can seek employment best suited to their free time. Contact McKeldin Library Personnel Office, 454-4097.

## Additional Resources

### Job Referral Listings Service

In addition to the maintaining need-based College Work Study (CWS) program, the Job Referral Service, 3120 Hornbake Library, assists Students in locating part-time, temporary, and summer employment opportunities both on and off campus.

## STUDENT RIGHTS AND RESPONSIBILITIES

As a recipient of federal student aid, you have certain rights they should exercise, and certain responsibilities you must meet. Knowing what they are will put you in a better position to make decisions about your educational goals and how you can best achieve them.

## Student Rights

1. You have the right to know what financial aid programs are available.
2. You have the right to know the deadlines for submitting applications for each of the financial aid programs available.
3. You have the right to know how financial aid will be distributed, how decisions on that distribution are made, and the basis for these decisions.
4. You have the right to know how financial need was determined. This includes how costs for tuition and fees, room and board, travel, books and supplies, personal and miscellaneous expenses, and the like are considered in the budget.
5. You have the right to know what resources (such as parental contribution, other financial aid, your assets, etc.) were considered in the calculation of your need.
6. You have the right to know how much of your financial need as determined by the institution has been met.
7. You have the right to request an explanation of the various programs in your student aid package.
8. You have the right to know the school's refund policy.
9. You have the right to know what portion of the financial aid you receive must be repaid, and what portion is grant aid. If the aid is a loan, you have the right to know what the interest rate is, the total amount that must be repaid, the payback procedures, the length of time you have to repay the loan, and when repayment is to begin.

## Student Responsibilities

1. You must complete all application forms accurately and submit them by the deadline date to the appropriate office. It is understood that in some instances estimated income must be used in order to meet deadlines; however, you are required to update estimated information after this information is completed or corrected by making corrections on the Student Aid Reports (SAR) and the Financial Aid Form (FAF) acknowledgement processed by the College Scholarship Service.
2. You must provide correct information. If you purposefully give false or misleading information on your financial aid application forms, it is considered a criminal offense which could result in indictment under the U.S. Criminal Code.
3. You must return all additional, verification, corrections, and/or new information requested by either the financial aid office or the agency to which you submitted your application.
4. You are responsible for reading and understanding all forms that you are asked to sign and for keeping copies of them.
5. You must accept responsibility for all agreements that you sign.
6. You must perform the work that is agreed upon in accepting a College Work-Study award.
7. You must be aware of and comply with the deadlines for application or reapplication for aid.
8. You should be aware of the school's refund procedures.
9. You must complete an exit interview if you are a loan borrower and are terminating student status or registering as less than a half-time student.
10. You must maintain current and correct addresses with the Office of the Bursar and the Records and Registrations Office.
11. You should be aware of any stipulations (e.g., minimum amount of credits you must be registered for) in order to maintain financial aid (i.e., grants, scholarships, loans).
12. You are responsible to contact your Financial Aid Counselor to report any changes, decisions, or in registration status (e.g., transferring to another institution, withdrawing from the university or from a class, graduation date, co-oping). Failure to do so may result in the cancellation of all or a portion of your aid.

For in-depth instructions, directions, and answers to financial aid questions and concerns, please refer to the "Financial Facts" book (a guide to financial aid resources) published yearly by the Financial Aid Office. This book is made available with the financial aid packet, or stop by the Financial Aid Office, 2130 Mitchell Building, to obtain your free copy.

The "facts book" contains vital information a student needs to know from applying for financial aid, to receiving financial aid and keeping the financial aid offered.

## Satisfactory Academic Progress for Financial Aid

Federal legislation governing the administration of the Pell Grant, the Perkins Loan (formerly National Direct Student Loan), the Supplemental Educational Opportunity Grant (SEOG), the College Work-Study (CWS), the Guaranteed Student Loan (GSL), and the PLUS/Supplemental Loan

requires that colleges and universities define and enforce standards of progress for students receiving or applying for federal financial aid. To comply with that legislation, the following Standards of Satisfactory Academic Progress have been established, and all recipients of the above-mentioned forms of financial aid are subject to these standards for renewal or receipt of their federal financial aid.

A review of the student's compliance with the Standards of Satisfactory Academic Progress will normally occur at the end of the Spring semester. Students who have not met the minimum credit hour requirement and/or minimum grade point average requirement will be informed in writing prior to the Fall semester.

### What You Must Do To Keep Aid

1. All undergraduate and graduate students must earn a basic annual credit minimum. The following chart will be used to determine eligibility for renewal/receipt of federal student financial aid funds:

#### Undergraduate Students

##### Full-time Undergraduate Students

First-year students must earn 15 credits per year  
 Second-year students must earn 18 credits per year  
 Third-year and up students must earn 24 credits per year

##### Part-time Undergraduate Students

First-year students must earn 8 credits per year  
 Second-year students must earn 9 credits per year  
 Third-year and up students must earn 12 credits per year

#### Graduate Students

##### Full-time Graduate Students

First-year students must earn 12 credits per year  
 Second-year and up students must earn 18 credits per year

##### Part-time Graduate Students

First-year students must earn 6 credits per year  
 Third-year and up students must earn 9 credits per year

2. Federal aid recipients must maintain the required grade point average necessary to continue as degree students at the University of Maryland at College Park. Therefore, you must maintain academic standing consistent with the institution's graduation standards as defined by the registrar and the graduate school as outlined in the undergraduate and graduate catalogs.

3. Students are eligible to receive federal student financial assistance for the following maximum time periods:

The maximum time frame allowed for a baccalaureate degree is as follows:

#### Pell Recipients

Full-time Students	5 years (10 semesters)
Part-time Students	0 years (20 semesters)

#### All Other Federal Aid Programs

Full-time Students	4-year program	6 years (12 semesters)
	5-year program	7 years (14 semesters)
Part-time:	4-year program	12 years (24 semesters)
		13 years (26 semesters)
	5-year program	

The maximum time frame allowed for a Master's degree/AGS certificate is as follows:

#### All Federal Aid Programs

Full-time or part-time	5 years (10 semesters)
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\*Exceptions made on an individual basis for programs requiring additional coursework.

The maximum time frame allowed for Doctoral degree candidates is as follows:

#### All Federal Aid Programs

Full-time or part-time	9 years (18 semesters)
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### How to Regain Eligibility

If a student is denied aid because of lack of progress, courses must be taken at the student's own expense until he or she has earned the minimum credit hours required or earned the required grade point average. At the time the student fulfills the Standards of Satisfactory Progress, the student must notify the Office of Student Financial Aid by submitting an appeal form to us indicating that the requirements have been met.

### Appeals

Students who do not comply with the Standards of Satisfactory Progress may submit a written appeal to the Office of Student Financial Aid if extenuating circumstances have affected their academic progress. The written appeal should include appropriate third-party documentation. If the appeal is denied, the student must complete the needed hours or grades before he or she will become eligible for federal financial assistance.

### Complications . . . Consequences

If you do not meet these standards, your aid will be cancelled. Should you submit a written appeal and if we approve it based on your academic

record and the unusual circumstances described, your eligibility may be reinstated. If you are not eligible for aid because you did not pass the minimum number of required credits, eligibility may be reinstated after successfully completion the deficient credits at your own expense. Aid will be reinstated on a funds available basis.

Not all credits count toward the minimum credit requirement; only grades of A, B, C, D, Pass, or Satisfactory will count. The following credits are not counted: "F" (Fail), "I" (Incomplete), "W" (Withdrawal), Unsatisfactory, Audit, repeats, and MEI.

The annual credit requirement and grade point average applies to whether or not you receive financial aid.

For more information on specific Standards of Satisfactory Academic Progress issues, please contact the Office of Student Financial Aid. If you choose to withdraw from a class or are in danger of not passing a class, you should contact this office to see how your financial aid will be affected.

# CAMPUS ADMINISTRATION, RESOURCES, AND STUDENT SERVICES

## CAMPUS ADMINISTRATION

### Office of the President

1101 Main Administration, 454-4796

The president is the chief executive officer of the University of Maryland at College Park. Four vice presidents, who report to the president, manage different divisions of the campus administration. The Office of Human Relations Programs, the Campus Senate, and the Department of Intercollegiate Athletics report to the Office of the President.

### Academic Affairs

1119 Main Administration, 454-4508

The Office of the Vice President for Academic Affairs coordinates the academic life of all students at College Park—both graduates and undergraduates—from admission and the granting of financial aid through the development of programs of study and academic policies, to the awarding of degrees. The vice president is responsible for the formulation, periodic revision, and implementation of academic policies and procedures, and for ensuring the integrity and continuity of all curricula offered at the University of Maryland at College Park. The office also functions as the coordinator for participants in the Academic Common Market, an interstate agreement for sharing academic programs through an exchange of students across state lines. Under this program, students have access to selected programs not offered at public post-secondary institutions in Maryland without having to pay out-of-state tuition charges.

### Administrative Affairs

1132 Main Administration, 454-4795

The Office of the Vice President for Administrative Affairs is responsible for the effective management of the physical, fiscal, and staff support resources of the institution. It also provides campus safety and security, materials management, administrative computing, and other necessary support services. Of particular interest to students are the community awareness and security programs offered by the University Police and the information and assistance services provided by the bursar for concerns of students regarding university billings.

### Institutional Advancement

1114 Main Administration, 454-1414

The Office of Institutional Advancement conducts a variety of programs to develop greater understanding and support for the University of Maryland at College Park among its many publics. Units of this office include Development, Public Information, Creative Services, and Alumni Programs. The Office of Institutional Advancement is responsible for all official campus-wide advancement programs such as fundraising, alumni affairs, production of official campus publications, films and video presentations, media relations, and management of major campus events.

### Student Affairs

2108 Mitchell Building, 454-2925

The Office of the Vice President for Student Affairs provides administrative leadership for the development of programs and services that help students clearly and fulfill their needs and objectives, and that contribute to a constructive campus learning environment. The office serves as a

general point of contact for students and their families regarding student life. It coordinates student affairs efforts with the academic colleges, the graduate school, and other administrative units in the areas of student conduct, due process and student-related legal matters. The office maintains liaison with the university chaplains, the Student Government Association (SGA), and the Graduate Student Association (GSA), and also advises Omicron Delta Kappa National Leadership Honor Society.

### Administrative Dean for Undergraduate Studies

1115 Hornbake Library, South Wing, 454-6231

The Office of the Dean for Undergraduate Studies coordinates the interpretation and implementation of academic regulations and requirements with the Vice President for Academic Affairs, and cooperates with academic deans and department chairs to assure the overall organization and continuity of the undergraduate curriculum. Specifically, the office oversees the general education requirements as well as undergraduate advising at both the departmental and college levels.

The Office of Undergraduate Studies is also the advising home for pre-business students and for those students who have not yet decided upon a major. The special advising necessary for students interested in health professions and law is also located here.

The Office of the Dean for Undergraduate Studies supervises the University Honors Program and the Individual Studies Program, administers the Distinguished Scholar-Teacher Program, and serves as the campus coordinator for Francis Scott Key and Benjamin Baneker Scholarships and Honor Societies (see below). It also administers the Credit by Examination Program and coordinates information about CLEP and Advanced Placement credits.

Academic service components reporting to this office include: the Career Development Center, the Office for Experiential Learning Programs, the Undergraduate Advising Center, the Health Professions Advising Office, Intensive Educational Development, Upward Bound, Talent Search, the Retention Office, and related tutorial services.

**Honor Societies.** Students who excel in scholarship and leadership may be invited to join the appropriate honor society. For information, contact the Coordinator, Undergraduate Advising Center, 454-2733. Honor societies at the College Park campus include:

- \*Alpha Epsilon (Agricultural Engineering)
- \*Alpha Kappa Delta (Sociology)
- \*Alpha Lambda Delta (Scholarship-Freshmen)
- Alpha Zeta (Agriculture)
- Beta Alpha Psi (Accounting major in Business and Management)
- Beta Gamma Sigma (Business and Management)
- Delta Phi Alpha (National German Honors Society)
- Eta Beta Rho (Hebrew)
- \*Eta Kappa Nu (Electrical Engineering)
- Financial Management Association
- \*Gamma Theta Upsilon (Geography)
- Golden Key National Honor Society (Scholarship and Leadership; juniors and seniors)
- Iota Lambda Sigma (Industrial Education)
- \*Kappa Delta Pi (Education)
- \*Kappa Tau Alpha (Journalism)
- \*Mortar Board (Scholarship and Leadership)
- \*Omega Chi Epsilon (Chemical Engineering)
- \*Omega Rho (Business and Management)
- \*Omicron Delta Epsilon (Economics)



\*Omicron Delta Kappa (Scholarship and Leadership)  
 \*Omicron Nu (Home Economics)  
 Phi Alpha Epsilon (Physical Education, Recreation, and Health)  
 \*Phi Alpha Theta (History)  
 Phi Beta Kappa (Liberal Arts and Sciences)  
 \*Phi Eta Sigma (Scholarship Freshmen)  
 \*Phi Kappa Phi (Senior and Graduate Scholarship)  
 \*Phi Sigma (Biology)  
 \*Phi Sigma Iota (French and Italian)  
 Phi Sigma Pi (Scholarship and Leadership)  
 Pi Alpha Xi (Floriculture)  
 Pi Mu Epsilon (Mathematics)  
 Pi Pi (Slavic Languages)  
 \*Pi Sigma Alpha (Political Science)  
 \*Psi Chi (Psychology)  
 Salamander (Fire Protection Engineering)  
 Sigma Alpha Omicron (Microbiology)  
 Sigma Delta Chi (Society of Professional Journalists)  
 \*Sigma Delta Pi (Spanish)  
 \*Sigma Gamma Tau (Aerospace Engineering)  
 \*Sigma Tau Delta (English)  
 \*Tau Beta Pi (Engineering)

(\*Members of Association of College Honor Societies)

## Administrative Dean for Summer Programs

2103 Reckord Armory, 454-3347

The University of Maryland at College Park offers two six-week summer sessions each year in addition to regular fall and spring semesters. See the Academic Calendar in the front matter of this catalog or the Schedule of Classes for exact dates. New freshman applicants who have met the regular university admission requirements for fall enrollment may begin their studies during the summer rather than waiting for the next fall term. By taking advantage of this opportunity and continuing to attend summer sessions, the time required for completion of a baccalaureate degree can be shortened by a year or more, depending upon the requirements of the chosen curriculum and the rate of progress.

Many new students have found that attendance during the summer sessions eases the transition from high school to college. Courses offered during the summer are the same in content and instruction as those offered during the fall and spring semesters.

The Summer Cultural and Recreational Program is an important part of "Summer at Maryland." The Maryland Summer Institute for the Creative and Performing Arts offers a series of programs in art, dance, drama, film and music, and outstanding performers in these media appear on the campus.

Facilities for most sports and an intramural program in several team and individual sports are available to the students. For additional information, write for a Summer Programs catalog, Administrative Dean for Summer Programs, The University of Maryland, College Park, Md 20742.

## CAMPUS RESOURCES AND SERVICES

### Academic Advising

Undergraduate Advising Center: 1117 Hornbake Library, 454-2733  
 Health Professions Advising: 454-2540  
 Credit-By-Exam/Advanced Placement/CLEP: 454-2733

Academic advising is available to all students at the University of Maryland at College Park. Advising is an essential part of an undergraduate's educational experiences. From orientation to graduation, advising can provide students with the assistance they need to plan their programs constructively. Effective academic advising functions like the hub of a wheel, providing connections between coursework and career, between learning and doing, between seeking advice and accepting responsibility.

Advantages for Students: As active and regular participants in existing advising programs, students can reasonably expect to

- (1) better understand their purposes for attending the university;
- (2) develop insights about personal behaviors that promote improved adjustment to the campus setting;
- (3) increase their awareness of academic programs and course offerings at the University of Maryland at College Park;
- (4) more frequently explore opportunities both inside and outside the classroom for intellectual and cultural development;

- (5) acquire decision-making skills that can accelerate academic and career planning.
- (6) more realistically evaluate their academic progress and its relationships to successful planning; and
- (7) understand the relationship between academic success and planning skills.

### Required Advising

Students enrolled in certain majors are required to see advisors before each registration. For most students, routine advising is not mandatory. However, the university does require all students to see an advisor under certain circumstances:

**Students in Their First Semester of Registration at the University of Maryland at College Park.** Students who are in their first semester of registration at College Park are urged to meet with an advisor prior to scheduling their classes.

**Students Receiving an Academic Warning.** Students who receive an "Academic Warning" at the end of any semester will be urged in writing to meet with an advisor prior to the beginning of the next semester. Students who do not meet with an advisor will not be allowed to drop or add courses or to register for the following semester.

**Students Dismissed From the University.** Each student dismissed from the university for academic reasons must, as a condition of reinstatement, meet with an academic advisor. According to the student's individual needs, this meeting may occur before or after reinstatement is granted; in no case, however, may a reinstated student complete registration until the fact of this meeting has been acknowledged/recorded by the advisor.

**Students Who Withdraw.** Given circumstances deemed appropriate by the Office of Reenrollment, certain students applying for reinstatement following withdrawal may be required to meet with an advisor as a condition of their reinstatement. When this occurs, the fact of the meeting must be acknowledged/recorded by an advisor before registration can be completed. The intent is to require advising of those students who have a record of consecutive withdrawals, withdrawal during a semester following probation, and various other reasons for similar concern.

**Senior Audit.** After a student has earned between 70 and 80 credits toward a baccalaureate degree, that student shall be urged in writing to meet with an advisor. This meeting is for the express purpose of reviewing the student's progress toward the degree and, at a minimum, requires the advisor to detail, in writing, all coursework yet to be completed in fulfillment of the degree requirements. Each college and department will have available one or more advisors to meet with these students at appropriate times.

### Finding An Advisor

Undergraduate students are encouraged to use the many advisement opportunities available to them. At both academic levels—college and department—at least one person has been designated to coordinate advising. A list of these persons, providing name, room number, and telephone extension is published each semester in the Schedule of Classes. Students who are unable to locate an advisor or who have questions about campus advising programs should visit or call the Undergraduate Advising Center, 1117 Hornbake Library, 454-2733.

### Undergraduate Advising Center

Many university students have decided to be "undecided" about their majors and want help in defining their goals. Other students, such as pre-business students, have plans to enter a particular program but are not certain they will meet the requirements. Still other students discover they have chosen the wrong majors and need help redefining their goals.

Whatever their reasons for being "undecided," these students have a temporary advising home in the Undergraduate Advising Center. Working with the center's staff of trained academic advisors, they are able to explore majors, choose and schedule courses, plan their academic program, and learn about campus-wide resources available for solving problems they encounter.

The Undergraduate Advising Center staff works closely with the Career Development Center, the Counseling Center, various tutoring services, and advisors from academic departments and programs across campus

## 32 Campus Administration, Resources, and Services

to provide a coordinated advising network which helps students design their personal academic plans, as follows:

**Choosing a Major:** Providing information and referral to the wide range of academic programs available to students and coordinating with services offered by the Career Development Center, the Counseling Center, and the academic colleges and departments. The Undergraduate Advising Center helps students select majors which best meet their interests and further their career goals.

**Pre-professional Advising:** Offering pre-professional advising for pre-law students (454-2733), and referral for students with interest in the health professions. For further information on pre-professional advising for pre-medical, pre-dental, and pre-allied health students, consult Campus-wide Programs in Chapter 8, or call 454-2540.

**Information and Referral:** Maintaining a central file of information about academic programs and requirements and academic support services the University of Maryland at College Park. Workshops designed to help students select majors and courses are offered regularly during the pre-registration period.

**Troubleshooting:** Helping individual students identify and solve specific advising problems and difficulties with administrative procedures, such as transfer credit evaluation, schedule revisions, changing majors, errors in academic records, etc.

**Policy Interpretation:** Keeping students and advisors informed about new academic policies and helping to interpret existing policies and practices and determine under what conditions exceptions might be granted.

**Credit-by-Exam, CLEP, Advanced Placement (454-2733):** Administering the campus-wide program of credit-by-examination and coordinating information about CLEP and advanced placement credits.

**General Assistance:** Giving general assistance to students who have not been assigned to a permanent advising home, such as students visiting this campus from other institutions.

### Admissions

Ground Level, Mitchell Building, 454-5550/6759

The services offered by the Office of Undergraduate Admissions are designed to meet the individual needs of both prospective and enrolled students. For prospective students, the office provides general information about the University of Maryland at College Park through brochures, letters, personal interviews, and campus tours. It also evaluates the applications of both freshman and transfer students in order to select qualified students. The Office of Reenrollment reviews all applications for readmission and reinstatement. Services for enrolled students include acting as a liaison with the academic departments for the evaluation of transfer credits, advanced placement, and CLEP scores, and providing any additional general information requested by enrolled students. See Chapter 2 for more information concerning undergraduate admissions.

### Campus Activities

1191 Stamp Student Union, 454-5605

The Office of Campus Activities is a major resource for students wishing to become involved in extracurricular activities on the College Park campus. This office provides advisement, consultation, and programming assistance to campus student organizations for the primary purpose of enhancing the educational growth of groups' leaders, members, and associates. Efforts focus on encouraging involvement of all students in campus life activities, establishing various programs for the benefit of the university community, and providing numerous leadership development opportunities. Specific efforts include:

**Student Organizations.** Campus Activities registers all student organizations at the University of Maryland at College Park, and make available a directory of more than 400 groups. The office also arranges reservations for these organizations when they wish to use campus facilities for their programs and events. Additionally, a full-service accounting office serves those groups which have received funding from Student Activity Fees by the Student Government Association.

**Organization Advisement.** Major student groups such as the Stu-

dent Government Association, the Homecoming Committee, and SEE Productions receive direct advisement from the staff of Campus Activities. Other student groups can also obtain help from the trained staff merely by requesting it.

**Leadership Development.** Campus Activities offers a wide range of training experiences in interpersonal and organizational development skills ranging in format from half-day seminars to weekend workshops to full semester courses earning academic credit.

**Fraternalities and Sororities.** Social fraternities and sororities are advised and supported by Campus Activities, individually and through the three "umbrella" organizations: the Intrafraternity Council, the Pan-Hellenic Council, and the Pan-Hellenic Association.

### Campus Senate

0104A Reckord Armory, 454-4549

The Campus Senate, an integral part of the institution's system of governance, is unique in that it has representation from all segments of the campus community: administrators, staff, faculty, and undergraduate and graduate students. Participation in the senate or any of its fourteen standing committees is an honor and a responsibility.

The full senate meets eight times a year to consider matters of concern to the institution including academic issues, university policies, plans, facilities, and the welfare of faculty, staff, and students. The senate advises the president, the chancellor, or the Board of Regents as it deems appropriate.

To become a student senator, students must be elected through their college or school, or the Office of Undergraduate Studies. Elections are held every year during the spring semester. Students are also encouraged to participate in a series of senate standing committees, such as Student Affairs and Human Relations. These committees draw membership from the campus community at large and cover every aspect of campus life and function. Details about the election and appointment processes are available from the Campus Senate office.

### Career Development Center

3121 Hornbake Library, South Wing, 454-2813/4

The Career Development Center (CDC) supports and assists students from all departments in early and systematic consideration of career questions and concerns, such as: "How are my interests, skills and values related to career fields and University of Maryland at College Park majors?" "What are effective strategies in securing a job or selecting a graduate school?" "How do I prepare now for a rewarding career in the future?" Career Development Center programs and services are designed to be used most effectively by students beginning in the freshman year and continuing through the college years. Students who begin to plan their education and career early in their college experience will be in the best position to direct themselves toward meaningful and rewarding careers upon leaving the University of Maryland at College Park.

#### Career Development Center Programs and Services

**Career Resource Center.** The Career Resource Center provides excellent information and guidance for career exploration, decision-making, graduate school planning and job seeking. The center's holdings include comprehensive reference material on all aspects of work, education, and career exploration, as well as listings of job vacancies, employer and graduate school information, job seeking guides, videotapes of career workshops and employer information, and the DISCOVER™ computerized career information system.

**Career Counselors.** Career counselors will assist students in identifying careers and majors suited to their interests and skills, and in developing the skills needed for their job search, graduate training, or career change. Counselors are available with or without an appointment. Check the center for walk-in times and further information.

**Course: EDCP 106D—Career Planning and Decision Making (1 credit).** This course emphasizes the learning of the lifelong process of career planning. Assignments are chosen to facilitate self and career exploration, to teach effective decision-making skills for choosing a major, selecting career objectives, and planning for future job/career changes.

**Credentials Service.** Credentials are a student's permanent professional record including letters of recommendation, evaluations, and course and resume information. Any undergraduate or graduate student may develop a file in preparation for graduation. Credential files are most helpful to students applying to graduate school and those seeking jobs in education, government, and not-for-profit organizations. All senior Education majors are required to establish a credentials file for employment purposes.

**Group Programs and Campus-wide Events.** Group programs on a wide variety of career development topics run continuously throughout each semester, including How to Choose a Major, Beginning and Advanced Interviewing, Resume Writing, Orientation to the On-Campus Recruiting Program, Your Job Search, and Applying to Graduate School. Campus-wide programs including career panels, Graduate/Professional School Fair, and career/job fairs bring students and employer representatives together for information exchange and employment contact. Check for current dates and times of these special events.

**On-Campus Recruiting Program (OCRCP).** Each year 600-700 employers come to campus to interview interested students who are within two semesters of graduation. Job opportunities are concentrated in the areas of management training, engineering, computer science, accounting and financial operations, and scientific research and applications. The Baltimore-Washington corridor offers additional opportunities in a variety of government and specialized careers. Employers also have the opportunity to list vacancies in the Career Resource Center, and to receive information from those graduating seniors who register for and participate in the Mini-Resume Referral database service. Job searches should be initiated at least one year in advance of graduation.

**Placement Manual and Handouts.** The Placement Manual provides detailed, comprehensive information regarding the services offered by the Career Development Center. Career planning and job search strategies including resume writing and interviewing techniques are discussed, and a preliminary listing of employers participating in the On-Campus Recruiting Program is provided. There are also numerous handouts available to all students, covering a wide variety of career planning topics.

## Commuter Affairs

1195 Stamp Student Union, 454-5274

The Office of Commuter Affairs has established services to work on behalf of, and for the commuter students at the University of Maryland at College Park. In addition to the services described below, the office is actively involved in several research projects and houses the National Clearinghouse for Commuter Programs. Commuter Connection, a newspaper mailed to the homes of commuters twice a semester, contains helpful information on campus life.

**Carpooling.** Students interested in forming a carpool can join the individual match-up program by filling out an application at the Office of Commuter Affairs or calling 1-800-492-3757. Student-run regional carpools are given assistance from OCA. Students who carpool with three or more people may apply at OCA for preferred parking.

**Off-Campus Housing Service (454-3645)** maintains up-to-date computerized listings of rooms, apartments, and houses (both vacant and to share). Area maps, apartment directories, and brochures concerning topics of interest to commuter students are available in the office.

**Settling In.** UMaps serve as a unique guide to the institution, helping students match their own interests with courses, careers, and opportunities for involvement on campus. Personal copies of UMaps are available in the Office of Commuter Affairs.

**Shuttle Bus System (454-2255)** is operated by the Office of Commuter Affairs for the security and convenience of all students. The bus system offers five distinct programs: daytime commuter routes, evening security routes, evening security call-a-ride, transit service for the disabled, and charter services. Schedules are available at the Stamp Student Union Information Desk, the Office of Commuter Affairs, and the Shuttle-UM Office.

## Counseling Center

Shoemaker Building, 454-2931

The Counseling Center provides comprehensive psychological and counseling services to meet the mental health and developmental needs of students. Records kept as part of providing counseling services are confidential, and are not part of the university's educational records. The Counseling Center is open Monday through Thursday, 8:30 a.m. to 9:00 p.m. and Friday, 8:30 a.m. to 4:00 p.m.

In order to meet the needs of the university community, the Counseling Center provides the following special services and programs:

**Counseling Service (454-2931).** Psychologists provide professional, individual and group counseling services for students with socio-emotional and educational-vocational adjustment concerns. Counseling is available for individuals and groups to overcome depression, career indecisiveness, anxiety, loneliness and other problems experienced by students. Workshops ranging from developing assertiveness and self-esteem to managing stress are offered. A 3:00 p.m. Minority Student Walk-in Hour is held daily. The center also provides a series of tape-recorded interviews with College Park campus department heads about course and career options in those fields.

**Disabled Student Service (454-5028, TDD 454-5029).** Professionals provide services for disabled students including assistance in locating interpreters for hearing impaired students, readers for visually impaired students, and access guides to various buildings and facilities on campus. Services must be arranged in advance. New students are urged to contact the office as soon as possible. The office, 0126 Shoemaker, is open Monday through Friday, 8:30 a.m. to 4:30 p.m.

**Learning Assistance Service (454-2935).** Educational specialists offer individual and group sessions for improving academic skills such as reading, writing, listening, notetaking, and how to learn mathematics and science material. Workshops cover such topics as study skills, time management, learning math skills, exam anxiety, and learning English as a second language.

**Parent Consultation and Child Evaluation Service (454-7203).** Professional help is available through consultation, testing, and counseling for youngsters ages 5 through 14, and families.

**Testing, Research, and Data Processing Unit (454-3126).** National testing programs such as CLEP, GRE, LSAT, MCAT, GMAT and Miller Analogies, as well as testing for counseling purposes including vocational assessment administered through this office. Staff members also produce a wide variety of research reports on characteristics of students and the campus environment.

Counseling Center services allow students to overcome barriers to their learning and development. Call or come to the Shoemaker Building for more information, or to schedule an appointment.

## Dining Services

1144 South Dining Hall, 454-2901 Meal Plan Information: 454-2906

Dining Services offers several meal plan alternatives at 28 different dining locations across campus. It is the intent of Dining Services to provide flexibility, convenience, a diverse selection of foods, and convenient hours to all students, faculty, and staff.

Meal plans available to both on-campus and off-campus students include: 1) a la carte selections; 2) dining room meal plans; and 3) DS Cash Card.

Dining locations include traditional dining halls, a custom deli, ethnic eateries, a table service restaurant, an upscale '50's-style eatery, a bakery, a dairy ice cream shop, traditional fast foods, and a convenience store. Students may obtain more information and apply for a meal plan in the Dining Services Contract Office.

## Experiential Learning Programs

0119 Hornbake Library, 454-4767

The Office of Experiential Learning Programs (ELP) provides a number of learning opportunities that involve students in the work of the community

and the campus. These programs encourage students to test classroom learning in work situations, explore career possibilities by direct participation, learn about the culture and people of an organization, geographic area, or academic environment, and enhance their personal development through work, academic travel, and volunteer experiences. The programs include the following:

**Internships and Field Experience.** There are several ways for students to earn academic credit through a work experience. Two internship courses, numbered 386 (Field Experience) and 387 (Analysis of Field Experience), are available in many departments across the campus. These courses allow students to develop individualized work and learning plans with a sponsoring faculty member. After departmental approval, students must register concurrently for these courses. Students may take the 386/387 sequence only once in any department for a maximum of six credits. No more than one 386/387 sequence may be taken in each semester. In addition, the student must prepare and submit a learning proposal to the Experiential Learning Program Office by the end of late registration for the semester of the internship. The maximum number of 386/387 credits applicable toward a baccalaureate degree is 24. Many departments also offer their own internship programs. ELP will help students match their interests with internship options and the nearly 2,000 local placement sites. Students should plan ahead for their internship.

**Volunteer Service.** The ELP Office maintains a listing of over 300 agencies and organizations that have expressed an interest in having volunteers from the University of Maryland at College Park. Volunteer service opportunities can range from research and advocacy to direct service to agencies and individuals. Students who wish to volunteer in a group setting may get involved with People Active in Community Effort (PACE), a student organization that provides valuable volunteer service/learning opportunities.

**Cooperative Education for Liberal Arts, Business, and the Sciences.** Cooperative Education (Co-op) allows students to gain paid, professional-level work experience that is related to their major. Students learn more about their field of study and earn a competitive salary. While most opportunities are in computer science and business, there are some positions available for students in most majors. To be eligible, a student must have completed thirty-six semester hours, twelve of which must have been earned at the University of Maryland at College Park the semester before co-oping, and have a minimum 2.0 cumulative GPA in the major, and each semester before co-oping. While most co-op students alternate semesters of on-campus study with semesters of full-time paid work, some choose a part-time co-op schedule. The minimum work commitment is the equivalent of six months of full-time work.

Interested students must complete a co-op application and attend three required information and preparation sessions. Students interested in co-oping beginning with the spring semester should apply in the fall. Those interested in co-oping beginning summer or fall should apply in the spring. See the College of Engineering entry in Chapter 7 for details about the Engineering Co-op Program.

**National Student Exchange.** National Student Exchange (NSE) provides students with the opportunity to experience educational travel, curricular development, cultural enrichment, and personal growth. Students may attend one of about 87 state-supported colleges and universities in the NSE consortium for a semester or academic year. The campuses vary and are located throughout the continental U.S. and in Hawaii, the Virgin Islands, Alaska, Guam, and Puerto Rico. Students often participate in NSE for a variety of reasons, selecting schools that provide a particular academic focus, unique cultural environment, or different geographic location. NSE provides the opportunity for students to experience a new living and learning environment and assists with a simplified admissions process and assurance of transferability of credit. Exchanges should be completed prior to the student's final thirty hours of coursework at College Park.

Maryland students pay tuition and mandatory fees to UMCP and room and board and miscellaneous fees to the host institution. Exchanges for the next academic year are negotiated in March by the NSE coordinator. Whenever possible, students are placed at the school of their first choice.

Students must have a 2.5 cumulative GPA at the time of application and exchange. Students may not exchange during their final thirty credits.

## Financial Aid

2130 Mitchell Building, 454-3046

The Office of Student Financial Aid (OFSA) administers a variety of financial assistance and student employment opportunities, primarily based on the need of the applicant. Members of the office staff are available for individual counseling on matters pertaining to financial planning for college expenses. For additional information, see Chapter 3

## Health Center

Campus Drive, opposite the Stamp Student Union, 454-3444

The Health Center, located directly across from the Stamp Student Union on Campus Drive, is for primary care of illness and injury, health promotion and maintenance, consultation or education. Services include the dental clinic; men's clinic; women's clinic; skin care; sports medicine; physical therapy; nutrition counseling; mental health; social services; laboratory and pharmacy.

Individual group health education programs are also available on topics such as sexual health; stress management; substance use and abuse; and date rape prevention.

The Health Center is open 24 hours, seven days a week. Hours vary during semester breaks and holidays. Currently registered students who have paid the health fee are eligible for care. Appointments are recommended. Students, however, are also seen on a walk-in basis. Some problems may require referral outside the Health Center at the student's expense. There are additional charges for special services such as x-ray; laboratory tests; dental treatment; allergy injections; pharmacy supplies; and physical therapy.

All information in student medical records is confidential. Medical information is released only with the student's written permission or court-ordered subpoena. The Health Center does not issue routine absence excuses for illness or injury. In case of prolonged absence or a missed exam, with the student's signed permission, the Health Center will verify dates of treatment.

Health Center telephone numbers:

Appointments:	454-4923
Health Education:	454-4922
Health Insurance:	454-6750
Information:	454-3444
Mental Health Services:	454-4925
Pharmacy:	454-6439

## Honors Programs

University Honors Program 0110 Hornbake Library, 454-2532/2535

Many special opportunities are available to energetic, academically talented students through the University's Honors programs. The two-year freshman/sophomore University Honors Program is available to all qualified students. In addition, there are over thirty department and college honors programs on campus.

All Honors programs offer challenging academic experiences characterized by small classes, active student participation, and an Honors faculty that encourages critical thinking and discussion. Individually guided research, field experience, and independent study are also important aspects of Honors work.

The University Honors Program allows students to pursue their general education at a challenging and demanding level. With others of similar ability and interests, students can engage in a program with emphasis on interdisciplinary and educationally broadening activity. These studies complement the students' specialized work in their chosen fields. Department and college Honors programs offer students the opportunity to pursue more deeply their studies in their chosen fields of concentration. These programs usually begin in the junior year, although a few may start earlier.

For information about department or college Honors programs, students should contact the appropriate department or college; for information about the University Honors Program, call 454-2532, or write Director, University Honors Program, The University of Maryland, College Park, MD 20742.

## Human Relations Programs

1107 Hornbake Library, 454-4707/4124

The Human Relations Office (HRO) is responsible for initiating action in compliance with institution, state, and federal directives designed to provide equal education and employment opportunities for College Park campus students and employees. It also monitors the outcomes of actions taken in this regard, reporting its findings to the president, the Campus Senate, and to the campus community at large. The HRO will provide students and staff with general information on equity efforts and on the status of equity and compliance matters at the University of Maryland at College Park.

The HRO sponsors programs that promote cross-cultural appreciation, and processes complaints of discrimination, following procedures set forth in the Campus Human Relations Code (see Appendix A). Copies of the code are also available from the HRO and from the offices of the vice presidents and deans of the colleges and schools. Equity officers will provide them on request (see list below).

Students or employees having a concern about possible inequities in educational or employment matters, or who wish to register a complaint, may contact an equity officer. Students may also contact the HRO office directly.

Minority and/or women students and staff wanting specific information about programs and opportunities available to them within a particular academic or administrative unit may contact the equity officer within that unit.

## Campus Equity Officers

HRO Campus Compliance Officer	
Dr. Michael A. Powell, 1107 Hornbake Library	454-4704
Academic Affairs	
Dr. Marie Davidson, 1119E Main Administration	454-2052
Administrative Affairs	
Dr. Sylvia Stewart, 1132 Main Administration	454-4795
Agricultural and Life Sciences	
Dr. Amel Anderson, 1224 Symons Hall	454-5981
Ms. Vivian Salters (Aff. Action), 1105 Symons Hall	454-3743
Architecture	
Mr. Stephen F. Sachs, 1205 Architecture Bldg.	454-4174
Arts and Humanities	
Dr. Cordell Black, 3104 Jimenez Hall	454-4303
Ms. Theresa Dipaolo, 1103 Francis Scott Key Hall	454-2737
Behavioral and Social Sciences	
Dr. Diana Jackson, 2141 Tydings Hall	454-5272
Business and Management	
Dr. M. Susan Taylor, Tydings Hall	454-6775
Computer, Mathematical, and Physical Sciences	
Dr. Richard Ellis, 2300 Mathematics Building	454-4596
Education	
Dr. Jeanette Kreiser, 3119 Benjamin Building	454-1524
Engineering	
Dr. Marilyn Berman, 1137 Engineering Classroom Bldg.	454-7386
Mr. James Newton, 1131L Engineering Classroom Bldg.	454-4048
Health and Human Performance	
Ms. Colleen (Coke) Farmer, 2314 PERH Bldg.	454-3550/2928
Human Ecology	
Ms. Barbara Hope, 1100 Marie Mount Hall	454-2136
Institutional Advancement	
Ms. Cari Howard, 2101 Turner Lab	454-3322
Journalism	
Dr. Greig Stewart, 2115 Journalism Building	454-2228
Library and Information Services	
Dr. William Cunningham, 4111C Hornbake Library	454-2376
President's Office	
Mr. Ray Gillian, 1111 Main Administration	454-4703
Public Affairs	
Dr. William Powers, 2106 Morrill Hall4	54-7401
Student Affairs	
Ms. Sharon Fries, 2108 Mitchell Building	454-2925

## Intensive Educational Development Program

0111 Chemistry Building, 454-4646/4647

The Intensive Educational Development Program (IED) is designed to provide comprehensive support services to both freshmen and sophomores currently enrolled at the University of Maryland at College Park, and also to high school seniors seeking admission to the university.

Specifically, the program provide services in the areas of English, study skills, math, counseling, academic advising, and tutoring. The program encourages students to utilize all IED and university services that would enable them to develop their intellectual, personal, social, and economic potential.

All prospective students attempting to gain entrance to the university by participation in the program are required to attend the six-week Summer Transitional Program which is designed to develop, expand, and improve their English, math, and study skills, provide a learning experience that will assist them in the transition from high school to the university, and provide an opportunity to challenge and further evaluate each student's potential for success at this institution.

Following the initial summer component and throughout the academic year, IED supports all students at the University of Maryland at College Park through sound academic advisement, continuing development of English, math, reading and study skills; personal counseling, and a free, comprehensive tutoring program.

The Tutorial Program offers tutoring in 117 courses in 30 major academic areas. Tutors are university students who are intensively screened and trained. Sessions between students and tutors are arranged at mutually convenient times. Hourly math exam reviews are scheduled, as well as workshops on time management, note-taking, and theme writing.

## Intercollegiate Athletics

Cole Student Activities Building, 454-2485

The Department of Intercollegiate Athletics is responsible for directing intercollegiate athletic programs for both women and men, and for managing the College Park athletic complex.

Women's intercollegiate athletic teams include cross country, field hockey, soccer, and volleyball in the fall; basketball, swimming, indoor track and gymnastics during the winter; and lacrosse and track in the spring. Tennis competition is scheduled in both the fall and spring seasons.

There are men's teams in football, soccer and cross country in the fall; basketball, swimming, wrestling, and indoor track during the winter; and baseball, golf, tennis, lacrosse, and outdoor track in the spring.

Both men's and women's teams compete in the Atlantic Coast Conference (ACC) and the National Collegiate Athletic Association (NCAA).

## National Collegiate Athletic Association Requirements for Student Athletes

1. NCAA eligibility for regular season competition subsequent to the student's first year is based upon satisfactory completion prior to each fall term of twenty-four (24) semester hours of acceptable degree credits or an average of twelve (12) semester hours per term of attendance.
2. The calculation of credit hours shall be based upon hours accepted for degree credit at the institution.
3. Student athletes must declare a major program of study no later than the beginning of their fifth term of attendance.
4. Credit hours earned toward athletic eligibility for students in declared majors must be acceptable in their specific majors.
5. The 24 credit hours of acceptable credit required each year may include credits earned for a repeated course when the previous grade was an F, but may not include the credits if the previous grade was D or better.

## University of Maryland Athletic Eligibility Requirements

The University of Maryland at College Park requires student athletes to maintain a specified minimum grade point average to be eligible for practice and competition. The following standards are effective for fall term, 1989:

Freshman (second term)	1.29 cumulative GPA
2nd year enrollment	1.78 cumulative GPA
3rd year enrollment	1.86 cumulative GPA
4th year enrollment	2.00 cumulative GPA
5th year enrollment	2.00 cumulative GPA

## Mid-Year Enrollees

Student athletes who matriculate in the spring semester are required to meet the following grade point average standards:

End of 1st semester	1.29 cumulative GPA
End of 2nd semester	1.78 cumulative GPA
End of 3rd semester	1.86 cumulative GPA
End of 4th semester	1.86 cumulative GPA
End of 5th semester	1.94 cumulative GPA
End of 6th semester	2.00 cumulative GPA
End of 7th semester	2.00 cumulative GPA
End of 8th semester	2.00 cumulative GPA

Student athletes who meet the required grade point average and all other NCAA eligibility requirements will be eligible to compete and practice for the full academic year with the exceptions noted below:

1. Student athletes who fail to meet necessary grade point average requirements for the fall semester are ineligible for the entire academic year. However, ineligible student athletes may restore their eligibility at the end of any semester if they raise their grade point average to the minimum standard for the ensuing year.
2. Ineligible student athletes are not permitted to practice or compete.
3. First semester freshmen and transfer student athletes will be required to meet established grade point average requirements after their initial semester at the university. Transfer students are required to attain the appropriate grade point averages based upon year of enrollment.
4. Mid-year matriculants are required to meet the established GPA standard for each of their first three semesters. Thereafter, they will be reviewed at the beginning of each fall term.
5. Student athletes in their final year of eligibility must maintain a 2.0 cumulative GPA in order to be eligible for practice and competition during spring term.
6. Eligible student athletes who go on academic warning after fall term are required to attend regularly supervised study sessions and receive academic support services as assigned by the Academic Support Unit Staff.
7. Dismissed and later reinstated student athletes are ineligible for both practice and competition until they meet designated grade point averages.

For further information, contact Dr. Gerald Gurney, 454-2485.

## International Education Services

3116A Mitchell Building, 454-3043

International students and faculty receive a wide variety of services designed to help them benefit from their experience in the United States. International Education Services works closely with the Office of Undergraduate Admissions, evaluating academic records from overseas and processing applications for English proficiency, visa, and financial requirements. Other services provided to the prospective student include special advising and orientations, help with securing housing, information about programs of international interest, and assistance with the forms that are required for compliance with immigration and other governmental regulations.

**Study Abroad Office.** American students and faculty receive advisement and information about study, travel, and work in other countries. Students may obtain assistance with transfer credits, reenrollment, pre-registration, and housing for the semester they return to campus. The University of Maryland at College Park offers study abroad programs in Israel and London. Information and advisement are also available about programs through other universities to most areas of the world. For more information about Study Abroad, see Chapter 8.

**English Language Instruction to Non-native Speakers.** The University of Maryland, through the Maryland English Institute, offers two programs of English language instruction for those who are not native speakers of English. For those students who are admissible but require part-time English instruction, the Maryland English Institute offers semi-intensive (part-time) instruction. Semi-intensive study would also require the student to enroll in a half-time academic program. Applicants who need more instruction take an intensive (full-time) program before beginning an academic program. These programs are offered on a semester basis and are also available during the summer. During the summer only, semi-intensive instruction is also available to students not admitted to the University of Maryland at College Park. For information regarding admission to the intensive Maryland English Institute, contact the International Education Services Office. For more information about the Maryland English Institute, see the College of Arts and Humanities entry in Chapter 7.

## Judicial Programs

2117 Mitchell Building, 454-2927

(To report instances of academic dishonesty, 454-4746)

**General Policy.** The primary purpose for the imposition of discipline in the university setting is to protect the campus community and to create an atmosphere of personal freedom, in which the rights of all students and staff members are fully protected.

Students may be accountable to both civil authorities and to the university for acts which constitute violations of law and of university regulations. Likewise, an act constituting a violation of the resident hall contract and university regulations may result in removal from university housing, the imposition of disciplinary sanctions, or both.

**General Statement of Student Responsibility.** Students are expected to conduct themselves at all times in a manner consistent with the university responsibility of ensuring to all members of the community the opportunity to pursue their educational objectives, and of protecting the safety, welfare, rights, and property of all members of the community and of the university itself. Students should consult the Code of Student Conduct, Appendix C, for further information.

**Office of Judicial Programs.** The Office of Judicial Programs directs the efforts of students and staff members in matters involving student discipline. The responsibilities of the office include: (1) determining the disciplinary charges to be filed against individual students or groups of students; (2) interviewing and advising parties involved in disciplinary proceedings; (3) supervising, training, and advising the various judicial boards; (4) reviewing the decisions of the judicial boards; (5) maintaining all student disciplinary records; and (6) collecting and disseminating research and analysis concerning student conduct.

Student judicial board members are invited to assume positions of responsibility in the university discipline system in order that they might contribute their insights to the resolutions of disciplinary cases. Final authority in disciplinary matters, however, is vested in the campus administration and in the Board of Regents.

**Disciplinary Procedures.** Students accused of violating university regulations are accorded fundamental due process in disciplinary proceedings. Formal rules of evidence, however, shall not be applicable, nor shall deviations from prescribed procedures necessarily invalidate a decision or proceeding unless significant prejudice to one of the parties may result. University hearing and conference procedures are outlined in the documents titled Preparing for a Hearing and Preparing for a Conference, available from the Office of Judicial Programs.

## Minority Student Education

1101 Hornbake Library, 454-4901

Nyumburu Community Center: South Campus Dining Hall, 454-5774

The Office of Minority Student Education (OMSE) was officially created on July 1, 1972, as a result of proposals and recommendations submitted to the chancellor from the Campus Black Community and the Study Commission on Student Life. The office exists to enhance the personal and social development and the academic success of minority students. Its mission is to work together with other resources on campus to provide support services for minority students throughout their college career at the University of Maryland at College Park.

Throughout the year OMSE implements several key programs that have as their objective enhancing the recruitment, retention, and graduation of minority students at the University of Maryland at College Park. Some of the programs, which constitute a supplemental support system, are the Tutorial Program, Job Fair, a mentoring program, a course, EDCP 108N: College and Career Advancement: Concepts and Skills for Minority Students, and Strategies for Personal, Academic and Career Excellence.

The OMSE Tutorial Program is designed to provide assistance to minority students on a walk-in or appointment basis

The Job Fair, an annual event sponsored by OMSE in conjunction with the Career Development Center, is designed to contribute to the career development of minority undergraduates at all levels. It brings representatives from local and national companies to interview students who are interested in either permanent positions, summer positions, internships, or general occupational information. Workshops in resume writing and interviewing techniques are available for students prior to the Job Fair.

OMSE staff attempt to develop a healthy socio-cultural minority community by encouraging and assisting in the organizing of pre-professional societies in each academic department. OMSE supports some and works cooperatively with a number of other minority pre-professional societies, including law, business, media, engineering, and computer science. OMSE also works closely with the campus Hispanic Society, the American Indian Student Union, the Black Student Union, and the Black Panhellenic Council.

OMSE contains a study-lounge that doubles as a tutorial center and a Computer Science Center workstation. It provides minority students with an opportunity to study, get assistance from a tutor, or work at state-of-the-art computers in a relaxed, social atmosphere.

## Orientation

1195 Stamp Student Union, 454-5752

The primary goal of orientation is to ease the transition of new students into the university community. Orientation begins when students are admitted to the university, and ends at the culmination of the first semester. At the time of admission to the university, new students will receive material announcing the orientation program. The purpose of the program is to

- Introduce new students to the academic community
- Coordinate academic advisement for the first semester
- Introduce campus services and resources
- Administer the math placement test.
- Register students for their first semester courses

The Freshman Program runs for two days and provides new students with the opportunity to interact formally and informally with faculty, administrators, returning students, and other new students. The Transfer Program lasts for one day and focuses on transfer evaluation, advisement, and registration. The math placement test is administered during both orientation programs.

Note: Students who arrive after 8:30 a.m. on their program day will be reassigned to the next available day.

Parents of new students are invited to attend a one-day program specifically designed to introduce parents to the academic, social, and cultural milieu of the university. These programs are offered during June and July.

The Orientation Office also coordinates the ongoing one-credit orientation course EDCP 108-O. The goal of this course is to introduce students to the world of higher education generally, and the University of Maryland specifically. The course is taught by faculty and administrators, and is limited to 25 students per section.

## Parking

Parking Garage 2 (off Regents Drive), 454-4242

The Department of Campus Parking (DCP) is responsible for managing and maintaining over 17,000 parking spaces on the University of Maryland at College Park campus. All College Park campus students who plan to park a motor vehicle in one of these spaces must register with the Department of Campus Parking. Motorcycles are considered in the same category as any other vehicle for the purposes of registration.

Students may register for parking at the Department of Campus Parking, located in Parking Garage 2, off Regents Drive, at any time during regular business hours. Extended hours are available during the first few weeks of the semester.

When registering for parking, students should bring their student ID cards and complete the University of Maryland at College Park Department of Campus Parking parking application for student parking.

Student rates for parking on campus range from \$10.00 to \$69.00 for the academic year.

Illegally parked vehicles, as well as those vehicles not displaying a University of Maryland at College Park hanging permit, will be ticketed, and students with outstanding parking fines may be barred from registration. Complete parking regulations, fines, and other information can be obtained when students register for parking.

Bicycles and mopeds need not be registered, but must be parked in designated bicycle racks so that they do not hamper access to buildings. Maryland State law prohibits securing or parking a bicycle or moped in any

manner which would obstruct vehicles or pedestrians (or handicapped access to buildings). Bicycles or mopeds parked in violation of this law will be subject to impoundment, and should be reported to the Environmental Safety Office, 454-5744

## Records and Registrations

First floor, Mitchell Building, 454-5559

The Office of Records and Registrations provides services to students and academic departments related to the processes of registration, scheduling, withdrawal, and graduation. The office also maintains the student's academic records, and issues transcripts. Staff members are available to students for consultation. Please see Chapter 5 for detailed information about registration procedures and record-keeping.

## Recreation Services

1104 Reckord Armory, 454-3124  
24-hour recording: 454-5454

Thousands of undergraduate and graduate students, faculty and staff members recognize the value of spending their free time in some sort of healthful physical activity. They find a lifestyle which balances academic pursuits with recreational and social involvement ideal for a fulfilling and enjoyable college experience. The Campus Recreation Services (CRS) staff meets almost everyone's leisure-time needs through informal recreational opportunities, intramural sports activities, fitness and wellness programs, sport clubs, and special events.

Informal recreational opportunities include lifting weights, running, swimming laps, and joining a colleague for a friendly game of racquetball, squash, or tennis. Intramural sports provide organized tournament and league play for individuals, pairs, and teams. Students have the choice of over twenty-five competitive sports (from badminton and basketball to track and field and volleyball) in the Men's Open (for commuters), Men's Dormitory, Fraternity, and Women's Leagues. There is a Graduate Students/Faculty/Staff League, as well, in most sports, entrants can select the above average or average skill level of play.

Fitness and wellness programs exist in the form of aerobics and water aerobics sessions and the Lifeline Fitness Club, a self-directed fitness program, while more than twenty-five sport clubs (from bowling and martial arts to rugby and sailing) are organized and supported through CRS. These groups comprise students, faculty, and staff interested in participating (and sometimes competing against other colleges) in one particular sport. Special events, such as Maryland Sports Day, the Sports Trivia Bowl, and the Home Run Derby round out the activities calendar at CRS.

Fees paid at the time of class registration cover virtually all the costs of participating in CRS activities.

## Religious Programs

University Memorial Chapel and 2108 Mitchell Building, 454-2925

A broad range of religious traditions is represented by the chaplains and religious advisors at the university. Individually and cooperatively, they offer many services, including counseling, worship, student programs here and abroad, personal growth groups, and opportunities for service and involvement.

The following chaplains and their services are available:

<b>Baptist</b> Gerald Buckner, Chaplain	1101 Memorial Chapel, 454-4604
<b>Black Ministries Program</b> Weldon Thomas, Chaplain	2120 Memorial Chapel, 454-5748
<b>Christian Science</b> Jack B. Pevenstein, Advisor	1112 Memorial Chapel, 587-3345
<b>Church of Christ</b> Graydon Stephenson, Chaplain	2112 Memorial Chapel, 454-5135
<b>Church of Jesus Christ of Latter Day Saints (Morman)</b>	7601 Mowatt Lane, Neil Petty, Director College Park, MD 20740, 422-7570
<b>Episcopal</b> Peter Peters, Chaplain	2116 Memorial Chapel, 454-2347

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**Jewish**  
Robert Saks, Chaplain  
Jewish Student Center  
7612 Mowatt Lane  
College Park, MD 20740, 422-6200

**Lutheran**  
Elizabeth Platz, Chaplain  
2103 Memorial Chapel, 454-3317

**Roman Catholic**  
Thomas Kalita, Chaplain  
Rita Ricker, Associate  
4141 Guilford Drive, 864-6223  
College Park, MD 20740  
(Opposite Lot 3)

**United Campus Ministry**  
Rob Burdette, Chaplain  
Kathleen Kline-Chesson, Chaplain  
Ki Yui Chung, Associate Chaplain  
2101 Memorial Chapel, 454-2348

(Supported by the Church of the Brethren, Disciples of Christ, United Presbyterian Church, United Church of Christ, and United Methodist Church)

**Chaplain Emeritus**  
Wofford K. Smith  
2128 Memorial Chapel, 454-1351

### Resident Life

3118 Mitchell Building, 454-2711

The Department of Resident Life is responsible for management of the residence halls as well as for cultural, educational, recreational, and social programming activities in the resident halls. A staff of full-time, graduate and undergraduate employees helps to meet programming, physical environment, and administrative needs. The staff works with other campus and state agencies to provide services and programs in accordance with university and state expectations.

On-campus housing is available in 35 undergraduate resident halls near academic, cultural, social, and recreational resources of the campus. All-male, all-female, and coeducational living arrangements are available in the halls, which accommodate from 35 to 550 residents. Traditional residence halls, apartment suites for four to six students, and kitchenless suites for four to eight students are available.

Students are encouraged to live on campus. Application for on-campus housing/dining services can be made on the undergraduate application for admission or in person. Once accommodated, a student may remain in residence halls throughout his or her undergraduate career. Preference is given to single, undergraduates, although graduate students may apply. Because about one-half of the 7,800 available spaces each year are reserved by returning upperclass students, the number of entering students from whom applications are received each year are assigned to the approximately 4,000 spaces that remain. Soon after application is made for housing services, each eligible student is sent the official offer of on-campus housing/dining services for the academic year. On-campus housing/dining is for the entire academic year (fall and spring semesters).

### Stamp Student Union

Administrative Offices  
2104 Stamp Student Union, 454-2801

The Adele H. Stamp Student Union is the "community center" of the University of Maryland at College Park. More than 22,000 students, faculty, staff members, and campus guests visit the union daily to take advantage of its services, programs, and facilities. In serving as the campus community center, the union offers lounge space, a variety of information services, recreation and leisure activities, student sponsored programs, visual arts, retail outlets, and more than 40,000 square feet of reservable space.

#### Information Services

- AIM (Access to Information about Maryland), a computerized guide to activities and events on the College Park campus, located in the union and library lobbies.
- Center located in the main lobby, 454-2801
- Bulletin Boards located throughout the building
- Copy machines in the main lobby.
- Display showcases located on the main level

#### Recreation and Leisure

- Hoff Movie Theatre, 454-2594
- Piano practice rooms located on the second level
- Recreation Center, including full-service bowling lanes, billiard tables, and video games, 454-2804.

#### Student Sponsored Programs

- Stamp Union Program Council (SUPC), a student-directed program board whose committees plan games, tournaments, concerts, lectures, outdoor recreation trips, and bicycle and road races, 454-4987.
- Student Tutorial Academic Referral Center (STAR Center), offering tutor listings and test files, 454-4948.
- Student Organization offices of over 40 student groups, including the Student Government Association.

#### Visual Arts, 454-4754

- Art Center, a visual arts work and teaching center, offering mini-courses and arts services, including graphic design, sign, and banner services. Parents' Association Art Gallery, located off the main lobby.

#### Retail Outlets (except for the University Book Center, located in the lower level mall area)

- Citizens Bank and Trust Co. of Maryland
- Bookstore University Book Center (lower level)
- Flower Cart (Union Shop)
- Food Services: Eateries, Dory's Ice Cream, Maryland Food Co-op, Deli and Sandwich Factory, Pizza Shop, Roy Rogers Family Restaurant, What's Your Beef Restaurant
- Record Co-op, featuring records, tapes, and compact disks
- Ticket Office, offering campus performance tickets, and a full Ticket Center Outlet, 454-2803.
- Union Shop, featuring snacks, sodas, tobacco, and newspapers and magazines
- U.S. Postal Service Automated Facility

#### Reservable Space

The union offers meeting rooms that accommodate groups from 8 to 1000 people. For reservations, or catering information, contact the Union Reservation Office, 454-2809.

### Stamp Student Union Hours

The union is open Monday through Thursday, 7:00 a.m. to 12:00 midnight; Friday, until 1:00 a.m.; Saturday, 8:00 a.m. to 1:00 a.m., and Sunday, 12:00 noon to 12:00 midnight.

### Talent Search

0112 Chemistry Building, 454-1578

The Talent Search Program is an educational outreach program of information, educational guidance counseling and support for low-income middle and high school graduates. The Talent Search Program reflects the concern that without early intervention, most disadvantaged students would be lost to postsecondary education because they would not be aware of their educational opportunities and because they would not select the appropriate high school courses. Thus, the objective of Talent Search is to identify, encourage, and help potentially able students as early as possible.

In addition to educational counseling, Talent Search, a national higher education program, provides information about college admissions requirements and the availability of scholarships and student financial aid programs. Students also get help in completing and submitting admission and financial aid applications.

### Tutoring

Students needing tutoring should first contact their professors or the graduate teaching assistants assigned to courses. They should inquire also at the department office to find out if the department sponsors any tutoring services. Many campus clubs, organizations, and honors societies also offer tutoring. Check out the Learning Assistance Center, University Honors Program, Office of Minority Student Education, and the STAR Center in the Stamp Student Union.

Tutoring for all 100 and 200 level courses is available through the Intensive Education Development Office, 0112 Chemistry Building. Call 454-5648/9 for further information. Students may sign up as tutors at IED.

### University Book Center

Lower level, Stamp Student Union, 454-3222

The University Book Center provides a convenient, on-campus selection



of textbooks, general interest books, literature, best sellers, magazines, and a large selection of school and office supplies to meet every educational need. The book center also has a wide selection of imprinted clothes and related items, plus cards, gifts, posters, convenience foods, and health and beauty aids. The University Book Center is located on the lower level, east, of the Stamp Student Union, and is open Monday through Friday, 8:30 a.m. to 7:30 p.m.; Saturday and Sunday, 12:00 noon to 5:00 p.m.

### **Upward Bound Program**

1107 West Education Annex, 454-2116/2117

The University of Maryland Upward Bound Program is designed to provide academic and counseling assistance to capable but underachieving high school students with the purpose of preparing them to pursue post-secondary education. The Upward Bound Program serves as a supplement to its participants' secondary school experiences. It provides the opportunity for each student to improve or develop the skills necessary for acquiring a positive self image, broadening his or her education and cultural perspectives, and realizing undiscovered potentials.

Upward Bound Program students are selected from high schools in Prince George's and Montgomery counties, and are recommended to the program through high school principals, teachers, counselors, the Talent Search Program, social service agencies, and individuals familiar with the program.

Counseling services and opportunities to develop academic skills are available to students throughout the school year and during the summer program. Academic instruction, tutoring, counseling, and other related innovative educational experiences are provided for the development of basic academic skills and motivation necessary for success in secondary school.

For more information, please contact the Director of Upward Bound, Room 1107, West Education Annex, The University of Maryland, College Park, MD 20742; 454-2116/7.

# REGISTRATION, ACADEMIC REQUIREMENTS, AND REGULATIONS

## REGISTRATION

First Floor Mitchell Building, 454 5559

To attend classes at the University of Maryland at College Park it is necessary to process an official registration. Specific registration dates and instructions can be found in the current Schedule of Classes. The schedule is issued four times per year; prior to early registration for the fall and spring semesters, and again at the beginning of each semester.

1. Newly admitted students are invited and encouraged to attend an orientation session. Advising and course registration are part of the program. All newly admitted students must meet with an advisor prior to registration.
2. All newly admitted freshman and transfer students are required to provide proof of immunization for measles, rubella, mumps, and tetanus/diphtheria.
3. Currently enrolled students are invited to early registration. Registration appointments for the fall semester begin in mid March; appointments for the spring semester begin in late October.
4. Open registration follows Early Registration and continues up to the first day of classes. During this time students may make schedule adjustments or process an original registration.
5. The **schedule adjustment period** is the first ten day of classes for the fall and spring semesters, and the first five days of classes for summer sessions. During this period, full-time undergraduates may drop or add courses, change sections, or change credit level with no charge. Part-time undergraduates may also drop or add courses, change sections, or change credit level, but they should consult the deadline section in the Schedule of Classes to avoid incurring additional charges. The choice of grading method option (including the pass-fail option) may be changed only during the schedule adjustment period. Registration is final and official when all fees are paid.

Departments may identify courses or sections of courses with the approval of the Office of the Vice President for Academic Affairs, which after the first five days of the schedule adjustment period in spring and fall semesters, shall require faculty or departmental approval for students to add.

Courses may be added, where space is available, during the schedule adjustment period and will appear on the student's permanent record along with other courses previously listed. Courses dropped during this period will not appear on the student's permanent record.

6. After the schedule adjustment period:
  - a) Courses may not be added without special permission of the department and the dean of the academic unit in which the student is enrolled.
  - b) All courses for which the student is enrolled shall remain as a part of the student's permanent record. The student's status shall be considered as full-time for certification purposes if the number of credit hours enrolled at this time is twelve or more. For billing purposes, a student is considered full-time if the number of credit hours enrolled is nine or more.
  - c) A charge shall be made for each course dropped or added.
  - d) An official class list for each course being offered is issued to the appropriate department by the Office of Records and Registrations. Students are not permitted to attend a class if their names do not appear on the class list. Instructors must report discrepancies to the Office of Records and Registrations.
7. The **drop period** for undergraduate students will begin at the

close of the schedule adjustment period and terminate at the end of tenth week of classes during the fall and spring semesters and at a corresponding time for summer sessions.

During the drop period a student may drop a maximum of four credits. However, if the course that the student wishes to drop carries more than four credits, the student may drop the entire course or, in the case of a variable credit course, reduce the credit level by up to four credits. Such a drop will be recorded on the student's permanent record with the notation "W" and will be considered to represent a single enrollment (one of three possible) in the course. This mark shall not be used in any computation of cumulative grade point average.

8. At the end of the semester official grade lists are issued to each department. Instructors mark the final grades on the grade lists, sign the lists and return them to Records and Registrations.
9. **Withdrawal from the University.** Students wishing to withdraw from all courses must do so on or before the last day of classes. The policies governing withdrawals are as follows:
  - a. Should a student desire or be compelled to withdraw from the university at any time, he or she must secure a form for withdrawal from the Records Office, and submit the form along with the semester identification and registration cards.
  - b. The effective date of withdrawal as far as refunds are concerned is the date that the withdrawal form is received by the Records Office. Notation of Withdrawn, and the effective date of the withdrawal, will be posted to the permanent record. The instructors and the college offices will be notified of all withdrawn students. The deadline date for submitting the withdrawal form for each semester is the last day of classes. Contact Undergraduate Admissions for readmission information.
10. When Dean's approval is required the Dean for Undergraduate Studies shall assume the responsibilities normally delegated to the dean in the case of non-college students.

## General Education Requirements

In addition to completing a major course of study, students are required to complete a set of general education requirements. These requirements are intended to expose students to broad areas of historic and contemporary thought and experience. The Board of Regents and the University of Maryland at College Park Campus Senate have recently approved a new general education program. This program, Core Liberal Arts and Sciences Studies (CORE), must be completed by all students entering in May 1990 and thereafter with eight (8) or fewer credits from this or any other higher education institution. Students who enter and have completed nine (9) or more credits before May 1990 from this or any other higher education institution will complete their general education requirements under the University Studies Program (USP). They may, however, choose the new CORE program if they so desire. Students who entered the University of Maryland at College Park prior to May 1980 are referred to Chapter 6, "Statue of Limitations," for additional information.

For a detailed outline of the program requirements for both the CORE and the USP programs, students should refer to Chapter 6. Also included in this chapter are lists of approved courses which may be selected to meet program requirements.

## Enrollment in Majors

A student who is eligible to remain at the University of Maryland at College Park may transfer among curricula, colleges, or other academic units

except where limitations on enrollments have been approved. Students must be enrolled in the major program from which they plan to graduate, when registering for the final fifteen hours of the baccalaureate program. This requirement also applies to the third year of the combined, preprofessional degree programs.

Students who wish to complete a second major in addition to their primary major of record must obtain written permission in advance from the appropriate deans. As early as possible, but in no case later than the beginning of the second semester before the expected date of graduation, students must file with the departments or programs involved and with the appropriate deans, formal programs showing the courses to be offered to meet requirements in each of the majors and supporting areas as well as the college and general education requirements. Approval will not be granted if there is extensive overlap between the two programs. Students enrolled in two majors simultaneously must satisfactorily complete the regularly prescribed requirements for each of the programs. Courses taken for one major may be counted as part of the degree requirements for the other and toward the requirements for the University Studies Program. If two colleges are involved in the double major program, the student must designate which college is responsible for the maintenance of records.

### Concurrent Undergraduate-Graduate Registration

A senior at the University of Maryland whose GPA is at least 3.0 and who is within seven hours of completing the requirements for the undergraduate degree may, with the approval of his or her dean, the chair of the department concerned, and the Graduate School, register for graduate courses, which may later be counted for graduate credit toward an advanced degree at this university. The total of undergraduate and graduate credits in the senior year cannot be used for graduate credit unless proper pre-arrangement is made. Seniors who wish to take advantage of this opportunity must formally apply for admission to the graduate school.

### Credit Unit and Load Each Semester

The semester hour, which is the unit of credit, is the equivalent of a subject pursued one period a week for one semester. Two or three hours of laboratory or field work are equivalent to one lecture or recitation period. The student is expected to devote three hours a week in classroom or laboratory or in outside preparation for each credit hour in any course.

In order for undergraduate students to complete most curricula in four academic years, the semester credit load must range from twelve to nineteen hours so that they would complete from thirty to thirty-six hours each year toward the degree. Students registering for more than nineteen hours per semester must have the approval of their dean.

### Classification of Students

No baccalaureate curriculum requires fewer than 120 semester hours. Actual classifications run as follows: freshman, 1-27 semester hours; sophomore, 28-55; junior, 56-85; and senior, 86 to at least 120.

### Undergraduate Credit for Graduate Level Courses

Subject to requirements determined by the graduate faculty of the department or program offering the course, undergraduate students may register for graduate level courses, i.e., those numbered from 600 to 898, with the exception of 799, for undergraduate credit.

A student seeking to utilize the option will normally be in the senior year, have earned an accumulated grade point average of at least 3.0, have successfully completed, with a grade of "B" or better, the prerequisite and correlative courses, and be a major in the offering or closely related department. The student will be required to obtain prior approval of the department offering the course. Graduate school approval is not required.

Enrollment in a graduate level course does not in any way imply subsequent departmental or graduate school approval for admission into graduate program, nor may the course be used as credit for graduate degree at the University of Maryland.

### Courses Taken at Other Institutions

Courses taken at another institution may not be credited toward a degree without approval in advance by the dean of the college from which the student expects a degree. The same rule applies to off campus registration in the summer program of another institution. However, courses taken through The Consortium of Universities of the Washington Metropolitan

Area are treated as resident credit. (See section on the Consortium, below.) Permission to enroll in off-campus courses must be requested for any course which will eventually be added to the the University of Maryland at College Park transcript.

## The Consortium of Universities of the Washington Metropolitan Area

The Consortium of Universities of the Washington Metropolitan Area consists of American University, The Catholic University of America, Gallaudet College, Georgetown University, George Washington University, Howard University, Marymount University, Mt. Vernon College, Trinity College, University of the District of Columbia, and the University of Maryland at College Park. Students enrolled in these institutions are able to attend certain classes at the other campuses and have the credit considered as "residence" credit at their own institutions. The intention is to allow students to take an occasional course to augment a program rather than to develop an individual program. Payment of tuition for courses will be made at the student's home campus.

Currently registered, degree-seeking University of Maryland at College Park undergraduates may participate in the consortium program according to the stipulations listed in the current edition of the Schedule of Classes. Golden ID students are not eligible to enroll in courses through the consortium with waiver of fees. Students interested in additional information about the consortium program should contact the consortium coordinator in the Office of Records and Registrations, Mitchell Building.

### Veterans Benefits

Students attending the university under the Veterans Education Assistance Act (Title 38, U.S. Code) may receive assistance and enrollment certification at the Veterans Certification Office in Records and Registrations, first floor of the Mitchell Building. Consult the Schedule of Classes for further information.

### Identification Cards

There are two cards, used jointly, to identify currently enrolled students: the photo ID and the semester registration card. The photo ID card is issued at the time the student first registers for classes. This card is to be used for the entire duration of enrollment. The semester registration card validates the photo identification card and is issued for each semester in which the student is registered. Both cards should be carried at all times.

Together the photo identification card and semester registration card can be used by students to withdraw books from the libraries, for admission to most athletic, social, and cultural events, and as a general form of identification on campus. Students who have food service contracts use a separate identification card issued by Dining Services.

There is a replacement charge of \$1.00 for lost or stolen registration cards and \$7.00 for lost, stolen, or broken photo identification cards. Questions concerning the identification card system should be addressed to the Office of Records and Registrations.

### Change of Address

Students are expected to notify the Office of Records and Registrations of any change in their local or permanent address. Change of Address forms are available at the Registration Counter, first floor, Mitchell Building and at the Office of the Bursar, first floor, Lee Building.

### Attendance

1. The university expects each student to take full responsibility for his or her academic work and academic progress. The student, to progress satisfactorily, must meet the quantitative requirements of each course for which he or she is registered. Students are expected to attend classes regularly, for consistent attendance offers the most effective opportunity open to all students to gain developing command of the concepts and materials of their course of study. However, attendance in class, in and of itself, is not criterion for evaluation of the student's degree of success or failure. Furthermore, absences (whether excused or unexcused) do not alter what is expected of the student qualitatively and quantitatively. Except as provided below, absences will not be used in the computation of grades, and the recording of student absences will not be required of the faculty.

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2. In certain courses in-class participation is an integral part of the work of the course. A few examples would be courses in public speaking and group discussion, courses emphasizing conversation in foreign languages, certain courses in physical education, and certain laboratory sessions. Each department shall determine which of its courses fall into this category. It shall be the responsibility of the instructor in such courses to inform each class at the beginning of the semester that in-class participation is an integral part of the work of the course and that absences will be taken into account in the evaluation of the student's work in the course.
3. Laboratory meetings require special preparation of equipment and materials by the staff. A student who is not present for a laboratory exercise has missed that part of the course and cannot expect that he or she will be given an opportunity to make up this work later in the term.
4. Special provision for freshmen: The freshman year is a transitional year. Absences of freshmen in the basic freshman courses will be reported to the student's dean or college officer when the student has accumulated more than three unexcused absences.
5. Excuses for absences (in basic freshman courses and in courses where in-class participation is a significant part of the work of the course) will be handled by the instructor in the course in accordance with the general policy of his or her department and college.

### Statement on Classroom Climate

The University of Maryland at College Park values the diversity of its student body and is committed to providing a classroom atmosphere that encourages the equitable participation of all students. Patterns of interaction in the classroom between the faculty member and students and among the students themselves may inadvertently communicate preconceptions about student abilities based on age, disability, ethnicity, gender, national origin, race, religion or sexual orientation. These patterns are due in part to the differences the students themselves bring to the classroom. Classroom instructors should be particularly sensitive to being equitable in the opportunities they provide students to answer questions in class, to contribute their own ideas, and to participate fully in projects in and outside of the classroom.

Of equal importance to equity in the classroom is the need to attend to potential devaluation of students that can occur by reference to demeaning stereotypes of any group and/or overlooking the contributions of a particular group to the topic under discussion. Joking at the expense of any group creates an inhospitable environment and is inappropriate. Moreover, in providing evaluations of students, it is essential that instructors avoid distorting these evaluations with preconceived expectations about the intellectual capacities of any group.

It is the responsibility of individual faculty members to review their classroom behaviors, and those of any teaching assistants they supervise, to ensure that students are treated equitably and not discouraged or devalued based on their differences. Resources for self-evaluation and training for faculty members on classroom climate and interaction patterns are available from the Office of Human Relations.

### Examinations

1. All examinations and tests shall be given during class hours in accordance with the regularly scheduled (or officially "arranged") time and place of each course listed in the Schedule of Classes. Unpublished changes in the scheduling or location of classes/ tests must be approved by the department chair and reported to the dean. It is the responsibility of the student to be informed concerning the dates of announced quizzes, tests, and examinations.
2. It is the policy of the university to excuse the absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and other written tests that fall on religious holidays. Examinations and other written tests may not be scheduled on Rosh Hashanah, Yom Kippur, or Good Friday. An instructor is not under obligation to give a student a make-up examination unless the absence was caused by illness, religious observance, participation in university activities at the request of university authorities, or compelling circumstances beyond the student's control. In cases of dispute, the student may appeal to the chair of the department offering the course within one week from the date of the refusal of the right to take a make-up exam. A make-up examination, when permitted, must be given on campus, unless the published schedule and course description require other arrangements. The make-up examination must be at a time and a place mutually agreeable to

the instructor and student, cover only the material for which the student was originally responsible, and be given with in a time limit that retains currency of the material. The make-up must not interfere with the student's regularly scheduled classes. In the event that a group of students require the same make-up examination, one make-up time may be scheduled at the convenience of the instructor and the largest possible number of students involved. Under the same guidelines students shall have equal access to all information and drills missed due to the reasons listed.

3. A final examination shall be given in every undergraduate course. Exceptions may be made with the written approval of the chair of the department and the dean. To avoid basing too much of the semester-grade upon the final examination, additional tests, quizzes, term papers, reports and the like should be used to determine a student's comprehension of a course. The order of procedure in these matters is left to the discretion of departments or professors and should be announced to the class at the beginning of course. All final examinations must be held on the examination days of the Official Final Examination Schedule. No final examination shall be given at a time other than that scheduled in the Official Examination Schedule without written permission of the department chair.
4. As of fall semester, 1980, graduating seniors will be expected to take final exams during the regular examination period. However, graduating seniors are not required to take final examinations on the day of graduation or on any regularly scheduled examination day following graduation. In courses with exams scheduled on those days, graduating seniors are expected to see their instructors early in the semester to make alternate arrangements.
5. A file of all final examination questions must be kept by the chair of each department.
6. The chair of each department is responsible for the adequate administration of examinations in courses under his or her jurisdiction. The deans should present the matter of examinations for consideration in staff conferences from time to time and investigate examination procedures in their respective colleges.
7. Every examination shall be designed to require for its completion not more than the regularly scheduled period except for final examinations.
8. A typewritten, mimeographed or printed set of questions shall be placed in the hands of every examinee in every test or examination requiring at least one period, unless the dean has authorized some other procedure.
9. Each instructor must safeguard examination questions and all trial sheets, drafts, and stenics.
10. Each instructor should avoid the use of examination questions which have been included in recently given examinations and should prepare examinations that will make dishonesty difficult.
11. Only clerical help approved by the department chair shall be employed in the preparation or reproduction of tests or examination questions.
12. Proctors must be in the examination room at least ten minutes before the hour of a final examination. Provisions should be made for proper ventilation, lighting, and a seating plan. At least one of the proctors present must be sufficiently cognizant of the subject matter of the examination to deal authoritatively with inquiries arising from the examination.
13. Books, papers, etc. belonging to the student, must be left in a place designated by the instructor before the student takes his or her seat, except in such cases where books or work sheets are permitted.
14. Students should be seated at least every other seat apart, or its equivalent, i.e., about three feet. Where this arrangement is not possible some means must be provided to protect the integrity of the examination.
15. "Blue books" only must be used in periodic or final examinations unless special forms are furnished by the department concerned.
16. If mathematical tables are required in an examination, they shall be furnished by the instructor. If textbooks are used, this rule does not apply.
17. Proctors must exercise all diligence to prevent dishonesty and to enforce proper examination decorum, including abstention from smoking.
18. Where an instructor must proctor more than forty students, he or she should consult the chair of the department concerning proctorial assistance. An instructor should consult the department chair if in his or her opinion a smaller number of students for an examination requires the help of another instructor.
19. No student who leaves an examination room will be permitted to return, except in unusual circumstances, in which case permission to do so must be granted by the proctor prior to the student's departure.
20. All conversation will cease prior to the passing out of examination

papers, and silence will be maintained in the room during the entire examination period.

21. Examination papers will be placed face down on the writing surface until the examination is officially begun by the proctor.
22. Examination papers will be kept flat on the writing surface at all times.

## RECORDS

### Marking System and Record Notations

The Records Office, located on the first floor of the Mitchell Building, is responsible for maintaining student records and issuing official transcripts.

The following symbols are used on the student's permanent record for all courses in which he or she is enrolled after the initial registration and schedule adjustment period: A, B, C, D, F, I, P, S, and W. These marks remain as part of the student's permanent records and may be changed only by the original instructor on certification, approved by the department chair and the dean, that an actual mistake was made in determining or recording the grade.

**A** — denotes excellent mastery of the subject and outstanding scholarship. In computations of cumulative or semester averages, a mark of A will be assigned a value of 4 quality points per credit hour.

**B** — denotes good mastery of the subject and good scholarship. A mark of B is assigned a value of 3 quality points per credit hour.

**C** — denotes acceptable mastery of the subject and the usual achievement expected. A mark of C is assigned a value of 2 quality points per credit hour.

**D** — denotes borderline understanding of the subject. It denotes marginal performance, and it does not represent satisfactory progress toward a degree. A mark of D is assigned a value of 1 quality point per credit hour.

**F** — denotes failure to understand the subject and unsatisfactory performance. A mark of F is assigned a value of 0 quality points per credit hour.

**S** — is a department option mark that may be used to denote satisfactory performance by a student in progressing thesis projects, orientation courses, practice teaching, and the like. In computation of cumulative averages a mark of S will not be included.

**W** — is used to indicate withdrawal from a course in which the student was enrolled at the end of the schedule adjustment period. For information and completeness, the mark of W is placed on the student's permanent record by the Office of Records and Registrations. The instructor will be notified that the student has withdrawn from the course. This mark is not used in any computation of quality points or cumulative average totals at the end of the semester.

**Audit** — A student may register to audit a course or courses which have been designated as available under the audit option and in which space is available. The notation AUD will be placed on the transcript for each course audited. A notation to the effect that this symbol does not imply attendance or any other effort in the course will be included on the transcript in the explanation of the grading system.

**Pass/Fail** — The mark of P is a student option mark, equivalent to A, B, C, or D. The student must inform the Registrations Office of the selection of this option by the end of the schedule adjustment period.

The following policy was approved by the Board of Regents for implementation beginning with the spring 1989 semester:

1. To register for a course under the pass-fail option, an undergraduate must have completed 30 or more credit hours of college credit with a GPA of at least 2.0. At least 15 of these credit hours must have been completed at UMCP with a University of Maryland GPA of at least 2.0.

2. Courses for which this option applies must be electives in the student's program. The courses may not be college, major, field of concentration, or general education program requirements.
3. Only one course per semester may be registered for under the pass-fail option.
4. No more than 12 semester hours of credit may be taken under the pass-fail option during a student's college career.
5. Students may not choose this option when re-registering for a course.
6. When registering under the pass-fail option, a course that is passed will count as hours in the student's record but will not be computed in the grade point average. A course that is failed will appear on the student's record and will be computed both in the overall average and the semester average.
7. Students registering for a course under the pass-fail option are required to complete all regular course requirements. Their work will be evaluated by the instructor by the normal procedure for letter grades. The instructor will submit the normal grade. The grades A, B, C, or D will automatically be converted by the Office of Records and Registrations to the grade P on the student's permanent record. The grade F will remain as given. The choice of grading option may be changed only during the schedule adjustment period for courses in which the student is currently registered.

**Incompletes.** The mark of "I" is an exceptional mark that is an instructor option. It is given only to a student whose work in a course has been qualitatively satisfactory, when, because of illness or other circumstances beyond the student's control, he or she has been unable to complete some small portion of the work of the course. In no case will the mark "I" be recorded for a student who has not completed the major portion of the work of the course.

1. The student will remove the "I" by completing work assigned by the instructor. It is the student's responsibility to request arrangements for completion of the work and to request that an Incomplete Contract be written. These arrangements must be documented in the Incomplete Contract, and signed by both the student and the instructor.
2. The Incomplete Contract must be submitted to the dean of the college offering the course, and a copy forwarded to the Records Office, within six weeks after the grade submittal deadline or the "I" will convert to a grade of "F." A copy of the signed agreement should also be filed in the department office.
3. All course work required by an Incomplete Contract must be completed by the time stipulated in the contract, usually the end of the next semester; but in any event, no later than one year. If the instructor is unavailable, the department chair will, upon request of the student, make the arrangements for the student to complete the course requirements. If the remaining work for the course as defined in the contract is not completed on schedule, the "I" will be converted to the grade indicated on the contract.
4. Exceptions to the time period cited above may be granted by the student's dean upon the written request of the student if circumstances are deemed to warrant further delay. The new completion date must again be specified and agreed to in writing by the student and the dean.
5. It is the responsibility of the instructor or the department chair concerned to return the appropriate supplementary grade report, both to the appropriate dean and to the Office of Records and Registrations, upon completion of the conditions of the Incomplete Contract.
6. The "I" cannot be removed through re-registration for the course or through the technique of "credit by examination." In any event this mark shall not be used in any computation of quality points or cumulative averages.

### Record Notations

In addition to the above marks, there are provisions for other record or transcript notations that may be used based on university policy and individual circumstances.

**Repeat:** Beginning fall 1973 the highest grade received in the repeated course is used to calculate the GPA. A student may repeat any course; however no student may be registered for a course more than three times.

If a student repeats a course in which he or she has already earned a total of A, B, C, D, P, or S, the subsequent attempt shall not increase the total hours earned toward the degree. Only the highest mark will be used in computation of the student's cumulative average. Under unusual circumstances, the student's dean may grant an exception to this policy.

**Duplicate course:** Used to indicate two courses with the same course content. The second course is counted in cumulative totals unless an exception is made by the student's dean.

**Non-applicable (Non-Appl):** In all cases of transfer from one college to another at the University of Maryland at College Park, the dean of the receiving college, with the approval of the student, shall indicate which courses, if any, in the student's previous academic program are not applicable to his or her new program, and shall notify the Office of Records and Registration of the adjustments that are to be made in determining the student's progress toward a degree. Deletions may occur both in credits attempted and correspondingly in credits earned. This evaluation shall be made upon the student's initial entry into a new program, not thereafter. If a student transfers from one program to another, his or her record evaluation shall be made by the dean in the same way as if he or she were transferring colleges. If the student subsequently transfers to a third college, the dean of the third college shall make a similar initial adjustment; courses marked "nonapplicable" by the second dean may become applicable in the third program.

**Excluded Credit (Excl Crd):** Excluded credit is noted when Academic Clemency has been granted.

### Academic Clemency Policy

Undergraduate students returning to the University of Maryland at College Park after a separation of a minimum of five calendar years may petition the appropriate dean to have a number of previously earned grades and credits removed from the calculation of their cumulative grade point average. Up to sixteen credits and corresponding grades from courses previously completed at the University of Maryland at College Park will be removed from calculation of the grade point average and will not be counted toward graduation requirements. The petition for clemency must be filed in the first semester of return to the campus. Approval is neither automatic nor guaranteed.

### Proficiency Examination Programs

The University of Maryland at College Park offers several opportunities to earn college credit through satisfactory achievement in a variety of examinations for new, continuing and returning students.

Currently, undergraduate students may earn credit through the various proficiency examination programs up to a total of one-half of the credits required for their degree. It is the student's responsibility to consult with the appropriate dean or advisor with regard to applicability of any credit earned by examination to a specific degree program and to determine courses that should not be elected in order to avoid duplication. A student will not receive credit for both passing an examination in a course and completing the same course.

Students with specific questions about the university's policy may contact the Coordinator, Undergraduate Advising Center, 1117 Hornbake Library, 454-2733.

Three proficiency examination programs are recognized for credit by College Park:

1. Advanced Placement Programs (AP). For complete policy and awarded credit information, see Chapter 2 on Admissions.
2. College Level Examination Program (CLEP). This program exists for the purpose of recognizing college level competence achieved outside the college classroom. Two types of CLEP tests are available: General Examinations, which cover the content of a broad field of study; and Subject Examinations, which cover the specific content of a college course. Credit can be earned and will be recognized by College Park for some CLEP General or Subject Examinations, provided satisfactory scores are attained. Credits earned under CLEP are not considered "residence" credit, but are treated as transfer credit.

### Policies and Administration of CLEP Examinations

These tests are administered at CLEP testing centers throughout the country. Written applications must be completed and on file at the testing center selected, usually not later than four working weeks prior to the intended test date. The University of Maryland is a CLEP Test Center (Test Center Code #5814).

The fees for these examinations are listed on the standard CLEP application. To obtain an application or additional information, contact the CLEP Administrator in the Counseling Center, 0106A Shoemaker Building,

454-3126, or write to CLEP, CN 6600, Princeton, NJ 08541-6600.

Students who want to earn credit through CLEP must have their official score reports sent to the Office of Undergraduate Admissions, Mitchell Building, University of Maryland, College Park, MD 20742. (University of Maryland at College Park Score Recipient Code #5814)

A student must matriculate at the University of Maryland at College Park before requesting the posting of CLEP credits. Such posting will not be done until a student has established a transcript, i.e., earned credit through regularly taken courses.

Each institution of the University of Maryland System establishes standards for acceptance of CLEP and AP exemptions and credits. Students must check with the institution to which they will transfer to learn if they will lose, maintain, or gain credit.

The University of Maryland at College Park will award credit for a CLEP examination provided the examination was being accepted for credit on this campus on the date the examination was taken by the student, and was not taken during a student's final thirty credits. The final thirty hours of credit are to be taken in residence, unless prior approval has been granted by the student's dean.

Credit will not be given for both completing a course and passing an examination covering substantially the same material. Furthermore, credit will not be awarded for CLEP examinations if the student has previously completed more advanced courses in the same field.

CLEP examinations posted on transcripts from other institutions will be accepted if the examination has been approved by the University of Maryland at College Park and the scores reported are equal to or greater than those required by this campus. If the transcript from the prior institution does not carry the scores, it will be the responsibility of the student to request the Educational Testing Service to forward a copy of the official report to the Office of Admissions.

#### General Examinations

Examination Title	Minimum Score	Crs. Awd.
Natural Science .....	489	6
Acceptable for general science credit; no specific course.		
Humanities		
Literature Subscore 2 .....	50	3
Acceptable for general English credit; no specific course.		
Social Science/History		
Social Sciences Subscore 1 .....	50	3
Acceptable for general social science credit .....		

#### Subject Examinations

Examination Title (and related course)	Minimum Score	Crs. Awd.
American Government (none) .....	50	3
Analysis and Interpretation of Literature (ENGL 102) .....		
Biology, General (none) .....	49	6
Calculus and Elementary Functions (MATH 140) .....		
Chemistry, General (CHEM 103) .....	50	6
College Algebra (none) .....	48	6
College Algebra - Trigonometry (MATH 115) .....	49	3
College Composition, with essay questions (ENGL 101) and passing essay graded by UMCP Freshman Writing Office .....		
Introductory Macroeconomics (ECON 201) .....	51	3
Introductory Microeconomics (ECON 203) .....	50	3
Introductory Sociology (SOCY 100) .....	50	3
Psychology, General (PSYC 100) .....	51	3

3. Credit by Examination — (Departmental Proficiency Examinations) College Park Departmental Proficiency Examinations, customarily referred to as "credit by examination," are offered in a number of courses, and are comparable to comprehensive final examinations in those courses. These examinations are given at a time mutually agreed upon by the student and the department. Department offices will provide information regarding place and administration, type of examination, and material which might be helpful in preparing for examinations. An undergraduate who

passes a departmental proficiency examination is given credit and quality points toward graduation in the amount regularly allowed in the course, provided such credits do not duplicate credit obtained by some other means (e.g., earned in high school or another college).

Although the mathematics and foreign language departments receive the most applications for credit by examination, most departments will provide examinations for a number of their courses. Initial inquiry as to whether an examination in a specific course is available is best made at the academic department office which offers the course in question. Any student who wishes more information or to apply for an examination should inquire at the Undergraduate Advising Center, Room 1117, Hornbake Library.

#### Policies governing credit by examination are as follows:

1. The applicant must be formally admitted to the University of Maryland at College Park. Posting of credit, however, will be delayed until the student is registered.
2. Departmental Proficiency Examinations may not be taken for courses in which the student has been registered beyond the schedule adjustment period (first ten day of classes).
3. Departmental Proficiency Examinations may not be used to change grades, including incompletes.
4. Application for credit-by-examination is equivalent to registration for a course; however, the following conditions apply:
  - a. A student may cancel the application at any time prior to completion of the examination with no entry on his/her permanent record. (Equivalent to the schedule adjustment period.)
  - b. The instructor makes the results of the examination available to the student prior to formal submission of the grade. Before final submission of the grade, student may elect not to have this grade recorded. In this case, a mark of W is recorded. (Equivalent to the drop period)
  - c. No course may be attempted more than twice.
  - d. The instructor must certify on the report of the examination submitted to the Office of Records and Registrations that copies of the examination questions or identifying information in the case of standardized examinations, and the student's answers have been filed with the chair of the department offering the course.
5. Letter grades earned on examinations to establish credit, if accepted by the student, are entered on the student's transcript and used in computing his/her cumulative grade point average. A student may elect to take an examination in an elective only for credit on a "Pass-Fail" basis. Since January 1989 no college, major, field of concentration, or general education program requirements may be taken under the pass-fail option. Please refer to the Pass-Fail policy under the "Records" section in this chapter.

University of Maryland System (UMS) institution will be posted as transfer credit. For all students who attended the College Park campus prior to fall 1989, courses taken at another campus of the University of Maryland Board of Regents institution (UMBC, UMAB, UMES, UMUC) prior to fall 1989 will be included in the cumulative GPA. Courses taken at any other institution may not be credited toward a degree without advance approval. See #1 above for information.

3. **UMS Concurrent Inter-Campus Institutional Registration Program** College Park undergraduate students participating in the UMS Concurrent Inter-Institutional Registration Program may receive permission from their dean to have coursework count as resident credit. Students participating in this program must be enrolled full-time in a degree program at College Park for the semester in which these courses are taken.
4. **Consortium of Universities of the Washington Metropolitan Area Courses** taken through the Consortium are considered to be resident credit. See above under "Consortium" and see the Schedule of Classes for information.

## REQUIREMENTS FOR RETENTION

Academic retention is based solely on grade point average (GPA). The significance of the cumulative grade point average (cumulative GPA) varies according to the number of credits attempted. A minimum of 120 credits of successfully completed (not I, F, or W) course credits is required for graduation in any degree curriculum.

Semester Academic Honors (Dean's List) will be awarded to a student who completes within any given semester twelve or more credits (excluding courses with grades of P and S) with a semester GPA of 3.500 or higher. This notation will be placed on the individual's permanent record.

Satisfactory Performance applies to those students with a cumulative GPA between 4.000 and 2.000.

1. Students with cumulative GPA of less than 2.000 fall into three categories: Unsatisfactory Performance, Academic Warning and Academic Dismissal. The notations Academic Warning and Academic Dismissal will be placed on the student's permanent record. The cumulative GPA that defines each of the categories varies according to the credit level. Credit level is defined as course with grades of A, B, C, D, F, P, S; transfer credit from other institutions, advanced placements (AP), CLEP, and other similar tests for which credit is given.

Credit Level	Unsatisfactory Performance	Academic Warning	Academic Dismissal
0-13	1.999-1.290	1.289-0.230	0.229-0.000
14-28	1.999-1.780	1.779-1.280	1.279-0.000
29-56	1.999-1.860	1.859-1.630	1.629-0.000
57-74	1.999-1.940	1.939-1.830	1.829-0.000
75-more	—	1.999-1.940	1.939-0.000

2. Computation of GPA. Credits completed with grades of A, B, C, and F, but not P and S, will be used in computation of the semester and cumulative GPA with values of 4.000, 3.000, 2.000, 1.000 and 0.000 respectively. Marks of I, P, S, W, and NGR will not be used in the computation of semester and cumulative GPA.

For students who began their attendance at the University of Maryland at College Park fall 1989 or later, all coursework taken at any University of Maryland System (UMS) institution will be posted as transfer credit. College Park undergraduate students participating in the UMS Concurrent Inter-Institutional Registration Program may receive permission from their dean to have coursework count as resident credit. Students participating in this program must be enrolled full-time in a degree program at the university for the semester in which these courses are taken. For all students who attended the College Park campus prior to fall 1989, courses taken at another campus of the University of Maryland Board of Regents institutions (UMBC, UMAB, UMES, UMUC) prior to fall 1989 will be included in the cumulative GPA.

3. Students with an unsatisfactory performance for any semester will be urged in writing to consult their advisors.
4. Students on academic warning will have this fact noted on their transcripts and will be urged in writing to consult with their advisors prior to the beginning of the next semester. Students who receive an academic warning in any semester will not be allowed either to

## TRANSFER CREDIT

The Records Office posts all transfer credit that would be acceptable to any of the degree programs at the University of Maryland at College Park. The dean of the college in which the student is enrolled determines which transfer credits are applicable to the student's degree program. In general, credit from academic courses taken at institutions of higher education accredited by a regional accrediting association will transfer, provided that the course is completed with at least a grade of C and the course is similar in content and level to work offered at the College Park campus. The title of courses accepted for transfer credit will be noted on the student's record; however, the grade will not. Grades from transferred courses are not included in the UMCP grade point average calculation. See Chapter 2, Admissions, for additional information.

### Courses Taken at Other Institutions While Attending the University of Maryland at College Park

1. **Courses taken at another institution.** Courses taken at another institution may not be credited toward a degree without approval in advance by the dean of the college from which the student expects a degree. The same rule applies to registration in the summer program of another institution. "Permission to Enroll in Another Institution" forms are available in the office of the student's dean. This form must be submitted and approved by the college for any course which will eventually be added to the College Park transcript.
2. **Courses taken at other University of Maryland Institutions.** For students who began their attendance at the University of Maryland at College Park fall 1989 or later, all coursework taken at any

add or drop courses or to register during the semester following the receipt of the academic warning without seeing an advisor.

5. Any student with sixty credits or more attempted and who thereafter received academic warning for two consecutive semesters will be academically dismissed. Students who are academically dismissed will have this action entered on their transcript.
6. No student transferring to the University of Maryland at College Park from outside the University of Maryland will be subject to Academic Dismissal at the end of the first semester as long as the student obtains a cumulative GPA of 0.23 or more. (A student who would otherwise be subject to Academic Dismissal will receive an Academic Warning.) Thereafter, such a student will be subject to the normal standards of academic progress. This provision does not apply to students reinstated or readmitted to College Park. A transfer student is defined as a student who has attended any regularly accredited institution of higher education following graduation from high school and attempted nine or more credits.
7. A student who has been academically dismissed and who is reinstated will be academically dismissed again if minimum academic standard are not met by the end of the first semester after reinstatement. (See Readmission and Reinstatement.)
8. Credits transferred, or earned during prior admissions terminating in academic dismissal or withdrawal and followed by readmission, will be applicable toward meeting credit requirements for a degree.
9. Under unusual circumstances, the Faculty Petition Board may set more rigorous requirements for the semester in which a reinstated student returns, or may allow a lengthened period (not to exceed two semesters) to reach the minimum or set academic standards.
10. Any appeal from the regulations governing academic warning or academic dismissal shall be directed to the Faculty Petition Board which shall be empowered to grant relief in unusual cases if the circumstances warrant such action.
11. A student may repeat any course; however no student may be registered for a course more than three times. If a student repeats a course in which he or she has already earned a mark of A, B, C, D, P, or S, the subsequent attempt shall not increase the total hours earned toward the degree. Only the highest mark will be used in computation of the student's cumulative average. Under unusual circumstances, the student's dean may grant an exception to this policy.

**Dismissal of Delinquent Students.** The university reserves the right to request at any time the withdrawal of a student who cannot or does not maintain the required standard of scholarship, or whose continuance in the university would be detrimental to his or her health, or to the health of others, or whose conduct is not satisfactory to the authorities of the university. Additional information about the dismissal of delinquent students may be found in the Code of Student Conduct, Appendix C.

## GRADUATION AND DEGREE REQUIREMENTS

The University of Maryland at College Park awards the following degrees: Bachelor of Arts, Bachelor of General Studies (no admission to program as of fall 1988), Bachelor of Music, Bachelor of Science, Master of Applied Anthropology, Master of Architecture, Master of Arts, Master of Business Administration, Master of Education, Master of Fine Arts, Master of Library Science, Master of Music, Master of Public Management, Master of Public Policy, Master of Science, Doctor of Education, Doctor of Musical Arts, and Doctor of Philosophy. Students in specified two-year curricula may be awarded certificates.

### Graduation Applications

Each candidate for a degree or certificate must file a formal application with the Office of Records and Registrations. The deadline for application is the end of the schedule adjustment period for the semester in which the student plans to graduate, or at the end of the first week of the second summer session for August degrees.

In all cases, graduation applications must be filed at the beginning of the student's final semester before receiving a degree. If all degree requirements are not completed during the semester in which the graduation application was submitted, it is the responsibility of the student to file a new graduation application with the Office of Records and Registrations at the beginning of a subsequent semester when all degree requirements may be completed. The graduation application fee is a one-time, non-refundable charge. If a subsequent application is filed for the same degree, the fee will not be charged a second time.

### Degree Requirements

The requirements for graduation vary according to the character of work in the different colleges, schools, departments and academic units. It is the responsibility of the colleges, schools, departments and other academic units to establish and publish clearly defined degree requirements. Responsibility for knowing and meeting all degree requirements for graduation in any curriculum rests with the student. Specific degree requirements are listed in this catalog under the college and/or department as appropriate.

Each student should check with the proper academic authorities no later than the close of the junior year to ascertain his or her standing with respect to advancement toward a degree. For this purpose, each student should be sure to retain a copy of the semester grade reports issued by the Office of Records and Registrations at the close of each semester.

- 1) Residency requirement - Final Thirty-Hour Rule
  - a. All candidates for College Park degrees should plan to take their final thirty credits in residence since the advanced work of their major study normally occurs in the last year of the undergraduate program. Included in these thirty semester hours will be a minimum of fifteen semester hours in courses numbered 300 or above, including at least twelve semester hours required in the major field (in curricula requiring such concentrations).
  - b. A student who at the time of graduation will have completed thirty hours in residence at College Park may, under unusual circumstances, be permitted to take a maximum of six of the final thirty credits of record at another institution. In such cases, written permission must be obtained in advance from the dean of the academic unit from which the student expects to receive the degree. Exceptions beyond six credits will be made only under highly unusual circumstances; requests for an exception must be made through the Dean's office to the Office of the Vice President for Academic Affairs.
  - c. For students in the combined three-year, preprofessional programs, the final thirty hours of the ninety-hour program at the University of Maryland at College Park must be taken in residence.
- 2) Enrollment in Majors. A student must be enrolled in the major program from which he or she plans to graduate, when registering for the final fifteen hours of the baccalaureate program. This requirement also applies to the third year of the combined, preprofessional degree programs.
- 3) Credit Requirements. While several undergraduate curricula require more than 120 credits, no baccalaureate curriculum requires fewer than 120. No baccalaureate degree will be awarded in instances in which fewer than 120 credit hours have been earned. It is the responsibility of each student to familiarize himself or herself with the requirements of specific curricula. The student is urged to seek advice on these matters from the departments, colleges, or the Office of Undergraduate Studies.

To earn a baccalaureate degree from the University of Maryland at College Park, a minimum of thirty credits must be taken in residence.

- 4) Grade Point Average  
A minimum 2.00 grade point average is required for graduation in all curricula.

### Second Degrees and Second Majors

- a. **Second Degree Taken Sequentially.** A student who has completed requirements for and has received one baccalaureate degree and who wishes to earn a second baccalaureate degree from College Park must satisfactorily complete the requirements of the second degree and enough additional credits so that the total, including all applicable credits earned at College Park or elsewhere, is at least 150 credits. In no case, however, will a second baccalaureate degree be awarded to a student who has not completed thirty credits in residence at College Park. Approval of the second degree will not be granted when there is extensive overlap between the two programs.
- b. **Second Degree Taken Simultaneously.** A student who wishes to receive simultaneously two baccalaureate degrees from College Park must satisfactorily complete a minimum of 150 credits (180 credits if one of the degrees is in Special Education). The regularly prescribed requirements of both degree programs must be completed. As early as possible and, in any case, no later than one full semester (preferably one year) before the expected date of gradu-



ation, the student must file with the departments or programs involved, as well as with the appropriate deans, formal programs showing the courses to be offered to meet the major, supporting area, college, and general education program requirements. If two colleges are involved in the double degree program, the student must designate which college is responsible for the maintenance of records. Approval of the second degree will not be granted when there is extensive overlap between two programs.

- C. **Second Major.** A student who wishes to complete a second major currently with his or her primary major of record must obtain written permission in advance from the appropriate deans. As early as possible, but in no case later than one full semester before the expected date of graduation, the student must file with the departments or programs involved and with the appropriate deans, formal programs showing the courses to be offered to meet requirements in each of the majors and supporting areas as well as the college and general education program requirements. Approval will not be granted if there is extensive overlap between the two programs. Students enrolled in two majors simultaneously must satisfactorily complete the regularly prescribed requirements for each of the programs. Courses taken for one major may be counted as part of the degree requirements for the other and toward the requirements for the general education requirements as appropriate. If two colleges are involved in the double major program, the student must designate which college is responsible for the maintenance of records.

4. **Grade Point Average.** For seniors a grade point average of at least 3.5 in all liberal courses taken, for juniors a grade point average of at least 3.75 in such courses.
5. **Distribution.** Normally the credit hours presented for Phi Beta Kappa must contain at least nine liberal hours in each of the three areas of humanities, social sciences and natural sciences (including a laboratory science course). Students with more challenging courses and moderately high grade point averages are preferred by the committee to those with higher grade point averages but a narrow range of courses. Minimal qualifications in more than one area may preclude election to Phi Beta Kappa.

#### Recommended criteria include:

1. Regular grades (rather than pass/fail) in (a) mathematics and foreign language courses, and (b) distribution areas in which the number of courses taken is minimal.
2. Some traditional social sciences and humanities courses that require written essays and papers. (Note that internships may be counted as professional courses and not as liberal courses.)
3. Courses in at least two of the required areas to be taken at the College Park campus, especially if courses are transferred from other institutions without chapters of Phi Beta Kappa.

Meeting the above requirements does not guarantee election to Phi Beta Kappa. The judgment of the resident faculty members of Phi Beta Kappa on the quality, depth, and breadth of the student's record is the deciding factor in every case.

Any questions about criteria for election to Phi Beta Kappa (including equivalency examinations in foreign languages) should be directed to the Phi Beta Kappa Office, 2103 Mathematics Building, 454-3303.

#### Awards and Prizes

In addition to the campus honors described above, many colleges, departments, programs, corporations, and individuals sponsor awards and prizes to graduating seniors. The following is a selected list of recently-awarded prizes:

**Milton Abramowitz Memorial Prize In Mathematics.** Awarded annually to a junior or senior student majoring in mathematics who has demonstrated superior competence and promise for future development in the field of mathematics and its applications.

**Agricultural Alumni Award.** Presented to a senior who during his or her college career contributed most toward the advancement of the College of Agriculture.

**Agricultural Engineering Outstanding Senior Award** is presented to a student in Agricultural Engineering on the basis of scholastic performance, participation in ASAE National Student Branch, and other extracurricular activities.

**Alpha Rho Chi Medal.** Awarded annually by the Alpha Rho Chi fraternity for architecture and the allied professions to a graduating student of architecture who has made a distinctive contribution to school life, embodying the ideals of professional service and leadership.

**American Institute of Aeronautics and Astronautics Award.** Free memberships in the institute for one year and cash prizes for the best paper presented at a student branch meeting and for the graduating aeronautical senior with the highest academic standing.

**James R. Anderson Award in Geography.** Awarded at each spring commencement to an outstanding undergraduate student in geography for high academic achievement.

**Appleman-Norton Award In Botany** is presented to a senior major in Botany who is considered worthy on the basis of demonstrated ability and excellence in scholarship.

**Harry C. Byrd Award** is presented to the outstanding senior male who has typified the model student and contributed significantly to student interests and concerns.

**Sally S. Byrd Award** is presented to the outstanding senior female who has typified the model student and who has contributed significantly to student interests and concerns.

**Delta Sigma Pi Scholarship Key.** Awarded to the senior with the highest overall scholarship in the college of Business and Management.

## COMMENCEMENT HONORS

Honors for excellence in scholarship are determined by the highest two percent (*Summa cum Laude*), the next three percent (*Magna cum Laude*), and the following five percent (*cum Laude*) of the GPA of the students of the preceding three commencements of each degree-granting unit. To be eligible for this recognition, at least 60 credits must be earned at the University of Maryland at College Park. These may include transfer grades that have been calculated in the College Park GPA. The computation of the cumulative grade point average does not include grades for courses taken during the last semester of registration before graduation, although the hours earned for that semester will apply toward the 60 hour requirement. No student with a grade point average less than 3.000 will be considered.

### Election to Phi Beta Kappa

Organized in 1776, Phi Beta Kappa is the oldest and most widely respected academic honorary society in the United States. Invitation to membership is based on outstanding scholastic achievement in studies of the liberal arts and sciences. Student members are chosen entirely on the basis of academic excellence; neither extra-curricular leadership nor service to the community is considered. Election is held only once a year, in the spring semester.

The process for election to Phi Beta Kappa involves the annual review in March by a select committee of faculty members representing the humanities, social sciences and natural sciences. The committee reviews transcripts of all juniors and seniors with qualifying grade point averages (irrespective of the graduation month of such a student). Whether a student qualifies for membership in Phi Beta Kappa depends on the quality, depth and breadth of the student's record in liberal education courses. The final decision for election rests with the resident faculty members of Phi Beta Kappa. There is no application procedure for election to Phi Beta Kappa.

Requirements for selection to membership in the campus chapter of Phi Beta Kappa include:

1. **Residence.** At least 60 hours taken at the College Park campus of the University of Maryland.
2. **Liberal Courses.** For seniors, at least 90 hours in liberal courses in the arts and sciences (where "liberal" means academic, rather than professional or technical) at least 45 of which are at the College Park campus. For juniors, at least 75 total hours must be completed, at least 60 of which are liberal courses, of which at least 45 are at the College Park campus.
3. **Required Courses.** One semester of mathematics and two semesters at least at the elementary level of one foreign language. The mathematics requirement must be fulfilled by college credit hours; the foreign language requirement may be fulfilled by a proficiency examination.

**Education Alumni Award.** Presented to the outstanding senior man and senior woman in the College of Education.

**Engineering Alumni Chapter Award** is presented to a senior in the College of Engineering for outstanding scholarship and service to the College of Engineering.

**Eta Kappa Nu Outstanding Senior Award** is presented to a senior in Electrical Engineering for outstanding scholastic achievement and service to the society and department.

**Charles B. Hale Dramatic Awards.** The University Theatre recognizes annually the male and female members of the senior class who have done the most for the advancement of dramatics at the university.

**P. Arne Hansen Memorial Award.** Presented to the Outstanding Departmental Honors Student in Microbiology.

**William Randolph Hearst Foundation Awards.** Categories: general news, features, editorials, investigative reporting, spot news.

**Institute of Electrical and Electronics Engineering Award.** The Washington Section of the Institute of Electrical and Electronics Engineers defrays the expenses of a year's membership as an associate in the institute for the senior doing the most to promote student branch activities.

**Joe Elbert James Memorial Award.** Gold watch annually awarded to a graduating senior in horticulture on basis of scholarship and promise of future achievement.

**Maryland-Delaware-DC Press Association Annual Citation.** Presented to the outstanding senior in journalism.

**Pi Tau Sigma Memorial Award.** Presented to the senior in Mechanical Engineering who has made the most outstanding contribution to the university.

**Public Relations Society of America.** The Maryland Professional Chapter of PRSA presents an annual citation to the outstanding senior majoring in public relations.

**The Shipleys of Maryland Award.** Cash award given to the graduating History major with the best academic record.

**Sigma Alpha Omicron Award.** This award is presented to a senior student majoring in microbiology for high scholarship, character and leadership.

**Sigma Delta Chi Citation.** For Achievement at the University of Maryland.

**Sigma Delta Pi Award.** Presented by the Department of Spanish and Portuguese Languages to the graduating member of Sigma Delta Pi (National Spanish Honor Society) who has rendered the greatest service to the Delta (University of Maryland) Chapter.

**Awards for Excellence in the Study of Spanish.** Presented by the Department of Spanish and Portuguese Languages to the three members of the graduating class who have most distinguished themselves as students of Spanish language and literature.

**James P. Wharton Art Award Fund.** This fund was endowed by the former head of the Art Department, Colonel James P. Wharton. An annual award of \$200.00 is given to a senior for special achievement in Studio Art.

## Athletic Awards

**Atlantic Coast Conference Award.** Plaque awarded each year to a senior in each conference school for excellence in scholarship and athletics.

**Alvin L. Aubinoe Basketball Trophy.** This trophy is given in memory of Alvin L. Aubinoe for the senior who has contributed most to the squad during the time the student was on the squad.

**Alvin L. Aubinoe Track Trophy.** This trophy is given in memory of Alvin L. Aubinoe for the senior who has contributed most to the squad during the time the student was on the squad.

**Louis W. Berger Trophy.** Presented to the outstanding senior baseball player.

**Geary F. Eppley Award.** Offered by Benny and Hotsy Alperstein to the graduating male senior who during his three years of varsity competition, lettered at least once and attained the highest overall scholastic average. Halbert K. Evans Memorial Track Award. This award, given in memory of "Hermie" Evans of the Class of 1940, by his friends, is presented to a graduating member of the track team.

**Charles P. McCormick Trophy.** This trophy is given in memory of Charles P. McCormick to the senior member of the swimming team who has contributed most to swimming during the swimmer's collegiate career.

**TEKE Trophy.** This trophy is offered by the Maryland Chapter of Tau Kappa Epsilon Fraternity to the student who during four years at the university has rendered the greatest service to football.

## Air Force ROTC Awards

**AFROTC Leadership Ribbon.** Presented for outstanding performance in a position of leadership as a cadet officer. Recognizes cadet officers who display leadership ability above and beyond normal expected performance.

**AFROTC Superior Performance Ribbon.** Presented to a cadet for a single or sustained performance of a superior nature. Recognizes achievements which are clearly outstanding.

**AFROTC Veterans of Foreign Wars Award.** Presented to the cadet who is actively engaged in the AFROTC program and possesses outstanding leadership qualities.

**American Defense Preparedness Association Award.** Presented to the outstanding senior cadet who has received no grade in the advanced ROTC courses less than B. is in upper twenty percent of total senior enrollment at the University of Maryland, has participated actively in athletics and/or campus activities, and has demonstrated outstanding leadership qualities.

**American Legion Outstanding Senior Cadet.** This award is sponsored by the American Legion, Department of Maryland, and is presented to the cadet described as the "Outstanding ROTC Senior."

**American Legion ROTC Military Excellence Awards** to a senior (Gold award) and junior (Silver award) in the upper twenty-five percent of his or her AFROTC class and demonstrating outstanding qualities in military leadership, discipline, and character.

**American Legion ROTC Scholastic Award** to an outstanding senior (Gold award) and junior (Silver award) in the upper ten percent of his or her class in the university and have demonstrated high qualities in military leadership.

**Commandant of Cadets Award** to a junior or senior cadet for outstanding performance as a Support Officer. This cadet most successfully exemplifies the "complete staff officer."

**Daughters of the American Revolution Award** to the senior cadet who is in the upper 25 percent of both the ROTC class and the university, and who has demonstrated high qualities of dependability, good character, adherence to military discipline, and leadership ability. Also demonstrates a fundamental and patriotic understanding of the importance of ROTC training.

**Governor's Cup.** Offered each year by His Excellency, the Governor of Maryland, and awarded to the cadet chosen by the Detachment Staff as the Cadet of the Year.

**Reserve Officer Association Awards** to the senior cadet (Gold award) junior cadet (Silver award), and sophomore cadet (Bronze award) demonstrating outstanding academic achievement in AFROTC subject matter and highest officer potential. Ribbons of merit are presented to the top ten percent of the freshman and the sophomore cadets.

**George M. Reiley Award.** Presented to the member of the flight instruction program who shows the highest aptitude for flying, as demonstrated by his or her performance in the program.

**Society of American Military Engineers Award** to recognize twenty junior or senior cadets nationally displaying outstanding scholastic achievement and leadership and majoring in the field of engineering.

## UNIVERSITY OF MARYLAND AT COLLEGE PARK CODE OF ACADEMIC INTEGRITY

### Introduction

The university is an academic community. Its fundamental purpose is the pursuit of knowledge. Like all other communities, the university can function properly only if its members adhere to clearly established goals and values. Essential to the fundamental purpose of the university is the commitment to the principles of truth and academic honesty. Accordingly, The Code of Academic Integrity is designed to ensure that the principle of academic honesty is upheld. While all members of the university share this responsibility, The Code of Academic Integrity is designed so that special responsibility for upholding the principle of academic honesty lies with the students.

### Definitions

1. **ACADEMIC DISHONESTY** Any of the following acts, when committed by a student, shall constitute academic dishonesty:
  - (a) **CHEATING**—intentionally using or attempting to use unauthorized materials, information, or study aids in any academic exercise.
  - (b) **FABRICATION**—Intentional and unauthorized falsification or invention of any information or citation in an academic exercise.
  - (c) **FACILITATING ACADEMIC DISHONESTY**—Intentionally or knowingly helping or attempting to help another to violate any provision of this code.
  - (d) **PLAGIARISM**—intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise.

### Responsibility to Report Academic Dishonesty

2. Academic dishonesty is a corrosive force in the academic life of a university. It jeopardizes the quality of education and depreciates the genuine achievements of others. It is, without reservation, a responsibility of all members of the campus community to actively deter it. Apathy or acquiescence in the presence of academic dishonesty is not a neutral act. Histories of institutions demonstrate that a laissez-faire response will reinforce, perpetuate, and enlarge the scope of such misconduct. Institutional reputations for academic dishonesty are regrettable aspects of modern education. These reputations become self-fulfilling and grow, unless vigorously challenged by students and faculty alike.

All members of the university community—students, faculty, and staff—share the responsibility and authority to challenge and make known acts of apparent academic dishonesty. Faculty must undertake a threshold responsibility for such traditional safeguards as examination security and proctoring.

### Honor Pledge

3. All applicants for admission to undergraduate or graduate programs at the University of Maryland College Park, as well as all students registering for courses, will be expected to sign an Honor Pledge as a condition of admission and at each registration. The wording of the pledge will be recommended by the **Student Honor Council**, for approval by the Campus Senate.

### Procedures: Academic Dishonesty

4. Any member of the university community who has witnessed an apparent act of academic dishonesty, or has information that reasonably leads to the conclusion that such an act has occurred or has been attempted, has the responsibility to inform the **Office of Judicial Programs** promptly. The **Office of Judicial Programs** will then send a written report of the allegation to the **Student Honor Council**, the accused student, and the instructor teaching the course.
5. Upon receipt of a report of academic dishonesty, the **Student Honor Council** will assign the matter to three of its members for preliminary inquiry. Members of the **Student Honor Council**

when acting in this capacity shall be designated **Review Officers**. In the event the report pertains to the conduct of a graduate student, then at least two **Review Officers** will be graduate students.

6. The **Review Officers** shall conduct a preliminary inquiry into the facts of the case in order to determine if there is reasonable cause to believe that an act of academic dishonesty has occurred, or has been attempted.
7. University administrators and faculty members are expected to provide reasonable assistance to the **Review Officers**, and to permit access to pertinent student papers or examinations, as determined by the Vice President for Academic Affairs. The **Review Officers** shall be advised by the Director of Judicial Programs.
8. If, after consultation with the Director of Judicial Programs:
  - (a) a majority of **Review Officers** determine that an act of academic dishonesty did not occur, or was not attempted, the council will inform the student and the course instructor of its finding; or
  - (b) if a majority of **Review Officers** determine that there is reasonable cause to believe that an act of academic dishonesty did occur, or was attempted, they will forward a written referral containing a statement of facts and their rationale to the **Student Honor Council**.
9. Upon receipt of a written referral from the **Review Officers**, the **Student Honor Council** shall:
  - (a) convene an **Honor Board** to resolve the matter through an **Honor Review**. The **Board** will be selected in the manner described in Paragraph 13, below.
  - (b) Appoint one of the **Review Officers** or the Campus Advocate to serve as the **Presenter** of the case. The responsibilities of the **Presenter** are more fully described in Paragraph 11, below.
10. The meetings and deliberations of the **Review Officers** and of the **Student Honor Council** shall be privileged and confidential.
11. The principal responsibilities of the **Presenter** are:
  - (a) to prepare a formal **Charge of Academic Dishonesty**, including the identity of the complaining party, and deliver it to the student and the **Honor Board**. The student will be deemed to have received such notice on the date of personal delivery, or if certified mail is used, on the date of delivery at the most recent address provided to the university by the student;
  - (b) to inform the complaining party of the actions being taken;
  - (c) to present the evidence and analysis upon which the **Charge** is based to the **Honor Board** during the **Honor Review**;
  - (d) to perform such other duties as may be requested by the **Student Honor Council** or the **Honor Board**.
12. The **Charge of Academic Dishonesty** serves to give a student a reasonable understanding of the act and circumstances to be considered by the **Honor Board**, thereby placing the student in a position to contribute in a meaningful way to the inquiry. It also serves to provide initial focus to that inquiry. It is not, however, a technical or legal document, and is not analogous to an indictment or other form of process. The charge may be modified as the discussion proceeds, as long as the accused student is accorded a reasonable opportunity to prepare a response.

### Procedures: Resolution by an Honor Review

13. An Honor Review is conducted by an **Honor Board**. The **Board** is convened by the **Student Honor Council** acting for the Vice President for Academic Affairs. It must consist of six persons, five of whom will be voting members. Determinations of the **Honor Board** will be by a majority vote (three votes or more). **Honor Boards** are selected as follows:
  - (a) three students selected by the **Student Honor Council** from among its members. In the event the student accused of academic dishonesty is a graduate student, then at least two of the student members shall be graduate students. No person who served as a **Review Officer** may serve on a factually related **Honor Board**.
  - (b) Two faculty members selected in accordance with procedures established by the Vice President for Academic Affairs. In the event the student accused of academic dishonesty is a graduate student, then at least one of the persons selected shall be a regular member of the Graduate Faculty.
  - (c) The **Honor Board** shall have one non-voting member, who shall serve as the **Presiding Officer**. The **Presiding Officer**

may be a student, faculty, or staff member of the university. The Presiding Officer will be selected by the Director of Judicial Programs.

14. If the Vice President for Academic Affairs determines that the **Student Honor Council** or a **Student Honor Board** cannot be convened within a reasonable period of time after an accusation is made, the Vice President or a designee may review the case. If there is reasonable cause to believe that an act of academic dishonesty has occurred or has been attempted, the Vice President or designee will convene an ad hoc **Honor Board** by selecting and appointing two students and one faculty/staff member. Whenever possible, student members of ad hoc honor boards shall be members of the **Student Honor Council**. A non-voting presiding officer shall be appointed by the Director of Judicial Programs. If **Review Officers** cannot be appointed in accordance with Part Five of this Code, the Campus Advocate or another person designated by the Vice President for Academic Affairs will serve in that capacity.
15. The purpose of an Honor Review is to explore and investigate the incident giving rise to the appearance of academic dishonesty, to reach an informed conclusion as to whether or not academic dishonesty occurred, and to make a recommendation to the **Dean**.<sup>1</sup> In keeping with the ultimate premise and justification of academic life, the duty of all persons at an Honor Review is to assist in a thorough and honest exposition of all related facts.

The basic tenets of scholarship—full and willing disclosure, accuracy of statement, and intellectual integrity in hypothesis, in argument and in conclusion—must always take precedence over the temptation to gain a particular resolution of the case. An Honor Review is not in the character of a criminal or civil legal proceeding. It is not modeled on these adversarial systems; nor does it serve the same social functions. It is not a court or tribunal. Rather, it is an academic process unique to the community of scholars that comprise a university.

16. The role of the **Presiding Officer** is to exercise impartial control over the Honor Review in order to achieve an equitable, orderly, timely and efficient process. The **Presiding Officer** is authorized to make all decisions and rulings as are necessary and proper to achieve that end, including such decisions and rulings as pertain to scheduling and to the admissibility of evidence. If in the judgment of the **Presiding Officer** there is reasonable cause to question the impartiality of a board member, the **Presiding Officer** will so inform the Honor Council, which will reconstitute the board.
17. The **Presiding Officer** will select the date, time and place for the Honor Review, and notify the student in writing a minimum of ten (10) days prior to the review.
18. The sequence of an Honor Review is necessarily controlled by the nature of the incident to be investigated and the character of the information to be examined. It thus lies within the judgment of the **Presiding Officer** to fashion the most reasonable approach. The following steps, however, have been found to be efficient, and are generally recommended:
- The **Presenter**, and then the student, summarize the matter before the **Honor Board**, including any relevant information or arguments.
  - The **Presenter**, and then the student, present and question persons having knowledge of the incident, and offer documents or other materials bearing on the case. The **Presenter**, the student, and all members of the **Honor Board** may question any person giving testimony.
  - The members of the **Honor Board** may ask the **Presenter** or the student any relevant questions. The members may also request any additional material or the appearance of other persons they deem appropriate.
  - The **Presenter**, and then the student, should make brief closing statements.
  - The **Honor Board** meets privately to discuss the case, and reaches a finding by a majority vote.
  - The **Honor Board** will not conclude that a student has attempted or engaged in an act of academic dishonesty unless,

after considering all the information before it, a majority of members believe that such a conclusion is supported by clear and convincing evidence. If this is not the case, the **Honor Board** will dismiss the charge of academic dishonesty in favor of the student with a finding that an attempt or act of academic dishonesty "did not occur", or that it was "not proven", whichever more accurately describes the result of its investigation. The student would then be notified in writing of the decision to dismiss the charge.

- If the **Honor Board** finds the student has engaged in an act of academic dishonesty, both the **Presenter** and the student may recommend an appropriate penalty. Pertinent documents and other material may be offered. The **Honor Board** then meets privately to formulate a Recommendation. The recommendation of the **Honor Board** will be by a majority vote of its members.
- The **Presiding Officer** will provide the appropriate Dean with a written report of the **Honor Board's** findings and recommendations.

19. The **Presiding Officer** will attempt to ensure the following rules and points of order are observed:

- The student may be assisted by an adviser, who may be an attorney. The role of an adviser will be limited to:
  - Making brief opening and closing statements, as well as comments on an appropriate sanction.
  - Suggesting relevant questions which the **Presiding Officer** may direct to a witness.
  - Providing confidential advice to the student.

Even if accompanied by an adviser, the student must take an active and constructive role in the Honor Review. In particular, the student must fully cooperate with the **Honor Board** and respond to its inquiries without undue intrusion or comment by an adviser.

In consideration of the limited role of an adviser and of the compelling interest of the university to expeditiously conclude the matter, the work of an **Honor Board** will not, as a general practice, be delayed due to the unavailability of an adviser.

- A tape recording of the Honor Review will be maintained.
- Presence at an Honor Review lies within the judgment of the **Presiding Officer**. An Honor Review is a confidential investigation. It requires a deliberative and candid atmosphere, free from distraction. Accordingly, it is not open to the public or other "interested" persons. However, at the student's request, the **Presiding Officer** will permit a student's parents or spouse to observe and may permit a limited number of additional observers. The **Presiding Officer** may cause to be removed from the Honor Review any person, including the student or an adviser, who disrupts or impedes the investigation, or who fails to adhere to the rulings of the **Presiding Officer**. The **Presiding Officer** may direct that persons, other than the student and the **Presenter**, who are to be called upon to provide information, be excluded from the Honor Review except for that purpose. The members of the **Honor Board** may conduct private deliberations at such times and places as they deem proper.
- It is the responsibility of the person desiring the presence of a witness before an **Honor Board** to ensure that the witness appears. If necessary, a subpoena may be requested, in accordance with Part 32 (b) of the Code of Student Conduct. Because experience has demonstrated that the actual appearance of an individual is of greater value than a written statement, the latter is discouraged and should not be used unless the individual cannot or reasonably should not be expected to appear. Any written statement must be dated, signed by the person making it, and witnessed by a university employee. The work of an **Honor Board** will not, as a general practice, be delayed due to the unavailability of a witness.
- An Honor Review is not a trial. Formal rules of evidence commonly associated with a civil or criminal trial may be counterproductive in an academic investigatory proceeding.

and shall not be applied. The **Presiding Officer** will accept for consideration all matters which reasonable persons would accept as having probative value in the conduct of their affairs. Unduly repetitious, irrelevant, or personally abusive material should be excluded.

20. If the **Honor Board** finds that an attempt or act of academic dishonesty did occur, it shall recommend an appropriate sanction. The normal sanction shall be a grade of "XF" in the course, but the **Honor Board** may recommend a lesser or more severe sanction. Generally, acts involving advance planning, falsification of papers, collaboration with others, or some actual or potential harm to other students will merit a severe sanction, i.e., suspension or expulsion, even for a first offense. An attempt to commit an act shall be punished to the same extent as the consummated act.
21. The finding of the **Honor Board** will be final and not subject to review. The **Board's** sanction recommendation is advisory to the Dean. If the Dean modifies the Honor Board's recommendation, the Dean will provide written reasons to the **Honor Board**.

## Procedures: Action by the Dean, Instructor, Vice President, President

22. If the **Honor Board** finds that an attempt or act of academic dishonesty did occur, then the Dean will provide the student a copy of the **Board's** findings and recommendations, by personal delivery or certified mail. The student may submit written appeal to the Dean concerning the **Honor Board's** recommendation within ten (10) days after the student receives the **Board's** findings and recommendations. The student will be deemed to have received such findings and recommendations on the date of personal delivery, or if certified mail is used, on the date of delivery at the last address provided to the university by the student.
23. If the Dean awards the student a grade, including the grade of "XF", or fashions an academic requirement, the decision constitutes the final and conclusive action of the university. If the Dean determines to suspend the student, then this will not be implemented until reviewed by the Vice President for Student Affairs (or designee). If the Dean determines to expel the student, then this will not be implemented until reviewed by the President (or designee). If the Dean determines to take an action not otherwise described above (e.g. a community service assignment), then this will not be implemented until reviewed by the Director of Judicial Programs. In each instance, the review shall be limited to ensuring the sanction is not grossly disproportionate to the findings of the **Honor Board**.

## The Grade of "XF"

24. The grade of "XF" is intended to denote a failure to accept and exhibit the fundamental value of academic honesty. The grade "XF" shall be recorded on the student's transcript with the notation "failure due to academic dishonesty." The grade "XF" shall be treated in the same way as an "F" for the purposes of Grade Point Average, course repeatability, and determination of academic standing.
25. No student with an "XF" on the student's transcript shall be permitted to represent the university in any extracurricular activity, or run for or hold office in any student organization which is allowed to use university facilities, or which receives university funds.
26. A student may file a written petition to the **Student Honor Council** to have the grade of "XF" removed and permanently replaced with the grade of "F". The decision to remove the grade of "XF" and replace it with an "F" shall rest in the discretion and judgment of a majority of a quorum of the Council, provided that:
  - (a) at the time the petition is received, at least twelve months shall have elapsed since the grade of "XF" was imposed; and,
  - (b) at the time the petition is received, the student shall have successfully completed a non-credit seminar on academic integrity, as administered by the **Office of Judicial Programs**; or, for the person no longer enrolled at the university, an equivalent activity as determined by the **Office of Judicial Programs**, and,

(c) the **Office of Judicial Programs** certifies that to the best of its knowledge the student has not been found responsible for any other act of academic dishonesty or similar disciplinary offense at the University of Maryland or another institution.

27. Prior to deciding a petition, the Honor Council will review the record of the case and consult with the Director of Judicial Programs. Generally, the grade of "XF" ought not to be removed if awarded for an act of academic dishonesty requiring significant premeditation. If the "XF" grade is removed, records of the incident may be voided in accordance with Parts 47 and 48 of the Code of Student Conduct. The decision of the Honor Council shall not be subject to subsequent Honor Council review for four years, unless the Honor Council specifies an earlier date on which the petition may be reconsidered. Honor Council determinations pertaining to the removal of the "XF" grade penalty may be appealed to the Vice President for Academic Affairs. If the Vice President removes the grade of "XF" from the student's transcript, the Vice President shall provide written reasons to the Honor Council.

## The Student Honor Council

28. There shall be a **Student Honor Council**. The Honor Council is composed of twenty-five (25) full-time students, normally appointed in the spring for the following academic year, and who may each be reappointed for additional one year terms.
29. The members of the Honor Council are appointed in the following manner:
  - (a) The Deans of the Colleges of Agriculture; Arts and Humanities; Behavioral and Social Sciences; Business and Management; Computer, Mathematical and Physical Sciences; Education; Engineering; Human Ecology; Journalism; Life Sciences; Health and Human Performance; the Dean of the School of Architecture; and the Dean for Undergraduate Studies will each appoint one undergraduate student.
  - (b) The Dean of the Graduate School will appoint seven graduate students.
  - (c) A committee consisting of the Vice President for Academic Affairs, the Vice President for Student Affairs, the Chair of the Graduate Student Association, and the President of the Student Government Association will appoint the remaining members.
30. A member must be in high academic standing (a cumulative G.P.A. of at least 3.0) at the university and have no history of disciplinary, academic, or criminal misconduct.
31. All council members are subject to the training and conduct requirements of Parts 24 and 25 of the Code of Student Conduct.
32. The **Student Honor Council** has the following responsibilities and authority:
  - (a) To develop bylaws subject to approval by the university for legal sufficiency and consistency with the requirements of this Code, and the Code of Student Conduct.
  - (b) To designate from its members students to serve as **Review Officers, Presenters**, and members of **Honor Boards** as specified in this Code. Appointment to these responsibilities will generally rotate in accordance with the bylaws of the Honor Council.
  - (c) To consider petitions for the removal of the grade of "XF" from university records in accordance with Part 26 of this Code.
  - (d) To receive complaints or reports of academic dishonesty from any source.
  - (e) To assist in the design and teaching of the non-credit seminar on academic integrity and moral development, as determined by the Director of Judicial Programs.
  - (f) To advise and consult with faculty and administrative officers on matters pertaining to academic integrity at the university.

## 52 Registration, Records, and Academic Regulations

- (g) To issue an annual report to the Campus Senate on academic integrity standards, policies, and procedures, including recommendations for appropriate changes.
33. The campus administration shall provide an appropriate facility, reserved for the primary use of the Honor Council, and suitable for the conduct of hearings. Clerical and secretarial assistance will also be provided.

### Future Self Governance

34. Insofar as academic dishonesty is most immediately injurious to the student body, and because the student body is in a unique position to challenge and deter it, it is the intent of the university that ultimately this Code will evolve into one the provisions of which are marked by complete student administration. The Campus Senate shall review the operation of this Code during the 1992-93 academic year based in part on the annual reports of the **Student Honor Council** for the first three years of its operation. Consideration at that time should be given to introducing additional enforcement responsibilities and privileges characteristic of traditional honor systems at sister institutions, including the provision that only student members of **Honor Boards** may vote. It is expected that faculty participation on the **Honor Boards** will continue, since the faculty has an important interest in academic integrity, and since faculty members will have insights that should be considered in the resolution of individual cases.

### TERMS

**AD HOC HONOR BOARD:** board consisting of two students and one faculty member appointed by the Vice President for Academic Affairs, and a **Presiding Officer** appointed by the Director of Judicial Programs. [Part 14].

**ACADEMIC DISHONESTY:** See Part 1 of this Code.

**CHARGE OF ACADEMIC DISHONESTY:** a formal description of the case being considered by the **Honor Board**. [Part 12].

**HONOR BOARD:** body appointed by the **Student Honor Council** to hear and resolve a case of academic dishonesty. The board consists of five voting members (three student members of the Honor Council and two faculty members). [Part 13].

**HONOR REVIEW:** the process leading to resolution of an academic dishonesty case. The process is conducted by an **Honor Board**. [Parts 18-21].

**PRESENTER:** officer responsible for preparing the charge of academic dishonesty and presenting the case before the **Honor Board**. The presenter is appointed by the **Honor Board** from among the **Review Officers**, or is the Campus Advocate. [Part 11].

**PRESIDING OFFICER:** individual on the **Honor Board** responsible for directing proceedings during the Honor Review. The presiding officer is a non-voting member of the Honor Board selected by the Director of Judicial Programs. [Part 16].

**QUORUM:** two-thirds of the members of the **Student Honor Council**.

**REVIEW OFFICERS:** three members of the **Student Honor Council** assigned to make a preliminary inquiry into an allegation of academic dishonesty. [Part 5].

**STUDENT HONOR COUNCIL:** body of 25 students appointed by the various Deans and Vice Presidents, as well as by the President of the Student Government Association and the Chair of the Graduate Student Association.

Students accused of academic dishonesty should request a copy of the university document "Preparing for an Honor Board Hearing." Contact the **Office of Judicial Programs** at 454-2927. **TO REPORT ACADEMIC DISHONESTY, DIAL 454-4746 AND ASK FOR THE "CAMPUS ADVOCATE."**

'As used throughout this document, the term "Dean" refers to the Dean of the College in which the alleged academic dishonesty occurred, or, if the accused student is a graduate student, the Dean of the Graduate School.

## CHAPTER 6

# UNIVERSITY STUDIES PROGRAM

## GENERAL EDUCATION REQUIREMENTS

Dean for Undergraduate Studies: Dr. Kathryn Mohrman  
1115 Hornbake Library, 454-6231

### The Purpose of General Education

To fulfill the requirements for a baccalaureate degree at the University of Maryland at College Park, students must complete both a major course of study and a set of campus-wide general education requirements. These requirements are intended to expose students to broad areas of historic and contemporary human thought and experience. General education permits a graduating student to make the claim that he or she is truly an "educated" person.

In a world of rapid economic, social, and technological change, the importance of a broadly based education remains paramount. Important societal questions and problems demand answers based on the broad perspective afforded by general education. Participation in a democratic society requires more than the core training provided by the major field of study. It is general education which makes the university more than merely a job-training institution. General education requirements ensure that a wide range of abilities and knowledge is developed, and that students have the intellectual integration and awareness which will prepare them for the developments and changes they will experience in their personal, social, political, and professional lives.

At the University of Maryland at College Park, the general education program has three major components:

### Fundamental Studies

These courses are intended to establish the student's ability to participate in the discourse of the university through demonstrated mastery of written English and mathematics. These requirements ensure that every student will have the tools necessary for success in higher education, and in the world beyond.

### Distributive Studies

These courses cover the broad areas of knowledge with which each student should be familiar. They serve as an introduction to the different kinds of knowledge and nature of scholarship in the humanities, physical and life sciences, mathematics, and social sciences. Students generally take distributive courses in the first two years of their coursework.

### Advanced Studies

These courses continue the broadening experience of the Distributive Studies courses, with the opportunity to cultivate higher-level critical thinking skills in the analysis of problems. They provide reflection upon contemporary problems in areas outside majors. Students take the advanced studies courses in their junior and senior years.

The general education requirements represent a third of the total academic work required for graduation and are designed to be spread throughout the student's four years of baccalaureate study.

### Statement on Applicability of The New CORE Program and The USP Program

At the College Park campus, the Campus Senate and the Board of Regents have recently approved a new general education program. This program, called Core Liberal Arts and Sciences Studies (CORE), must be completed by all students entering in May 1990 and thereafter with eight (8) or fewer credits from this or any other college. Students who enter and have completed nine (9) or more credits before May 1990 from this or any other college will complete their general education requirements under the University Studies Program (USP). They may, however, choose the new CORE program if they so desire. Each program is outlined below and lists of approved courses for each are provided.

### Statement on Statute of Limitation for GEP and GUR Programs

Undergraduate students returning or transferring to the College Park campus after August 1987 will no longer have the option of completing general education requirements under the older General Education Program (GEP) or the General University Requirements (GUR).

Thereafter, following any substantive change in general education requirements, undergraduate students returning or transferring to College Park after a separation of five continuous years must follow the requirements in effect at the time of re-entry. Exceptions may be granted to those students who at the time of separation had completed 60% of general education requirements then in effect.

Students from Maryland public community colleges shall be treated as if registration dates were concurrent with enrollment at the University of Maryland at College Park. Other exceptions to this policy may be appealed to the Dean of Undergraduate Studies.

## PROGRAM DESCRIPTIONS

### The CORE Liberal Arts and Science Studies Program (CORE)

This program must be completed by all students entering in May 1990 and thereafter with eight (8) or fewer credits from this or any other college. A course taken to satisfy college, major, and/or supporting area requirements may also be used to satisfy CORE requirements if that course appears on the list of approved course for this program. Courses taken to satisfy CORE requirements may not be taken on a Pass-Fail basis.

## 54 The University Studies Program

### Fundamental Studies (CORE)

Nine (9) credits required. List of approved CORE courses follows CORE program outline.

1. Freshman composition — 3 credits  
Exemptions: a. students with SAT verbal score 600 or above  
b. students with AP English score of 4 or 5
2. Advanced Writing — 3 credits (taken after completion of 56 credit hours)  
Exemptions: a. students with an A in ENGL 101 (NOT ENGL 101A or ENGL 101X), except for students majoring in Engineering  
(Note: no exemption granted for achievement on SAT verbal exam.)
3. Mathematics — 3 credits  
Exemptions: a. students with SAT math score 600 or above  
b. students with College Board Achievement Test in Mathematics, Level I or II, score of 600 or above  
c. students with AP score of 3 or above in Calculus AB or BC  
d. students with any CLEP Subject Examination in Mathematics score 60 or above.

### Distributive Studies (CORE)

Twenty-eight (28) credits required. List of approved CORE courses approved as of February 15, 1990 follows CORE program outline. This is not a complete list.

Humanities and the Arts — 9 credits, 3 courses  
One literature  
One history and/or theory of arts  
One additional humanities and arts

Mathematics and the Sciences — 10 credits, 3 courses  
No more than two courses from A or B, no more than one course from C. One must include or be accompanied by a laboratory.  
A. Physical Science  
B. Life Science  
C. Mathematics or formal reasoning

Social Science — 9 credits, 3 courses  
One social or political history  
Two behavioral and social science

### Advanced Studies (CORE)

Six (6) credits required. List of approved courses will be available early in 1991. See your undergraduate advisor.  
One course in Analysis of Social and Ethical Problems  
One of following options:  
a second course in Analysis of Social and Ethical Problems  
a course in Development of Knowledge  
an approved Capstone Course

### Diversity (CORE)

One (1) course required. List of approved courses will be available mid-summer, 1990. See your undergraduate advisor.

Focus must be on (a) the history, status, treatment, or accomplishment of women or minority groups and subcultures, or (b) non-Western culture. Course may but need not be drawn from either Distributive or Advanced Studies; it may be satisfied with any major, supporting, or elective course from the approved list.

### Approved Course Lists for Core Program

**Note:** Honors courses are under review, but a list of courses approved for the CORE program was not available at the time of publication. Students should consult the Schedule of Classes for a list of the honors courses approved for the CORE program.

### Fundamental Studies (CORE)

- Freshman Composition (CORE) 3 credits, one course:  
ENGL 101—Introduction to Writing  
ENGL 101A—(must be taken if student has TSWE (SAT verbal subtest) score below 330)  
ENGL 101X—(Students for whom English is a second language may register for ENGL 101X instead of ENGL 101. To register for ENGL 101X, a student must present one of the following:  
(1) a score of 550 on the TOEFL, or  
(2) a score of 220 on the Comprehensive English Language Test (CELT) administered at the College Park campus by the Maryland English Institute, or  
(3) successful completion of the Institute's semi-intensive course in English. Based on scores from either the TOEFL or CELT a student might be required to complete a program of English language instruction for non-native speakers through the Maryland English Institute before being allowed to register for ENGL 101X.)

Advanced Writing (CORE) 3 credits, one course, taken after completion of 56 credit hours:  
ENGL 391—Advanced Composition  
ENGL 391X—Advanced Composition (ESL)  
ENGL 392—Advanced Composition (Pre-law)  
ENGL 393—Technical Writing  
ENGL 393X—Technical Writing (ESL)  
ENGL 394—Business Writing  
ENGL 395—Technical Writing (pre-med and health careers)

Mathematics (CORE) 3 credits, one course:  
MATH 110—Elementary Mathematical Models OR  
MATH 115—Precalculus OR  
Any 100 or 200 level Mathematics or statistics course except MATH 210, and MATH 211

### Distributive Studies (CORE)

Humanities and the Arts (CORE) 9 credits, 3 courses:

**CORE Distributive Studies Literature Courses:**  
CHIN 213—Chinese Poetry into English  
CLAS 100—Classical Foundations  
CLAS 270—Survey of Greek Literature  
CLAS 271—Survey of Latin Literature  
CLAS 372—Classical Epic in Translation  
ENGL 201—Western World Literature: Homer to the Renaissance  
ENGL 202—Western World Literature: The Renaissance to the Present  
ENGL 205—Shakespeare  
ENGL 242—Fact and Fiction: Forms of Non-Fictional Prose  
FREN 241—Women Writers of French Expression in Translation  
FREN 242—Black Writers of French Expression in Translation  
FREN 250—Readings in French  
FREN 351—French Literature from the Revolution to the Present  
FREN 352—French Literature from the Middle Ages to the Revolution  
GERM 282—Germanic Mythology  
GERM 285—German Film and Literature  
GERM 349M—Yiddish Literature in Translation: Masterworks of Yiddish Literature  
GERM 383—The Viking Era  
GERM 384—The Age of Chivalry  
GERM 389C—The Ancient Celts  
GERM 389I—Ancient India  
HEBR 223—The Hebrew Bible: Narrative  
HEBR 224—The Hebrew Bible: Poetry and Rhetoric  
ITAL 251—Introduction to Italian Literature  
ITAL 351—Italian Literature from Dante to the Renaissance



ITAL 352—Italian Literature from the Renaissance to the Present  
 SPAN 223—Rhetorical Strategies and Society in Golden Age Texts  
 SPAN 224—Violence and Resistance in the Americas

**CORE Distributive Studies Arts courses:**

AMST 205—Material Aspects of American Life  
 APDS 104—Survey of Design History  
 ARTH 275—African Art  
 ARTH 290—Arts of Asia  
 DANC 200—Introduction to Dance  
 ENGL 245—Film and the Narrative Tradition  
 HSAD 362—Ideas in Design  
 MUSC 140—Music Fundamentals  
 MUSC 210—The Impact of Music on Life  
 WMST 250—Introduction to Women's Studies: Women, Art and Culture

**CORE Distributive Studies additional Humanities courses:**

AMST 201—Introduction to American Studies  
 AMST 203—Popular Culture in America  
 AMST 204—Film and American Culture Studies  
 EDPA 210—Historical and Philosophical Perspectives on Education  
 HIST 110—The Ancient World  
 HIST 112—The Rise of the West: Europe 1500-1789  
 KNES 362—Philosophy of Sport  
 LING 240—Language and Mind  
 PHIL 100—Introduction to Philosophy  
 PHIL 110—Plato's Republic  
 PHIL 140—Contemporary Moral Problems  
 PHIL 150—Self and Identity  
 PHIL 243—Philosophy of Rural Life  
 PHIL 250—Philosophy of Science I  
 PORT 224—Brazilian Culture  
 RUSS 281—Russian Language and 19th Century Russian Culture  
 RUSS 282—Russian Language and Soviet Culture

**Mathematics and the Sciences (CORE) 10 credits, 3 courses:**

Non-Laboratory Courses:  
 CORE Distributive Studies Physical Sciences courses:  
 ASTR 200—Introduction to Astronomy and Astrophysics  
 ASTR 300—Stars and Stellar Systems  
 ASTR 330—Solar System Astronomy  
 ASTR 340—Galaxies and the Universe  
 ASTR 380—Life in the Universe  
 CHEM 121—Chemistry in the Modern World  
 ENES 389A—How Things Work: Technological Literacy for the 1990's  
 ENME 111—Energy and Power Generation  
 GEOL 120—Environmental Geology  
 PHYS 161—General Physics: Mechanics and Particle Dynamics  
 PHYS 171—Introductory Physics: Mechanics

**CORE Distributive Studies Math or Formal Reasoning courses:**

CMSC 150—Introduction to Discrete Structures  
 HSAD 370—Computers, Graphics, and Design  
 MATH 140—Calculus I  
 MATH 141—Calculus II  
 MATH 220—Elementary Calculus I  
 MATH 221—Elementary Calculus II  
 MATH 240—Introduction to Linear Algebra  
 MATH 250—Calculus Honors  
 MATH 251—Calculus II Honors

PHIL 271—Symbolic Logic

**CORE Distributive Studies Life Sciences courses:**

AGRO 105—Soil and the Environment  
 BCHM 361—Origins of Modern Biochemistry

**Laboratory Courses:****CORE Distributive Studies Physical Sciences Laboratory courses:**

ASTR 100 and 110 or 111—Introduction to Astronomy and Astronomy Laboratory OR Observational Astronomy Laboratory  
 CHEM 102—Chemistry of Our Environment  
 CHEM 103—General Chemistry  
 CHEM 105—Principles of General Chemistry I  
 CHEM 113—General Chemistry II  
 CHEM 115—Principles of General Chemistry II  
 CHEM 122—Laboratory Chemistry  
 GEOG 201 and 211—Geography of Environmental Systems and Geography of Environmental Systems Laboratory  
 GEOL 100 and 110—Physical Geology and Physical Geology Laboratory  
 GEOL 101—Physical Geology for Science Students  
 PHYS 117—Introduction to Physics  
 PHYS 121—Fundamentals of Physics I  
 PHYS 122—Fundamentals of Physics II  
 PHYS 142—Principles of Physics I  
 PHYS 262—General Physics: Vibrations  
 PHYS 263—General Physics: Electrodynamics  
 PHYS 272 and 275—Introductory Physics: Waves and Experimental Physics I

**CORE Distributive Studies Math or Formal Reasoning Laboratory courses:**

CMSC 113—Computer Science II

**CORE Distributive Studies Life Sciences Laboratory courses:**

AGRO 101—Introduction to Crop Science  
 AGRO 302—Fundamentals of Soil Science  
 BIOL 105—Principles of Biology  
 CHEM 104—Fundamentals of Organic and Biochemistry  
 MICB 100—Basic Microbiology  
 MICB 200—General Microbiology

**Social Science (CORE) 9 credits, 3 courses:****CORE Distributive Studies Social or Political History Courses:**

HIST 106—The American Jewish Experience  
 HIST 111—The Medieval World  
 HIST 113—Europe Since 1789  
 HIST 126—The Jewish Experience  
 HIST 175—Science and Technology in World History  
 HIST 234—History of Britain to 1485  
 HIST 235—History of Britain 1400/1750  
 HIST 236—History of Britain 1688 to Present  
 HIST 237—Russian Civilization HIST 250 Latin American History I  
 HIST 251—History of Modern Latin America  
 HIST 275—Law and Constitutionalism in American History  
 KNES 293—History of America Sport

**CORE Distributive Studies Behavioral and Social Science courses:**

ANTH 102—Introduction to Anthropology  
 AREC 240—Environment and Human Ecology  
 AREC 250—Elements of Agricultural and Resource Economics  
 ECON 105—Economics of Social Problems

**THE UNIVERSITY STUDIES PROGRAM (USP)**

This program will be completed by all students entering before May 1990 with nine (9) or more credits from this or any other college, unless they choose the new CORE program. A course taken to satisfy college, major, and/or supporting areas requirements may also be used to satisfy USP requirements if that course appears on the list of approved course for this program. Courses taken to satisfy USP requirements may not be taken on a Pass-Fail basis. (Please refer to the Statute of Limitations for information regarding students who may have questions regarding completion of requirements under the GEP and GUR general education programs.)

CORE (general education) replaces USP for students enrolling as of May 1990 with 8 or fewer credits.

ECON 201—Principles of Economics I  
 ECON 203—Principles of Economics II  
 ECON 205—Fundamentals of Economics  
 EDHD 330—Human Development and Societal Institutions  
 GEOG 100—Introduction to Geography  
 GEOG 150—World Cities  
 HESP 120—Introduction to Linguistics  
 LING 200—Introductory Linguistics

This list includes all courses approved by the CORE program committees as of February 15, 1990 as suitable for satisfying requirements of the program. Since all courses approved are not offered every semester, students should consult the Schedule of Classes each semester for the most current list.

### Advanced Studies (CORE) 6 credits, 2 courses:

Analysis of Social and Ethical Problems (CORE): List of approved courses will be available early in 1991. See your undergraduate advisor.

Development of Knowledge (CORE): List of approved courses will be available early in 1991. See your undergraduate advisor.

Capstone Course (CORE): List of approved courses will be available in your department. See your undergraduate advisor.

DIVERSITY (CORE): 3 credits, one course: List of approved courses will be available mid-summer, 1990. See your undergraduate advisor.

### Fundamental Studies (USP)

Nine (9) credits required. List of approved USP courses follows USP program outline.

1. Freshman composition—3 credits  
 Exemptions: a. students with SAT verbal score 600 or above  
 b. students with AP score of 4 or 5
2. Advanced Writing—3 credits (taken after completion of 56 credit hours)  
 Exemptions: a. Students with an A in ENGL 101 (NOT ENGL 101A or ENGL 101X)  
 (Note: Students with SAT verbal score 700 or above will NOT be exempt from Advanced writing requirement.)
3. Mathematics—3 credits  
 Exemptions: a. Students with SAT math score 600 or above  
 b. Students with College Board Achievement Test in Mathematics, Level I or II, score 600 or above  
 c. Students with AP score of 3 or above in Calculus AB or BC  
 d. Students with any CLEP Subject Examination in Mathematics score 60 or above.

### Distributive Studies (USP):

Twenty-four (24) credits required. List of approved courses follow USP program outline.

- Area A: Culture and History 6 credits, 2 courses  
 Area B: Natural Sciences and Mathematics 6 credits, 2 courses, one course must be a laboratory science.  
 Area C: Literature and the Arts 6 credits, 2 courses. Courses must be taken in two different departments.  
 Area D: Social and Behavioral Sciences 6 credits, 2 courses

### Advanced Studies (USP):

Six (6) credits required. List of approved courses follow USP program outline.

- Development of Knowledge—3 credits, 1 course  
 Analysis of Human Problems—3 credits, 1 course

## Course Lists for USP

### Fundamental Studies (USP)

Freshman Composition (USP) 3 credits, one course:

ENGL 101—Introduction to Writing  
 ENGL 101A—(must be taken if student has TSWE (SAT verbal subtest) score below 330)  
 ENGL 101X—(Students for whom English is a second language may register for ENGL 101X instead of ENGL 101. To register for ENGL 101X, a student must present one of the following:

- (1) a score of 550 on the TOEFL, or
- (2) a score of 220 on the Comprehensive English Language Test (CELT) administered at the College Park campus by the Maryland English Institute, or
- (3) successful completion of the Institute's semi-intensive course in English. Based on scores from either the TOEFL or CELT a student might be required to complete a program of English language instruction for non-native speakers through the Maryland English Institute before being allowed to register for ENGL 101X.)

Advanced Writing (USP) 3 credits, one course taken after completion of 56 credit hours:

ENGL 391—Advanced Composition  
 ENGL 391X—Advanced Composition (ESL)  
 ENGL 392—Advanced Composition (Pre-law)  
 ENGL 393—Technical Writing  
 ENGL 393X—Technical Writing (ESL)  
 ENGL 394—Business Writing  
 ENGL 395—Technical Writing (pre-med and health careers)

Mathematics (USP) 3 credits, one course:

MATH 110—Elementary Mathematical Models OR  
 MATH 115—Precalculus OR  
 Any 100 or 200 level mathematics or Statistics course, except MATH 210, and MATH 211

### Distributive Studies (USP)

#### USP Area A: Culture and History, 6 credits, 2 courses:

AASP 100—Introduction to Afro-American Studies  
 AASP 200—African Civilizations  
 AASP 202—Black Culture in the United States  
 AMST 201—Introduction to American Studies I  
 AMST 205—Material Aspects of American Life  
 AMST 207—Contemporary American Cultures  
 ANTH 298A—Chesapeake: An Archaeology of Maryland  
 ANTH 298B—The First Americans  
 CHIN 101—Intensive Elementary Chinese I  
 CHIN 102—Elementary Spoken Chinese  
 CHIN 103—Elementary Written Chinese  
 CHIN 201—Intermediate Spoken Chinese I  
 CHIN 202—Intermediate Written Chinese I  
 CHIN 203—Intermediate Spoken Chinese II  
 CHIN 204—Intermediate Written Chinese II  
 CLAS 170—Greek and Roman Mythology  
 EDPA 210—Historical and Philosophical Perspectives on Education  
 ENGL 260—Introduction to Folklore  
 FMCD 330—Family Patterns  
 FREN 101—Elementary French I  
 FREN 102—Elementary French II  
 FREN 103—Review of Elementary French  
 FREN 121—Accelerated French I  
 FREN 122—Accelerated French II  
 FREN 203—Intermediate French  
 FREN 311—Advanced Comprehension and Expression in French  
 FREN 312—French Conversation: Current Cultural Events  
 FREN 370—Aspects of French Civilization  
 GEOG 150—World Cities  
 GEOG 202—The World in Cultural Perspective  
 GEOG 321—Maryland and Adjacent Areas  
 GEOG 324—Europe  
 GEOG 325—The Soviet Union  
 GEOG 326—Africa  
 GEOG 327—South Asia  
 GEOG 331—Southeast Asia  
 GERM 101—Elementary German I  
 GERM 102—Elementary German II  
 GERM 103—Review of Elementary German

- GERM 104—Intermediate German  
GERM 141—Elementary Yiddish I  
GERM 142—Elementary Yiddish II  
GERM 144—Intermediate Yiddish I  
GERM 145—Intermediate Yiddish II  
GERM 280—German-American Cultural Contrast  
GERM 281—Women in German Literature and Society (in English)  
GERM 282—Germanic Mythology  
GERM 381—German Civilization I  
GERM 382—German Civilization II  
GERM 383—The Viking Era  
GERM 384—The Age of Chivalry  
GERM 389C—Selected Topics in Germanic Area Studies (The Ancient Celts)  
GERM 389I—Selected Topics in Germanic Area Studies (Ancient India)  
GNED 189F—Cultural Literacy in the Electronic Age  
GREK 101—Elementary Greek I  
GREK 102—Elementary Greek II  
GREK 203—Intermediate Greek  
GVPT 240—Political Ideologies  
HEBR 111—Elementary Hebrew I  
HEBR 112—Elementary Hebrew II  
HEBR 211—Intermediate Hebrew I  
HEBR 212—Intermediate Hebrew II  
HEBR 333—Hebrew Civilization  
HEBR 334—Hebrew Civilization  
HIST 101—Great Ideas, Events and Personalities in History  
HIST 110—The Ancient World  
HIST 111—The Medieval World  
HIST 112—The Rise of the West: 1500-1789  
HIST 113—Modern Europe, 1789-Present  
HIST 120—Islamic Civilization  
HIST 122—African Civilization  
HIST 156—History of the United States to 1865  
HIST 170—The Humanities I  
HIST 171—The Humanities II  
HIST 174—Introduction to the History of Science  
HIST 175—Space and Technology in World History: Space/Time/Man/Woman  
HIST 176—Modern Business History  
HIST 210—Women in America: The Colonial Period to 1880  
HIST 211—Women in America Since 1880  
HIST 234—History of Britain to 1485  
HIST 235—History of Britain 1461-1714  
HIST 236—History of Britain 1688-Present  
HIST 237—Russian Civilization  
HIST 250—Latin American History I (to 1810)  
HIST 251—Latin American History II (1810-Present)  
HIST 282—History of the Jewish People I  
HIST 283—History of the Jewish People II  
HIST 284—East Asian Civilization I  
HIST 285—East Asian Civilization II  
HONR 118—Freshman Honors Colloquium, Cultural and Historical  
HONR 318—Honors Seminar, Cultural and Historical  
ITAL 101—Elementary Italian I  
ITAL 102—Elementary Italian II  
ITAL 121—Accelerated Italian I  
ITAL 122—Accelerated Italian II  
ITAL 203—Intermediate Italian  
ITAL 204—Review Grammar and Composition  
ITAL 211—Intermediate Conversation  
ITAL 370—Italian Civilization  
JAPN 101—Elementary Japanese I  
JAPN 102—Elementary Japanese II  
JAPN 201—Intermediate Spoken Japanese I  
JAPN 202—Intermediate Written Japanese I  
JAPN 203—Intermediate Spoken Japanese II  
JAPN 204—Intermediate Written Japanese II  
JAPN 217—Buddhism and Japanese Literature in Translation  
LATN 101—Elementary Latin I  
LATN 102—Elementary Latin II  
LATN 120—Intensive Latin  
LATN 203—Intermediate Latin I  
LATN 204—Intermediate Latin II  
LATN 220—Intermediate Intensive Latin  
PHED 293—History of Sport in America  
PHIL 100—Introduction to Philosophy  
PHIL 110—Plato's Republic  
PHIL 243—Philosophy of Rural Life  
PHIL 250—Philosophy of Science I  
PORT 101—Elementary Portuguese I  
PORT 102—Elementary Portuguese II  
PORT 203—Intermediate Portuguese  
RUSS 101—Elementary Russian I  
RUSS 102—Elementary Russian II  
RUSS 281—Russian Culture  
RUSS 282—Russian Language and Soviet Culture  
SPAN 101—Elementary Spanish I  
SPAN 102—Elementary Spanish II  
SPAN 103—Review of Elementary Spanish  
SPAN 203—Intermediate Spanish  
SPAN 204—Review of Oral and Written Spanish  
SPAN 205—Intermediate Conversation  
SPAN 311—Advanced Conversation I  
SPAN 312—Advanced Conversation II  
SPAN 325—Spanish Civilization I  
SPAN 326—Spanish Civilization II  
SPAN 346—Latin American Civilization I  
SPAN 347—Latin American Civilization II  
TEXT 345—History of Costume I  
TEXT 347—History of Costume II  
TEXT 363—History of Textiles  
THET 310—The American Theatre

**USP Area B: Natural Sciences and Mathematics, 6 credits, 2 courses:**

**USP Lab Sciences:**

- AGRO 302—General Soils  
ASTR 100 and 110 or 111—Introduction to Astronomy and Astronomy Laboratory  
BIOL 101 and 102—Organization and Interrelationships in the Biological World, and Laboratory in Biology.  
BIOL 105—Principles of Biology I  
BIOL 106—Principles of Biology II  
BOTN 100—General Botany for Non-science Students  
CHEM 102—Chemistry of Man's Environment  
CHEM 103—General Chemistry I  
CHEM 104—Fundamentals of Organic and Biochemistry  
CHEM 105—Principles of General Chemistry I  
CHEM 111—Chemistry in Modern Life  
CHEM 113—General Chemistry II  
CHEM 115—Principles of General Chemistry II  
ENTM 205—Principles of Entomology  
GEOG 170 and 171—Maps and Map Use, and Maps and Map Use Laboratory  
GEOG 201 and 211—The Geography of Environmental Systems and The Geography of Environmental Systems Laboratory  
GEOL 100 and 110—Physical Geology and Physical Geology Laboratory  
GEOL 101—Physical Geology for Science Students  
MICB 100—Basic Microbiology  
MICB 200—General Microbiology  
PHED 360—Physiology of Exercise  
PHYS 102 and 103—Physics of Music and Laboratory  
PHYS 106 and 107—Light Perception, Photography and Visual Phenomena and Light Perception, Photography and Visual Phenomena Laboratory  
PHYS 114—Energy and the Environment  
PHYS 117—Introduction to Physics  
PHYS 121—Fundamentals of Physics I  
PHYS 122—Fundamentals of Physics II  
PHYS 141—Principles of Physics I  
PHYS 142—Principles of Physics II  
PHYS 221—General Physics for Science Teachers I  
PHYS 222—General Physics for Science Teachers II  
PHYS 262—(lab)—General Physics: Heat, Electricity and Magnetism  
PHYS 263—(lab)—General Physics: Waves, Relativity and Quantum Physics  
PHYS 272 and 275—Introductory Physics: Thermodynamics, Electricity and Magnetism; Lab: Mechanics and Thermodynamics  
PHYS 273 and 276—Introductory Physics: Electricity and

Magnetism, Waves Optics. Lab: Electricity and Magnetism  
 ZOO 210—Animal Diversity  
 ZOO 212—Ecology, Evolution and Behavior

**USP Non-lab Sciences and Mathematics:**

AGRO 105—Soil and the Environment  
 ANSC 101—Principles of Animal Science  
 ANTH 101—Introduction to Anthropology: Archaeology and Physical Anthropology  
 ASTR 100—Introduction to Astronomy  
 ASTR 181—Introductory Astronomy and Astrophysics I  
 ASTR 182—Introductory Astronomy and Astrophysics II  
 ASTR 350—Astronomy and Astrophysics  
 BIOL 101—Organization and Interrelationships in the Biological World  
 BOTN 103—Human Aspects of Plant Biology  
 BOTN 211—Ecology and Mankind  
 CHEM 107—Chemistry and Man  
 ENAG 232—Water, A Renewable Resource  
 ENES 120—Noise Pollution  
 ENES 121—The Man-Made World  
 ENTM 100—Insects  
 GEOG 140—Coastal Environments  
 GEOG 170—Maps and Map Use  
 GEOG 201—The Geography of Environmental Systems  
 GEOL 100—Physical Geology  
 GEOL 102—Historical Geology  
 GEOL 120—Environmental Geology  
 HESP 305—Anatomy and Physiology of the Speech Mechanism  
 HONR 128—Freshman Honors Colloquium, Natural Sciences and Mathematics  
 HONR 328—Honors Seminar, Natural Sciences and Mathematics  
 HORT 100—Introduction to Horticulture  
 MATH 111—Introduction to Math II  
 MATH 140—Calculus I  
 MATH 141—Calculus II  
 MATH 150—Calculus I (Honors)  
 MATH 151—Calculus II (Honors)  
 MATH 210—Elements of Mathematics  
 MATH 211—Elements of Geometry  
 MATH 220—Elementary Calculus I  
 MATH 221—Elementary Calculus II  
 MATH 240—Introduction to Linear Algebra  
 MATH 241—Calculus III  
 MATH 246—Differential Equations for Scientists and Engineers  
 MATH 250—Calculus III (Honors)  
 MATH 251—Calculus IV (Honors)  
 METO 100—Weather and Life  
 MICB 322—Microbiology and the Public  
 NUTR 100—Elements of Nutrition  
 PHIL 271—Symbolic Logic I  
 PHYS 101—Contemporary Physics  
 PHYS 102—Physics of Music  
 PHYS 106—Light, Perception, Photography and Visual Phenomena  
 PHYS 111—Physics in the Modern World I  
 PHYS 112—Physics in the Modern World II  
 PHYS 161—General Physics: Mechanics and Particle Dynamics  
 PHYS 171—Introductory Physics: Mechanics  
 PSYC 206—Developmental Biopsychology  
 PSYC 301—Biological Basis of Behavior  
 SOCY 201—Introductory Statistics for Sociology  
 STAT 100—Elementary Statistics and Probability  
 ZOO 181—Life in the Oceans

**USP Area C: Literature and the Arts, 6 credits, 2 courses:**

**Note: Courses must be taken in different departments.**

APDS 104—Survey of Design History  
 ARCH 170—An Introduction to the Built Environment  
 ARCH 222—History of Western Architecture  
 ARTH 200—Introduction to Art  
 ARTH 200—Art of the Western World I  
 ARTH 201—Art of the Western World II  
 ARTH 275—Art of Africa  
 ARTH 290—Arts of Asia

CHIN 213—Chinese Poetry in English  
 CHIN 314—Chinese Fiction and Drama in Translation  
 CHIN 315—Modern Chinese Literature in Translation  
 CHIN 441—Traditional Chinese Fiction  
 CHIN 44—2Modern Chinese Fiction  
 CLAS 270—Greek Literature in Translation  
 CLAS 271—Roman Literature in Translation  
 DANC 200—Introduction to Dance  
 ENGL 201—World Literature: Homer to the Renaissance  
 ENGL 202—World Literature: The Renaissance to the Present  
 ENGL 205—Introduction to Shakespeare  
 ENGL 211—English Literature from Beginnings to 1800  
 ENGL 212—English Literature from 1800 to Present  
 ENGL 221—American Literature: The beginning to 1865  
 ENGL 222—American Literature: 1865 to Present  
 ENGL 234—Introduction to Afro-American Literature  
 ENGL 240—Introduction to Literary Forms: Fiction, Poetry, Drama  
 ENGL 241—Introduction to the Novel  
 ENGL 242—Fact and Fiction: Forms of Non-Fiction Prose  
 ENGL 243—Introduction to Poetry and Poetics  
 ENGL 244—Introduction to Drama  
 ENGL 245—Introduction to Film as Literature  
 ENGL 246—The Short Story  
 ENGL 247—Literature of Fantasy  
 ENGL 250—Women in Literature  
 ENGL 271—Honors World Literature: Homer to the Renaissance  
 ENGL 272—Honors World Literature: Renaissance to the 20th Century  
 ENGL 301—Critical Methods in the Study of Literature  
 ENGL 302—English Medieval Literature in Translation  
 ENGL 304—Major Works of Shakespeare  
 ENGL 305—Shakespeare and His Contemporaries: An Introduction  
 ENGL 345—Twentieth Century Poetry of Britain and America  
 ENGL 462—Folksong and Ballad  
 FREN 250—Readings in French Literature  
 FREN 340—Modern French Literature in Translation  
 FREN 350/350H—Advanced Reading in French  
 FREN 351/351H—French Literature from the Revolution to the Present  
 FREN 352/352H—French Literature from the Middle Ages to the Revolution  
 GERM 220—Introduction to German Literature  
 GERM 285—German Film and Literature  
 GNED 189A—The Two Cultures  
 GNED 189G—Technology as a Theme in Literature Since the Industrial Revolution  
 GREK 204—Intermediate Greek (Homer)  
 HEBR 223—The Hebrew Bible: Narrative  
 HEBR 224—The Hebrew Bible: Poetry and Rhetoric  
 HEBR 231—Introduction to Jewish Literature in Translation  
 HEBR 322—Israeli Literature in Translation  
 HONR 138—Freshman Honors Colloquium: Literature and the Arts  
 HONR 338—Honors Seminar: Literature and the Arts  
 HORT 160—Introduction to the Art of Landscaping  
 ITAL 251—Introduction to Italian Literature  
 ITAL 351—Italian Literature from Dante to the Renaissance  
 ITAL 352—Italian Literature from the Renaissance to the Present  
 ITAL 376—The Italian Opera Libretto  
 MUSC 130—Survey of Music Literature  
 MUSC 140—Music Fundamentals I  
 MUSC 141—Music Fundamentals II  
 MUSC 215—The Art of the Performer  
 RTVF 314—Introduction to the Film  
 RUSS 221—Masterworks of Russian Literature I  
 RUSS 222—Masterworks of Russian Literature II  
 RUSS 328A—Nineteenth Century Russian Literature in Translation I  
 RUSS 328B—Nineteenth Century Russian Literature in Translation II  
 SPAN 221—Readings in Spanish  
 SPAN 321—Survey of Spanish Literature: 12th-17th Century  
 SPAN 322—Survey of Spanish Literature: 18th-20th Century  
 SPAN 323—Survey of Spanish American Literature I  
 SPAN 324—Survey of Spanish American Literature II

THET 110—Introduction to the Theatre  
 WMST 250—Women, Art and Culture

**USP Area D: Social and Behavioral Sciences, 6 credits, 2 courses:**

AMST 203—Popular Culture in America  
 AMST 204—Film and American Culture Studies  
 AMST 206—Business and American Culture Studies  
 ANTH 102—Introduction to Anthropology  
 ANTH 221—Man and Environment  
 ANTH 241—Introduction to Archaeology  
 ANTH 271—Language and Culture  
 AREC 240—Environmental and Human Ecology  
 ARSC 310—Management and Leadership I  
 ARSC 320—National Security Forces in Contemporary American Society I  
 BSOS 200—Introduction to Applied Behavioral and Social Science  
 CJUS 100—Introduction to Law Enforcement  
 CNEC 100—Introduction to Consumer Economics  
 CRIM 220—Criminology  
 ECON 105—Economics of Social Problems  
 ECON 201—Principles of Economics I  
 ECON 203—Principles of Economics II  
 ECON 205—Fundamentals of Economics  
 ECON 307—Development of Economic Ideas  
 ECON 310—Evolution of Modern Capitalism in Western Europe and the United States  
 ECON 311—American Economic Development  
 EDHD 306—A Study of Human Behavior  
 EDHD 330—Human Development and Societal Institutions  
 EDPA 201—Education in Contemporary American Society  
 FMCD 201—Concepts in Community Development  
 FMCD 250—Decision Making in Families and Communities  
 FOOD 110—Food for People  
 FOOD 300—Economics of Food Consumption  
 GEOG 100—Introduction to Geography  
 GEOG 110—The World Today: A Regional Geography  
 GEOG 130—Developing Countries  
 GEOG 203—Economic Geography  
 GNED 189B—Rationality and Values  
 GNED 189C—Leisure and Technology  
 GNED 189D—Individual Rights from Cicero to Rand  
 GNED 189E—How Society Deals with Technological Hazards  
 GVPT 100—Principles of Government and Politics  
 GVPT 170—American Government  
 GVPT 220—Introduction to Political Behavior  
 GVPT 273—Introduction to Environmental Policy  
 GVPT 300—International Political Relations  
 GVPT 343—Political Themes in Contemporary Literature  
 HESP 120—Introduction to Linguistics  
 HIST 157—History of the U.S. Since 1865  
 HIST 275—Law and Constitutionalism in American History  
 HLTH 230—Introduction to Health Behavior  
 HLTH 285—Controlling Stress and Tension  
 HONR 148—Freshman Honors Colloquium: Social and Behavioral Sciences  
 HONR 348—Honors Seminar: Social and Behavioral Sciences  
 JOUR 100—Introduction to Mass Communication  
 LING 200—Introduction to Linguistics  
 LING 240—Language and Mind  
 PHED 287—Sport and American Society  
 PHED 350—Psychology of Sport  
 PHED 385—Motor Learning and Skilled Performance  
 PHIL 140—Contemporary Moral Issues  
 PHIL 245—Political and Social Philosophy I  
 PSYC 100—Introduction to Psychology  
 PSYC 221—Social Psychology  
 PSYC 310—Perception  
 PSYC 335—Personality and Adjustment  
 PSYC 353—Adult Psychopathology  
 PSYC 355—Child Psychology  
 RECR 130—Recreation and Leisure  
 RTVF 124—Mass Communication in 20th Century Society  
 SOCY 100—Introduction to Sociology  
 SOCY 105—Introduction to Contemporary Social Problems  
 SOCY 230—Sociological Social Psychology  
 SOCY 300—American Society  
 SOCY 327—Introduction to the Study of Deviance

SOCY 331—Work, Bureaucracy and Industry  
 SOCY 341—Inequality in American Society  
 SPCH 350—Foundation of Communication Theory  
 URBS 100—Introduction to Interdisciplinary Urban Studies  
 URBS 210—Behavioral and Social Dimensions of the Urban Community  
 URBS 220—Environmental and Technological Dimensions of the Urban Community  
 URBS 320—The City and the Developing National Culture of the United States  
 WMST 200—Introduction to Women's Studies

**Advanced Studies (USP)**

**USP Development of Knowledge, 3 credits, one course:**

AMST 418E—Cultural Themes in America: the American Image of Africa  
 AMST 418K—Cultural Themes in America: Race in America: Theory and Policy  
 AMST 428A—American Cultural Eras: Social Dramas in American Cultural History  
 AMST 429B—Perspectives on Popular Culture: Science Fiction in American Culture  
 AMST 432—Literature and American Society  
 ANTH 371—Introduction to Linguistics  
 ANTH 389C—Research Problems: Cultural and Personality  
 ANTH 401—Cultural Anthropology: Principles and Processes  
 ANTH 451—Archaeology of the New World  
 ARHU 308B—An Interdisciplinary Analysis of Scandinavian Civilization  
 ARHU 309A—Forms and Forces of Human Experience: An Interdisciplinary Exploration Philosophies of Art  
 ASTR 300—Stars and Stellar Systems  
 ASTR 330—Solar System Astronomy  
 ASTR 340—Galaxies and the Universe  
 ASTR 380—Life in the Universe  
 BCHM 361—Origins of Biochemistry  
 CJUS 330—Contemporary Legal Policy Issues  
 CLAS 320—Women in Classical Antiquity  
 CLAS 470—Advanced Greek and Roman Mythology  
 ECON 402—Business Cycles  
 EDMS 451—Introduction to Educational Statistics (Students who have credit for PSYC 200, ECON 421, BMGT 230, GVPT 422, GEOG 305 or SOCY 201 cannot receive credit for EDMS 451. Students who wish to use EDMS 451 in lieu of one of the above to satisfy departmental requirements must receive approval from their departmental academic advisor.)  
 ENGL 320—English Romantic Literature  
 ENGL 379B—Special Topics in Literature: Beckett, Joyce, and Caribbean Literature in English  
 ENGL 379E—Special Topics in Literature: Film Analysis/The Rhetoric of Fictional Worlds  
 ENGL 379I—Special Topics in Literature: Science and Literature  
 ENGL 379J—Special Topics in Literature: Interpreting the Bible  
 ENGL 379K—Special Topics in Literature: Private Lives  
 ENGL 379L—Special Topics in Literature: The Great Divide: The Modern and Pre-Modern Worlds  
 ENGL 379M—Special Topics in Literature: Britain in the Age of Revolution, 1760-1820  
 ENGL 379O—Special Topics in Literature: Language and Gender: Male/Female Difference in Language Use  
 ENGL 379V—Special Topics in Literature: Modern Poetry and the Visual Arts  
 ENGL 385—Semantics  
 ENGL 412—Literature of the 17th Century, 1600-1660  
 ENGL 432—American Literature, 1865-1914: Realism and Naturalism  
 ENGL 440—The American Novel to 1915.  
 ENGL 453—Literary Criticism  
 ENGL 477—Studies in Mythmaking  
 ENGL 479R—Special Topics in English and American Literature after 1800: Readers, Writers, and Rhetoric  
 ENGL 489A—Special Topics in English Language: The Language of Advertising  
 ENGL 489C—Special Topics in English Language: The Language of the Law

GEOL 301—Evolution in Geology  
 GERM 349A—Yiddish Literature in Translation: The Holocaust in Film and Literature  
 GERM 479B—Selected Topics in Germanic Philology: Language and Science  
 GNED 301—The Arts and the Sciences  
 GVPT 441—History of Political Theory: Ancient and Medieval  
 GVPT 442—History of Political Theory/Medieval to Recent  
 GVPT 443—Contemporary Political Theory  
 HEBR 498B—Special Topics in Hebrew: Issues in Jewish Ethics and Law  
 HEBR 498R—Special Topics in Hebrew: Reconstructing Ancient Civilizations: the Case of Mesopotamia  
 HIST 311A—Approaches to the Past: Approaches to European Social History  
 HIST 311B—Approaches to the Past: Historiography  
 HIST 311S—Approaches to the Past: Science and History Archaeoastronomy and the History of Science  
 HIST 401—The Scientific Revolution: From Copernicus to Newton  
 HIST 402—The Development of Modern Physical Science: From Newton to Einstein  
 HIST 403—Twentieth Century Revolutions in Physical Sciences  
 HIST 407—History of Technology  
 HIST 412—Readings in Psycho-History  
 HLTH 498T—Ways of Knowing about Human Stress and Tension  
 HONR 368—Honors Seminar: Development of Knowledge  
 HSAD 451—Gaming Simulation in Design I  
 ITAL 421—The Italian Renaissance  
 LING 440—Grammars and Cognition  
 MATH 310—Introduction to Mathematical Reasoning  
 MATH 406—Introduction to Number Theory  
 MATH 430—Euclidean and Non-Euclidean Geometries  
 MUSC 340—Music Literature Survey I  
 NUTR 335—History of Nutrition  
 PHED 362—Philosophy of Sport  
 PHIL 308A—Studies in Contemporary Philosophy: Philosophy of Literature and Film  
 PHIL 308D—Studies in Contemporary Philosophy: Discovery and Analogy in Science  
 PHIL 308E—Studies in Contemporary Philosophy: Philosophy of History  
 PHIL 310—Ancient Philosophy  
 PHIL 328B—Marxist Philosophy  
 PHIL 331—Philosophy of Art  
 PHIL 332—Philosophy of Beauty  
 PHIL 334—Philosophy of Music  
 PHIL 380—Philosophy of Psychology  
 PHIL 385—Philosophy of Computers  
 PHIL 408D—Topics in Contemporary Philosophy: Philosophical Issues in Art History  
 PHIL 408F—Topics in Contemporary Philosophy: Contemporary French and German Philosophy  
 PHIL 408S—Topics in Contemporary Philosophy: The Nature of Scientific Understanding  
 PHIL 428A—Origins of the Modern Scientific World-View  
 PHIL 431—Aesthetic Theory  
 PHIL 447—Philosophy of Law  
 PHIL 450—Scientific Thought I  
 PHIL 451—Scientific Thought II  
 PHIL 452—Philosophy of Physics  
 PHIL 453—Philosophy of Science II  
 PHIL 454—Philosophy of Economics  
 PHIL 455—Philosophy of the Social Sciences  
 PHIL 456—Philosophy of Biology  
 PHIL 458A—Topics in the Philosophy of Science: Philosophy of Agricultural Science  
 PHIL 458X—Topics in the Philosophy of Science: Causation and Causal Thinking  
 PHIL 472—Philosophy of Mathematics  
 PHYS 420—Principles of Modern Physics  
 PHYS 421—Introduction to Modern Physics  
 PHYS 490—History of Modern Physics  
 PHYS 499F—Special Topics in Physics Physics for Managers and Analysts: Twentieth Century Physics  
 PORT 478—Contemporary Brazilian Literature: Themes and Movements of Luso-Brazilian Literature in Translation.

PORT 478A—Africa in Brazil  
 SOCY 403—Intermediate Sociological Theory  
 SOCY 498K—Sociology of Knowledge  
 SPCH 450—Classical and Medieval Rhetorical Theory  
 THET 495—History of Theatrical Theory and Criticism  
 WMST 400—Theories of Feminism  
 ZOO 301—Biological Issues and Scientific Evidence  
 ZOO 323—Brain and Behavior

**USP Analysis of Human Problems, 3 credits, one course:**

AED 323—Developing Youth Programs  
 AGRO 303—International Crop Production  
 AMST 330—Critics of American Culture  
 AMST 418B—Cultural Themes in America: Culture and Mental Disorders in Modern America  
 AMST 418C—Cultural Themes in America: The American Environment: Conservation and Energy  
 AMST 418D—Cultural Themes in America: Growing Up American  
 AMST 428B—American Cultural Eras: American Film Culture in the 1960s  
 ANTH 389B—Medicine, Health and Culture  
 AREC 365—World Hunger: Population and Food Supplies  
 AREC 433—Food and Agricultural Policy  
 AREC 445—Agricultural Development in the Third World  
 AREC 453—Natural Resource Economics and Public Policy  
 ARHU 308A—Post World War II Japan through Film and Fiction  
 CHEM 374—Technology, Energy and Risk  
 CLAS 374—Greek Literature in Translation  
 CNEC 310—Consumer Economics and Public Policy  
 CNEC 410—Consumer Finance  
 CNEC 431—The Consumer and the Law  
 CNEC 435—Economics of Consumption  
 CNEC 437—Consumer Behavior  
 ECON 315—Economic Development of Underdeveloped Areas  
 ECON 451—Public Choice and Public Policy  
 ECON 490—Survey of Urban Economic Problems and Policies  
 EDCI 381—Schools and Children  
 EDCP 420—Education and Racism  
 EDCP 462—The Disabled Person in American Society  
 EDHD 413—Adolescent Development  
 EDHD 445—Guidance of Young Children  
 EDIT 476—Application of Technology to Societal Problems  
 EDIT 492—Issues Confronting Families Past and Future: A Multidisciplinary Approach  
 EDPA 400—The Future of the Human Community  
 EDNA 415—Educational Technology, Policy and Social Change  
 ENAG 315—Energy: Its Effects on Agriculture and Food  
 ENGL 379F—Special Topics in Literature: Coping with Change  
 ENGL 379N—Special Topics in Literature: Literature of Sentiment and Sentimentality  
 ENGL 379Q—Special Topics in Literature: More's Utopia and Utopian Vision  
 ENGL 379R—Special Topics in Literature: Different Views of the Chesapeake Bay  
 ENGL 379S—Special Topics in Literature: Changing Ideas of the City in Western Literature  
 ENGL 379T—Special Topics in Literature: On Argument  
 ENGL 479A—Selected Topics in English and American Literature After 1800: Ideal and Real Communities in 19th Century American Literature  
 ENTM 303—International Pesticide Problems and Solutions  
 FMCD 381—Poverty and Affluence Among Low Income Families and the Community  
 FMCD 431—Family Crises and Intervention  
 FMCD 487—Legal Aspects of Family Problems  
 FMCD 497—The Child and the Law  
 FREN 478B—Themes and Movements of French Literature in Translation: Autobiographical Fiction by Francophone Women Writers  
 FREN 478C—Themes of Movements of French Literature in Translation: Conflict Between Individual and Society in French Literature  
 FREN 479A—Masterworks of French Literature in Translation: The Age of Anxiety The Literature of Existentialism and the Absurd

- FREN 479D—Masterworks of French Literature in Translation: Ideologies and Relations between the Sexes  
 GEOG 434—Agricultural and Rural Development  
 GEOG 456—Social Geography of Metropolitan Areas  
 GEOG 462—Water Resources and Water Resource Planning  
 GEOG 463—Geographic Aspects of Pollution  
 GEOG 464—Energy Resources and Planning  
 GERM 389J—Topics in Germanic Culture: Honor as a Theme in Western Literature  
 GERM 389R—Topics in Germanic Culture: Reason and Faith  
 GNEED 300—Perspectives on Nuclear War  
 GVPT 403—Law, Morality and War (cross-listed with PHIL 446)  
 GVPT 405—Defense Policy and Arms Control  
 GVPT 432—Civil Rights and the Constitution  
 GVPT 457—American Foreign Relations  
 GVPT 462—Urban Politics  
 GVPT 471—Women and Politics  
 HIST 312A—Crisis and Change in the United States: The Changing Urban Scene  
 HIST 312B—Crisis and Change in the United States: Dynamics of Federal Indian Policy  
 HIST 313A—Crisis and Change in European Society: Freedom and Authority  
 HIST 314A—Crisis and Change in the Middle East and Africa: Nationalism and Nation Building in the Middle East  
 HIST 316A—Crisis and Change in Latin America: Slavery and Race Relations  
 HIST 458A—Selected Topics in Women's History: Victorian Women  
 HLTH 476—Death Education  
 HLTH 490—Theories of Children's Love and Peace Behaviors  
 HONR 378—Honors Seminar: Analysis of Human Problems  
 ITAL 411—Dante  
 NUTR 425—International Nutrition  
 NUTR 498F—Development and Modification of Food Habits  
 PHIL 308B—Philosophy of Life  
 PHIL 308F—Philosophical Aspects of Feminism  
 PHIL 340—Making Decisions  
 PHIL 342—Moral Problems in Medicine  
 PHIL 408—ATopics in Contemporary Philosophy: Analysis and Design of Legal and Moral Institutions  
 PHIL 408L—Topics in Contemporary Philosophy: Racial and Sexual Discrimination  
 PHIL 441—History of Ethics  
 PHIL 446—Law, Morality and War (cross-listed with GVPT 403)  
 PHYS 318N—Topics in Contemporary Physics: the Risks of Nuclear Power  
 PSYC 354—Cross-Cultural Psychology  
 SOCY 305—Scarcity and Modern Society  
 SOCY 325—Sex Roles  
 SOCY 333—Technology and Society  
 SOCY 427—Deviant Behavior  
 SOCY 431—Formal and Complex Organizations  
 SOCY 441—Social Stratification and Inequality  
 SOCY 460—Sociology of Work  
 SOCY 464—Military Sociology  
 SOCY 498A—Medical Sociology  
 SOCY 498N—Sociology of Nuclear War  
 SOCY 498R—Work, Family, Community and Friendship: Issues in Social Identity and Well Being  
 SPCH 324—Communication and Sex Roles  
 ZOOL 346—Human Genetics and Society  
 ZOOL 381—Natural History and the Chesapeake Bay

\*This list includes all courses approved by the Office of the Dean for Undergraduate Studies as suitable for satisfying requirements of the program. Since all courses approved are not offered every semester, students should consult the Schedule of Classes each semester for the most current list.

# THE COLLEGES AND SCHOOLS

## COLLEGE OF AGRICULTURE (AGRI)

1114 Symons Hall, 454-6332

Dean: Paul H. Mazzocchi (Acting)

Today's agriculture is a highly complex and extremely efficient industry that involves supplies and services used in agricultural production, and the marketing, processing and distribution of products to meet consumers' needs and wants. The mission of the College of Agriculture includes the application of knowledge to the solution of some of the world's most critical problems concerning adequate amounts and quality of food and the quality of the environment in which we live. The college strives to provide an agricultural education that fits all the needs of today's advanced science of agriculture.

The College of Agriculture offers educational programs with a broad cultural and scientific base. Instruction in the college includes the fundamental sciences, and helps develop the foundation for its students' future roles by emphasizing the precise knowledge graduates must employ in the industrialized agriculture of today. Students are prepared for careers in agriculturally related sciences, technology and business. Course programs in specialized areas may be tailored to fit the particular needs of the individual student. Previous training in agriculture is not a prerequisite for study in the College of Agriculture; students with rural, suburban and urban backgrounds comprise the student body. Graduates of the College of Agriculture have an appropriate educational background for careers and continued learning after college in business, industry, production, teaching, research, extension, and many other professional fields.

The original college of the University of Maryland at College Park was chartered in 1856. The College of Agriculture has a continuous record of leadership in education since that date. It became the beneficiary of the Land Grant in 1862. The College of Agriculture continues to grow and develop as part of the university system, providing education and research activities enabling us to use our environment and natural resources to best advantage while conserving basic resources for future generations.

The College of Agriculture offers the following majors and programs of study:

Agricultural Extension Education  
 Agricultural and Resource Economics  
 Agricultural Chemistry  
 Agricultural Engineering  
 Agriculture—General Curriculum  
 Agronomy  
 Animal Sciences  
 Food Science Program  
 Horticulture  
 Institute of Applied Agriculture (two-year program)  
 Natural Resources Management Program  
 Combined Degree—College of Agriculture and Veterinary Medicine

### Advantage of Location and Facilities

Educational opportunities in the College of Agriculture are enhanced by the proximity of several research units of the federal government. Teach-

ing and research activities in the college are conducted with the cooperation of scientists and professional people in government positions. Of particular interest are the Agricultural Research Center at Beltsville, the important National Agricultural Library there, and the U.S. Department of Agriculture Headquarters in Washington, D.C. Related research laboratories of the National Institutes of Health, military hospitals, National Aeronautics and Space Agency, and the National Bureau of Standards are also located in the vicinity of College Park. Interaction of faculty and students with personnel from these agencies is encouraged.

Instruction in the basic biological and physical sciences, social sciences and engineering principles is conducted in well-designed classrooms and laboratories. The application of basic principles to practical situations is demonstrated for the student in numerous ways. For example, modern greenhouses are available for teaching and research on a wide variety of plants, plant pests, and crop cultural systems. Dairy and beef cattle and flocks of poultry are available for teaching and research purposes.

In addition to on-campus facilities, several operating research farms, located in Central, Western, and Southern Maryland and on the Eastern Shore, support the educational programs in agriculture by providing locations where important crops, animals, and poultry can be grown and maintained under practical and research conditions. These farms add an important dimension to the courses offered in agriculture. Data from these operations and from cooperating producers and processors of agricultural products are utilized by students interested in economics, teaching, engineering, and conservation, as they relate to agriculture, as well as by those concerned with biology or management of agricultural crops and animals.

### Requirements for Admission

Admission requirements to the College of Agriculture are the same as those of the university.

For students entering the College of Agriculture it is recommended that their high school preparatory course include English, 4 units; mathematics, 3 units; biological and physical sciences, 3 units; and history or social sciences, 2 units. Four units of mathematics should be elected by students who plan to major in agricultural engineering or agricultural chemistry.

### Degree Requirements

Students graduating from the college must complete at least 120 credits with an average of 2.0 in all courses applicable toward the degree. Included in the 120 credits must be the following:

1. University Studies Program Requirements (40 credits)
2. College Requirements
  - a. Chemistry: Any one course of three or more credits in chemistry numbered 102 or higher (Agribusiness majors excepted)
  - b. Mathematics or any course that satisfies the University Studies Program
  - c. Biological Sciences: Any one course carrying three or more credits selected from offerings of the Departments of Botany, Entomology, Microbiology, or Zoology.

Courses marked "for non-science majors" cannot be used to satisfy degree requirements for any major in the College of Agriculture.



3. Requirements of the major and supporting areas, which are listed under individual program headings in Chapter 8.

## Required Courses

Courses required for students in the College of Agriculture are listed in each curriculum. The program for the freshman year is similar for all curricula. Variations in programs will be suggested based on students' interests and test scores.

### Typical Freshman Program College of Agriculture

	Semester Credit Hours	
ENGL 101 .....	1	II
BIOL 105 .....	3	
MATH .....	4	
ANSC 101 .....	3	3
BIOL 106 .....	4	4
AGRO 100 .....	2	
AGRO 102 .....	2	
SPCH 107 .....	3	
University Studies Program Requirement .....	3	3
<b>Total</b> .....	<b>15</b>	<b>15</b>

## Advising

Each student in the College of Agriculture is assigned to a faculty advisor. Advisors normally work with a limited number of students and are able to give individual guidance. Students entering the freshman year with a definite choice of curriculum are assigned to departmental advisors for counsel and planning of all academic programs. Students who have not selected a definite curriculum are assigned to a general advisor who assists with the choice of electives and acquaints students with opportunities in the curricula in the College of Agriculture and in other units of the university.

## Financial Assistance

A number of scholarships are available for students enrolled in the College of Agriculture. These include awards by the Agricultural Development Fund, Arthur M. Ahalt Memorial Scholarship, Capitol Milk Producers Cooperative, Inc., George Earle Cook, Jr. Scholarship Fund, Dr. Ernest N. Cory Trust Fund, Ernest T. Cullen Memorial Scholarship, Dairymen, Inc. Scholarship, Delmarva Corn and Soybean Scholarship, Delaware-Maryland Plant Food Association, Mylo S. Downey Memorial Scholarship, James R. Ferguson Memorial Scholarship, Forbes Chocolate Leadership Award, Goddard Memorial Scholarship, Manasses J. and Susanna Grove Memorial Scholarship, Joe E. James Memorial Award Fund, The King-horne Fund, Gary Lee Lake Memorial Scholarship, Maryland Holstein-Freisian Association Scholarship, Maryland Turfgrass Association, Maryland State Golf Association, Maryland and Virginia Milk Producers, Inc., Dr. Ray A. Murray Scholarship Fund, Paul R. Poffenberger Scholarship Fund, R. J. Reynolds Tobacco Scholarship, Ralston Purina Company, J. Homer Remsberg Memorial Scholarship, The Schluderberg Foundation, The Ross and Pauline Smith Fund for Agriculture, Southern States Cooperative, Inc., The David N. Steger Scholarship Fund, T. B. Symons Memorial Scholarship, Veterinary Science Scholarship, Winslow Foundation, and The Nicholas Brice Worthington Scholarship Fund.

## Honors

An Honors Program is approved for majors in agricultural and resource economics. The objective of the Honors Program is to recognize superior scholarship and to provide opportunity for excellent students to broaden their perspective and to increase the depth of their studies. The programs in Honors are administered by departmental Honors committees. Students in the College of Agriculture who are in the top 20 percent of their class at the end of their first year may be considered for admission into the Honors Program. Of this group up to 50 percent may be admitted.

Sophomores or first semester juniors will be considered upon application from those students in the upper 20 percent of their class. While application may be made until the student enters the sixth semester, early entrance into the program is recommended. Students admitted to the program enjoy certain academic privileges.

## Student Organizations

Students find opportunity for varied expression and growth in the several voluntary organizations sponsored by the College of Agriculture. These organizations are Agriculture and Resource Economics Club, Agronomy Club, American Society of Agricultural Engineers, Animal Husbandry Club, Collegiate 4-H Club, Collegiate Future Farmers of America, Forestry Club, Equestrian Association, Food Science Club, Horticultural Club, INAG Club, Poultry Science Club, Soil Conservation Society of America, The University of Maryland Student Chapter, and Veterinary Science Club.

Alpha Zeta is a national agricultural honor fraternity. Members are chosen from students in the College of Agriculture who have attained the scholastic requirements and displayed leadership in agriculture.

The Agricultural Student Council is made up of representatives from the various student organizations in the College of Agriculture. Its purpose is to coordinate activities of these organizations and to promote work that is beneficial to the college.

## Research and Service Units

### The Agricultural Experiment Station

The Maryland Agricultural Experiment Station, headquartered on the UMCP campus, is a state-wide agency conducting research in laboratories at UMCP or UMES or at one of its nine field locations throughout Maryland. It was established in 1888 to comply with the Hatch Act of 1887 authorizing the establishment of an agricultural experiment station at the Land Grant Colleges. The station is supported by federal funds, state appropriations, grants and contracts with state and federal agencies, and by gifts or other support from individual and farm-related businesses and industry. The research is performed by faculty with the assistance of research assistants, technicians, graduate and undergraduate students.

The objective of the Experiment Station is to enhance all aspects of Maryland agriculture for the benefit of farmers, farm-related businesses and consumers through optimal utilization, conservation, and protection of soil and water resources. For example, improved techniques of waste utilization or disposal require an examination of soil-moisture-plant relationships and plant-bird or animal-environment relationships as well as studies of the applications of engineering for producing or maintaining the optimal environment for biological systems.

Genetic principles are studied and applied in the improvement of turf and ornamentals, vegetable crops, field crops, poultry, dairy cattle, and other animals. Similarly, pathological principles are of concern in the improvement of methods of identification, prevention and/or control of plant and animal diseases. Studies of biological, chemical and mechanical methods and improved chemical pest control in the field, forests, food processing chain and the home are continuous. Biochemistry plays an important role in evaluating the nutritional quality of crops produced, the efficiency of feed conversion by poultry and animals, and the quality of plant and animal products for human consumption. Research in progress is also concerned with improvement of processing systems to enhance food quality.

The socio-economics of changing agricultural systems in terms of farm policy and rural development is also a major research area.

### Cooperative Extension Service

As part of the total university, the Cooperative Extension Service takes the University of Maryland to the people of Maryland, wherever they are. In its role as the "off-campus, non-credit, out-of-classroom" arm of the university, it extends the classroom to all parts of the state. With its uniquely effective educational delivery system, the Cooperative Extension Service helps people to help themselves, to define their problems, to evaluate reasonable alternatives, and to generate action to solve their problems. To accomplish its mission, the Cooperative Extension Service works closely with teaching and research faculty of the university and with units of the university outside of agriculture, as well as state and federal agencies and private groups.

General administrative offices of the Maryland Cooperative Extension Service are located at the University of Maryland at College Park (UMCP) and the administration of the 1890 Program (an integral part of the total MCES effort) is based in offices at the University of Maryland Eastern Shore (UMES).

The Cooperative Extension Service was authorized by Congress in 1914 under the Smith-Lever Act and is funded by a three-way partnership. Support comes from the federal government for both 1862 and 1890 Land Grant institutions; and from the state and all twenty-three counties and Baltimore City in Maryland.

Off-campus faculty, located in each county and in Baltimore City, are the "front lines" that deliver university resources in ways people can use them effectively. These field faculty rely on campus-based Cooperative Extension specialists at both UMCP and UMES to provide up-to-date, meaningful information and for aid in planning and conducting relevant educational programs. Many of the Cooperative Extension Service faculty at the state level carry joint appointments with teaching and research, especially in the UMCP College of Agriculture and College of Life Sciences. In each county and in Baltimore City competent Extension agents conduct educational work in program areas consistent with the needs of the citizenry and as funds permit. Through these efforts, local people are assisted in finding solutions to their problems.

The Maryland Cooperative Extension Service delivers programs in eight major initiative areas. These include: (1) agricultural profitability; (2) natural resources; (3) diet, nutrition, and health; (4) human capital development; (5) family economic stability; (6) agricultural technology for urban audiences; (7) profitability of marine industries; (8) enhancement of community vitality.

The Cooperative Extension Service works in close harmony and association with many groups and organizations such as 4-H and homemakers' clubs, farmers' groups and cooperatives, agribusiness firms, watermen's organizations, civic and social organizations, governmental agency personnel, and elected officials, to multiply its effects. In addition to work on farms and with agribusiness, extension programs are aimed at many small and part-time farmers, rural non-farm and urban family consumers as well as watermen and marine-related businessmen. Both rural and urban families learn good food habits through the Expanded Food and Nutrition Education Program. Thousands of young people gain leadership knowledge and experience and are provided practical education instruction in 4-H clubs and other youth groups. The Service maintains a close working relationship with the Maryland Department of Agriculture and other state agencies and organizations. More than 22,000 volunteers in Maryland give generously of their time and energy.

Time-tested, informal educational methods used are farm and home visits, phone and office conferences, and structured events such as meetings, teaching institutes, workshops, and training conferences. Teaching events include tours, field days, and demonstrations. Short courses, workshops, and conferences in various fields of interest are conducted at UMCP and other locations throughout the state. Indirect communications include circular letters, radio and television programs, newspaper articles and columns, articles in specialized publications, and exhibits to reach a statewide audience.

The Cooperative Extension Service is committed to making its programs available to all people without regard to race, color, creed, marital status, personal appearance, age, national origin, political affiliation, handicap, or sex.

## Combined Degree Curriculum—College of Agriculture and Veterinary Medicine

Students enrolled in the College of Agriculture who have completed at least ninety hours, including all university and college requirements, may qualify for the Bachelor of Science degree from the University of Maryland, College of Agriculture, upon successful completion in an accredited College of Veterinary Medicine of at least thirty semester hours. It is strongly recommended that the ninety hours include credits in animal science.

### Combined Degree Requirements

	Semester Credit Hours
University Studies Program Requirements*	40
ANSC 221—Fundamentals of Animal Production	3
ANSC 211—Anatomy of Domestic Animals	4
ANSC 212—Applied Animal Physiology	4
BIOL 105—Principles of Biology I	4
BIOL 106—Principles of Biology II	4
Mathematics (must include at least 3 credits of Calculus)	6
CHEM 103—General Chemistry I	4

CHEM 113—General Chemistry II	4
CHEM 233—Organic Chemistry I	4
CHEM 243—Organic Chemistry II	4
PHYS 121—Fundamentals of Physics I	4
PHYS 122—Fundamentals of Physics II	4
Electives	10

\*Includes eleven required credits listed above.

For additional information, please contact the Associate Dean, VMRCVM, 3222 Chemistry Building, University of Maryland, College Park, MD 20742, (301) 454-4631.

## Institute of Applied Agriculture—Two-Year Program

The Institute of Applied Agriculture, a two-year, college-level program offered as an alternative to the four-year program, prepares students for specific occupations in technical agriculture.

The institute offers three major programs with eleven curriculum options:

- I. Business Farming
  - A. Farm Production and Management
  - B. Agricultural Business Management
- II. Ornamental Horticulture
  - A. General Ornamental Horticulture
  - B. Nursery Management
  - C. Garden Center Management
  - D. Greenhouse Management
  - E. Florist Shop Management
  - F. Landscape Management
- III. Turfgrass Management
  - A. Golf Course Management
  - B. Lawn Care Management
  - C. Lawn Care Technician (a one-year option)

The **Business Farming program** develops skills needed for farm operation or for employment in agricultural service and supply businesses such as feed, seed, fertilizer, machinery companies, and farmers' cooperatives.

**Options in Ornamental Horticulture** prepare students for employment in, or management of, greenhouses, nurseries, garden centers, florist shops, landscape maintenance companies or interior plantscaping companies.

The **Turfgrass Management program** concentrates on the technical and management skills needed to work as a golf course superintendent, in commercial or residential lawn care companies or in other turfgrass-related industries such as parks and cemeteries.

To enhance a student's occupational knowledge, the institute requires participation in a Supervised Work Experience program, usually completed before taking second-year classes.

A graduate of the institute is awarded a Certificate in Agriculture specifying the student's area of specialization. Graduation requires the successful completion of sixty credit hours of a recognized program option, completion of Supervised Work Experience, and a 2.00 cumulative grade point average.

Though designed as a two-year terminal program, the institute does not restrict continuing education. In general, all institute courses are transferable to the University of Maryland at College Park and the University of Maryland Eastern Shore. The extent to which the courses can be applied to a baccalaureate degree will depend on the individual department in which a student is planning to major.

### Courses Common to All Programs

COMM 1-1—Oral Communication*	3
COMM 1-2—Written Communication*	3
COMM 1-3—Employment Communication	1
AGMA 1-1—Agricultural Mathematics*	3
BOTN 1-1—Introduction to Plant Science*	3
HORT 1-5—Diseases of Ornamentals	3
AGRO 1-1—Soils and Fertilizers*	3
AGRO 1-6—Weed Ecology in Agriculture	2
AGRO 1-11—Pesticide Use and Safety	2
AGEN 1-1A, B—Agricultural Mechanics I, II	2-2

AGEN 1-2—Power and Machinery .....	3
AGEN 1-3A—Land Measurement and Surveying .....	1
AGEN 1-3B—Drainage Practices .....	1
AGEN 1-3C—Irrigation Practices .....	1
AGEN 1-7—Machine Operation Laboratory .....	1
AGEC 1-2—Business Law .....	3
AGEC 1-4—Business Operations .....	3
AGEC 1-8—Using Computers in Agriculture .....	2
AGEC 1-10—Personnel Management .....	3
AGEC 1-13—Agricultural Finance Records and Analysis .....	4
AGEC 1-14—Supervised Work Experience* .....	1
AGEC 1-15—Business Management .....	3

\*Required for all management options

**Courses for Farm Production and Agribusiness Management Majors**

ANSC 1-1—Introduction to Animal Science .....	3
ANSC 1-2—Feeds and Feeding .....	3
ANSC 1-3—Animal Health .....	3
ANSC 242—Dairy Production .....	3
ANSC 1-8—Livestock Management .....	3
ANSC 1-10—Seminar .....	1
ANSC 422—Meats .....	3
ANSC 444—Analysis of Dairy Production Practices .....	3
ENTM 242—Agricultural Insect Pests .....	3
AGRO 1-7—Grain and Forage Crop Production .....	4
AGRO 1-12—Crop Production Practices .....	3
AGEC 1-7—Agricultural Marketing .....	3
AGEC 1-11—Farm Management .....	3

**Courses for Ornamental Horticulture and Turfgrass Majors**

HORT 1-2—Woody Ornamentals .....	3
HORT 1-3—Plant Propagation .....	3
HORT 1-6—Nursery Management .....	3
HORT 1-7—Greenhouse Management .....	2
HORT 1-8—Arboriculture .....	2
HORT 1-10—Floral Design I .....	2
HORT 1-12—Floral Crop Production .....	2
HORT 1-13—Floral Design II .....	2
HORT 1-15—Interior Plant Culture .....	2
HORT 1-17—Floral Design III .....	2
HORT 1-18—Woody Ornamentals II .....	2
HORT 1-22—Seminar .....	1
HORT 1-24—Interior Plantscaping .....	3
HORT 1-25—Floral Design IV .....	2
HORT 1-26—Landscape Design and Implementation .....	4
HORT 1-27—Landscape Management .....	4
HORT 1-30—Vegetable Production Practices .....	2
ENTM 1-2—Pests of Ornamental Plants .....	3
AGRO 1-2—Turf Management .....	4
AGRO 1-3—Lawn Care Management .....	2
AGRO 1-4—Golf Course Management I .....	3
AGRO 1-5—Golf Course Management II .....	3

For additional information, write: Director, The Institute of Applied Agriculture, University of Maryland, College Park, MD 20742.

**VIRGINIA-MARYLAND REGIONAL COLLEGE OF VETERINARY MEDICINE MARYLAND CAMPUS**

**College of Agriculture**

3222 Chemistry Building, 454-4631/4651

Professor and Associate Dean: Mohanty  
 Professor: Marquardt  
 Associate Professors: Dutta, Mallinson, Snyder, Stephenson  
 Assistant Professors: Carmel, Gorham, Ingling, Samal, Vakharia  
 Instructors: Bradley, Penny

The Virginia-Maryland Regional College of Veterinary Medicine is operated by the University of Maryland and the Virginia Polytechnic Institute and State University. Each year, thirty Maryland and fifty Virginia residents comprise the entering class of a four-year program leading to a Doctor of Veterinary Medicine (DVM).

The first three years are given at Virginia Polytechnic Institute and State University in Blacksburg, Virginia. The final year of instruction is given at several locations, including the University of Maryland at College Park.

A student desiring admission to the college must complete the pre-veterinary requirements and apply for admission to the professional curriculum. Admission to this program is competitive, and open to all Maryland residents. All Maryland residents' applications are processed at the Department of Veterinary Medicine, University of Maryland, College Park.

**SCHOOL OF ARCHITECTURE**

Architecture Building, 454-3427

Professor and Dean: John W. Hill (Acting)  
 Associate Dean: Sacks  
 Assistant to the Dean: Lapanne  
 Professors: Bennett, Ettlin, Hill, Lewis, Loss, Lu, Schlesinger, Steffian  
 Associate Professors: Bechhoefer, DuPuy, Fogle, Schumacher, Vann  
 Assistant Professors: Bell, Drost, Kelly, Masters, Thiratrakoolchai, Weiss  
 Lecturers: Dynerman, McInturf, O'Meara, Wiedemann, Wilkes  
 Instructor: Gardner

The School of Architecture offers a four-year undergraduate program leading to the Bachelor of Science degree in architecture and a graduate program leading to the degree, Master of Architecture. The undergraduate major in architecture is designed to minimize the time required to complete the curriculum leading to the professional degree, Master of Architecture.

Students receive rigorous and comprehensive instruction from a faculty whose members are active in professional practice or research. Many faculty members have distinguished themselves across the professional spectrum and represent different approaches to architectural design. Their individual areas of expertise include architectural design and theory, history, architectural archaeology, technology, urban design and planning, and historic preservation. Visiting critics, lecturers, and the Kea Distinguished Professor augment the faculty; together they provide students with the requisite exposure to contemporary realities of architectural design.

The B.S. degree in architecture will qualify graduates to pursue a career in any of a number of fields, such as construction, real estate development, public administration, or historic preservation, or to continue in graduate work in professional fields such as architecture, urban planning, or law.

The graduate of the Master's degree program in architecture will be qualified to enter the profession of architecture in private practice, as an employee of a public agency at the local, state, or Federal level, or to enter any one of a number of other career paths.

The school's professional program is accredited by the National Architectural Accreditation Board, Inc., enabling graduates to qualify for licensure in all 50 states, and by reciprocal agreement, in several foreign countries.

**Entrance Requirements**

Admission to the School of Architecture is selective. Students are normally admitted to the undergraduate major in architecture after completing 56 credits of general and prerequisite work. Early admission is possible directly from high school for outstanding students who meet one of the following standards: (1) 3.5 GPA in high school and combined SAT score of 1200; (2) National Merit Scholarship finalist; or (3) recipient of Maryland Distinguished, Banneker, Francis Scott Key Scholarship or equivalent award. Such students need not submit the portfolio described below.

Prior to admission, students not admitted directly to the school may enroll in a two year pre-architecture program, but must also declare an alternate major. Pre-architecture is open to any UMCP student and provides a program for the first two years that includes the basic requirements of the University Studies Program plus other pre-architecture requirements.

The School of Architecture normally accepts transfer credits from regionally accredited four-year institutions. Transfer credits for technical and professional courses, however, are normally accepted only from institutions that are also accredited by the National Architectural Accrediting Board (NAAB).

**Admission**

Final application deadline for student admission is February 1. A 3.0 GPA is normally recommended for admission to the School of Architecture.

In addition to the required high school and college transcripts, letters of recommendation, and other information, a portfolio of creative work must be submitted by all transfer and pre-architecture student applicants. The required portfolio of student work may include copies of drawings, photographs, and other evidence of creative work, submitted in an 8 1/2" x 11" format such as, for example, a standard three-ring notebook. The portfolio should be submitted to the Director of Admissions, School of Architecture. (Please see the more detailed information available from the School of Architecture. The portfolio will be returned **only** if requested, in which case a self-addressed, stamped mailing envelope should be included with the portfolio for this purpose.)

## Curriculum Requirements

**Pre-Architecture.** In the first two years of college, pre-architecture students should adhere to the following curriculum:

	Credit Hours
University Studies Program and Electives .....	28
ENGL 101—Introduction to Writing .....	3
MATH 220—Elementary Calculus I .....	3
ARCH 170—Introduction to the Built Environment .....	3
MATH 221—Elementary Calculus II (recommended) .....	3
PHYS 121—Fundamentals of Physics I .....	4
ARCH 220—History of Architecture I .....	3
ARCH 242—Drawing I .....	2
PHYS 122—Fundamentals of Physics II .....	4
ARCH 221—History of Architecture II .....	3
Total Credits .....	56

**Bachelor of Science, Major in Architecture.** If admitted after completing 56 credits, students are expected to complete the following requirements for a total of 121 credits:

	Credit Hours
<b>Third Year</b>	
ARCH 400—Architecture Studio I* .....	6
ARCH 375—Architectural Construction and Materials .....	3
ARCH 4xx—Arch. History/Area A** .....	3
ARCH 401—Architecture Studio II .....	6
ARCH 460—Site Analysis and Design .....	3
ARCH 343—Drawing II Line Drawing .....	2
ENGL 391—Advanced Composition .....	3
USP Requirements .....	6
Total .....	32

### Fourth Year

ARCH 402—Architecture Studio III .....	6
ARCH 445—Visual Analysis of Architecture .....	3
ARCH 312—Architectural Structures I .....	3
ARCH 313—Thermal and Acoustical Technology in Buildings .....	3
ARCH 403—Architecture Studio IV .....	6
ARCH 454—Theory of Urban Form .....	3
ARCH 412—Architectural Structures II .....	3
ARCH 415—Illumination, Electrical and Systems Technology in Building .....	3
ARCH 4xx—Arch. History/ Area B** .....	3
Total .....	33

**Total Credits:** ..... 121

\*Courses are to be taken in sequence as indicated by Roman numerals in course titles.

\*\* Architecture history courses: Area A, ARCH 422, 423, 432, and 436 Area B, ARCH 433, 434, and 420.

## Special Resources and Opportunities

The school is housed in a modern, air-conditioned building providing workstations for each student, a large auditorium, and seminar and classroom facilities. A well-equipped woodworking and model shop, darkroom facilities, a lab equipped with testing machines and various instruments used in studying the ambient environment, and computer terminal facilities are also provided. The Architecture Library, one of the finest in the nation, offers convenient access to a current circulating collection of over 24,000 volumes, 6,000 periodicals, and an extensive selection of reference materials. Rare books and special acquisitions include a collection relating to international expositions and the 11,000-

volume National Trust for Historic Preservation Library. A visual resources facility includes a reserve slide collection of 240,000 slides on architecture, landscape architecture, urban planning, architectural science, and technology as well as audio-visual equipment for classroom and studio use.

The school provides learning experiences through CADRE Corporation, a nonprofit center for Architectural Design and Research, which provides an organizational framework for faculty and students to undertake contract research and design projects appropriate to the school's fundamental education mission. CADRE Corporation projects include building and urban design, urban studies, building technology, historic preservation, architectural archaeology, studies in energy conservation, or other work for which the school's resources and interests are uniquely suited.

Summer programs include the Caesarea Ancient Harbor Excavation Project (CAHEP), an ongoing land and underwater excavation in Israel at the harbor of Herod the Great at Caesarea Maritima. In addition, summer workshops for historic preservation are sponsored by the school each year in Cape May, New Jersey, a designated national historic landmark district, and Kiplin Hall in North Yorkshire, England. Students may earn direct credit doing hands-on restoration work and by attending lectures by visiting architects, preservationists, and scholars.

Course Code: ARCH

## COLLEGE OF ARTS AND HUMANITIES (ARHU)

1101 Francis Scott Key Hall

Dean: Robert Griffith (454-6790)  
Office of Student Affairs (454-2737)  
Academic Advisors (454-2737)  
Computer Facility (3101 Francis Scott Key Hall, 454-1814)

The College of Arts and Humanities embraces a heterogeneous group of disciplines, all of which value the development of critical thinking, fluent expression in writing and speech, sensitivity to ethical and aesthetic standards, and a complex understanding of history and culture. Departments and programs in Arts and Humanities, while they have strong individual identities, are also involved in interdisciplinary studies. Thus students will find, for example, courses in the Department of English that approach literature from political perspectives, courses in the Department of History that rely on feminist perspectives, courses in the Department of Art History that study African cultures and so on.

Examples of the special opportunities available to students in this richly variegated college are an exceptionally large slide library in the Art History Department, the Music Department's newly refurbished recital hall, the Pugliese Theatre for experimental drama, Improvisations Unlimited (a faculty-student dance group), the Computer Assisted Design and Development Laboratory in the Department of Design, the campus literary magazine *Calvert Review*, a biweekly foreign and art film series, a junior year abroad program in Nice, a year abroad program in Sheffield, and Honors programs in most departments. There are also special programs in women's studies, comparative literature, and the history and philosophy of science.

Preparation in the Arts and Humanities provides valuable background for careers in a broad range of fields. Students should be aware of the many eloquent testimonials from leaders of the nation's businesses, industry and government to the skills of oral presentation, written exposition, critical thinking, and analytic problem-solving nurtured in humanities courses. These skills, essential to a successful career in any number of different fields, underlie a certificate program, the Liberal Arts in Business, available to Arts and Humanities majors.

## Entrance Requirements

Students wishing to major in one of the creative or performing arts are encouraged to seek training in the skills associated with such an area prior to matriculation. Students applying for entrance to these programs may be required to audition, present slides, or submit a portfolio as a part of the admission requirements. Admission to programs in Design and in Radio, Television and Film is restricted.

## Graduation Requirements

The following college requirements apply only to students earning Bachelor of Arts degrees from the College of Arts and Humanities. These

requirements are in addition to or in fulfillment of campus and departmental requirements. For information concerning the Bachelor of Music in the Department of Music and the Bachelor of Science in Housing in the Department of Design, the student should consult advisors in those units.

**College graduation requirements are under review at the time of publication. New students should consult the Office of College Student Affairs for requirements in effect at the time of matriculation.**

### Distribution

A minimum of 45 semester hours of the total of 120 must be upper-level work (i.e., courses numbered 300-499).

### Foreign Language

Language proficiency may be demonstrated in one of several ways:

- Successful completion of level 4 in one language or level 2 in each of 2 languages in high school, or
- Successful completion of a 12-credit sequence or of the intermediate level in college language courses, or
- Successful completion of a language placement examination in one of the campus language departments offering such examinations.

Students whose native language is not English should see an advisor in the College Office of Student Affairs.

### Speech

Students must demonstrate proficiency in speech by:

- successful completion of one of the following courses in speech communication: SPCH 100, 107, 125, 220, or 230; or
- successful completion of a full unit of speech in high school (usually a year-long course).

## Major Requirements

All students must complete a program of study consisting of a major (a field of concentration) and supporting courses as specified by one of the academic units of the college. No program of study shall require in excess of 60 semester hours. Students should consult the unit in which they will major for specific details.

Students may choose a major as early as they wish; however, once they have earned 56 hours of acceptable credit, they must choose a major before their next registration.

A major shall consist, in addition to the lower division departmental prerequisites, of 24 to 40 hours, at least 12 of which must be in courses numbered 300 or 400 and at least 12 of which must be taken at the University of Maryland at College Park.

A major program usually requires a secondary field of concentration (supporting courses). The nature and number of these courses are determined by the major department.

No grade lower than C may be used to fulfill major or supporting course requirements. No course for the major or support module may be taken Pass-Fail.

## Advising

Freshmen have advisors in the Arts and Humanities College Office of Student Affairs (454-2737) who assist them in the selection of courses and the choice of a major. After selecting a major, students are advised in their major department and may also continue to see college advisors. For further information about advising, students should see the section on advising in the Mini-Guide, available from the college.

## Degrees and Majors

The College of Arts and Humanities offers the degree of Bachelor of Arts in the following fields of study:

American Studies  
Art  
Art History  
Classics

Classical Humanities  
Greek  
Latin  
Comparative Literature  
Dance  
East Asian Languages and Literatures  
Chinese  
Japanese  
English Language and Literature  
French Language and Literature  
German Language and Literature  
History  
Jewish Studies  
Linguistics  
Music  
Philosophy  
Radio, Television, and Film  
Romance Languages  
Russian Language and Literature  
Russian Area Studies  
Spanish Language and Literature  
Speech Communication  
Theatre

The college also offers the degrees of Bachelor of Music and Bachelor of Science in Housing and certificate programs in Women's Studies, The Liberal Arts in Business, and East Asian Studies.

## Internships

Most departments in Arts and Humanities have well-established internship offerings. Typically, students must complete an application and attach a current academic transcript. Internships are generally for one semester of the junior or senior year for students with a good academic record. Along with the actual work experience, students do a written analysis of the experience. For more information, students should contact their major departmental advisor or the college student affairs office (454-2737).

## Certification of High School Teachers

A student who wishes certification as a high school teacher in a subject represented in this college must consult the College of Education in the second semester of the sophomore year. Application for admission to the Teacher Education program is made at the time that the first courses in Education are taken. Admission to the College of Education is selective.

## Honors

Departmental Honors Programs are offered in the Departments of English, French, German, History, Music, Philosophy, Spanish, Speech, and Theatre. Departmental Honors Programs are administered by an Honors Committee within each department. Programs and policies differ from department to department. Admission to a Departmental Honors Program ordinarily occurs at the beginning of the first or second semester of the student's junior year. Students must have a cumulative grade point average of at least 3.0 to be admitted. Most departments require a comprehensive examination over the field of the major program or a thesis. On the basis of the student's performance on the Honors Comprehensive Examination and in meeting such other requirements as may be set by the Departmental Honors Committee, the faculty may vote to recommend the candidate for the appropriate degree with (departmental) honors or for the appropriate announcement in the commencement program and citation on the student's academic record and diploma.

In some departments, honors students enjoy certain academic privileges similar to those of graduate students.

**Phi Beta Kappa.** Consult the description of Phi Beta Kappa in Chapter 5 of this catalog, under "Graduation."

## Research and Service Units

### Academic Computing Services

3101 Francis Scott Key Hall; 454-1814  
Director: John F. Smith

Academic Computing Services provides facilities and support for a wide range of computing needs for undergraduate students in the College of Arts and Humanities. There are currently 65 networked microcomputers

## 68 College of Behavioral and Social Sciences

located in four laboratories throughout the college which are available for student use. In addition, the college provides discipline specific classroom laboratories for the Professional Writing Program in English, foreign language instruction and computer-aided design.

### The Art Gallery

2202 Art-Sociology Building; 454-2763  
Director: Gwendolyn Owens  
Assistant Director: Cynthia Wayne

The Art Gallery presents a series of exhibitions each year of historic and contemporary art in a variety of media and subject matter. Opportunities for museum training and experience are available to students through intern and work-study positions.

### The Center for Studies in Nineteenth-Century Music

Director: H. Robert Cohen  
Associate Director: Luke Jensen  
Research Coordinator: Gaetan Martel

The Center for Studies in Nineteenth-Century Music promotes research focusing on nineteenth-century music and musical life. The center's programs are designed to facilitate the study, collection, editing, indexing, and publication of documentary source materials.

### The Center for Renaissance and Baroque Studies

1120 Francis Scott Key Hall; 454-2740  
Director: S. Schoenbaum  
Executive Director: Adele Seeff

The Center for Renaissance and Baroque Studies promotes teaching and research in the Renaissance and Baroque periods in all disciplines of the arts and humanities, as well as in such allied fields as the history and philosophy of science.

### Language House

0107 St. Mary's Hall; 454-2288  
Coordinator: Kathleen James (Acting)

The Language House is a campus residence for students wishing to immerse themselves in the study of a foreign language and culture. A total of 92 students of French, German, Hebrew, Italian, Japanese, Russian, and Spanish share 19 apartments. A live-in graduate mentor leads each language cluster. The goal of language immersion is achieved through activities organized by the students and mentors, a computer-based Language Learning Center, an audio-visual room, an international cafe, and foreign television programs received via satellite.

### Language Media Center

1202 Jimenez Hall; 454-5728  
Director: James E. Royalty  
Assistant Director: Charlotte Groff Aldridge

The Language Media Center houses a large international collection of films, video and audio programs, graphic and resource materials, the Arts and Humanities Cinema, language laboratories, video viewing rooms, and a computer laboratory. Audio programs for instruction in more than 25 languages and the computer laboratory are available to students throughout the day and evening. The collection of international films and television programs is available through the academic programs.

### Maryland English Institute

1104 Preinkert Fieldhouse; 454-6545/6  
Director: Leslie A. Palmer

The Maryland English Institute (MEI) offers special instruction in English to University of Maryland students who need to improve their competence in the language before they are able to undertake a full program of academic work. Two programs are offered: a half-time semi-intensive course and a full-time intensive course.

**Semi-intensive.** This program is open only to University of Maryland students, both graduate and undergraduate, who fall within a TOEFL score range of 450-549. Candidates in this proficiency range may be admitted to the University of Maryland on a provisional basis, requiring them to satisfactorily complete the MEI Semi-intensive program in order to become full-time students. Classes meet two hours per day, five days per week during regular terms and four hours per day, five days per week during Summer Session II. In addition, students have two hours per week of assigned work in the language laboratory. The program is designed especially to perfect the language skills necessary for academic study at

the University of Maryland. Enrollment is by permission of the director, and no credit is given toward any degree at the university.

**Intensive.** This full-time English-as-a-Foreign-Language program is open to non-native speakers of English who need substantial improvement in their English competence before they can undertake any academic study at a college or university in the United States. On the basis of an entrance examination, students will be assigned to classes at their particular proficiency levels. They will have four hours of English language instruction per day and one hour of work in the language laboratory, five days per week during the regularly scheduled semester and an eight-week summer session. The program is intended primarily for students who wish to enroll at the University of Maryland after completing their language instruction. However, satisfactory completion of the language program does not guarantee acceptance at the university. Enrollment is by permission of the director and no credit is given toward any degree at the university.

Course Code: ARHU

## COLLEGE OF BEHAVIORAL AND SOCIAL SCIENCES (BSOS)

2141 Tydings Hall, 454-5272

Dean: Murray E. Polakoff  
Associate Dean: Stewart L. Edelstein  
Assistant Dean for Student Affairs: Katherine Pedro Beardsley  
Assistant Dean for Equity and Recruitment: Diana Ryder Jackson  
Advising and Records Office: 454-2301  
Center for Minorities in Behavioral and Social Sciences: 454-4225

The College of Behavioral and Social Sciences is comprised of a diverse group of disciplines and fields of study all of which emphasize a broad liberal arts education as the foundation for understanding the environmental, social, and cultural forces that shape our world. At the heart of the behavioral and social sciences is the attempt to understand human beings, both individually and in groups. Disciplines in the behavioral and social sciences use approaches that range from the scientific to the philosophical, from the experimental to the theoretical. Integral to all the disciplines, however, is the development and application of problem solving skills, which in combination with other academic skills, enable students to think analytically and to communicate clearly and persuasively. Students interested in human behavior and in solving human and social problems will find many exciting opportunities through the programs and courses offered by the College of Behavioral and Social Sciences.

The college is composed of the following major programs that lead to the Bachelor of Arts or the Bachelor of Science degree, as appropriate:

Afro-American Studies Program\*  
Department of Anthropology  
Department of Economics  
Department of Geography  
Department of Government and Politics  
Department of Hearing and Speech Sciences  
Department of Psychology  
Department of Sociology  
Institute for Urban Studies  
Institute of Criminal Justice and Criminology

\*The Afro-American Studies Program also offers an undergraduate certificate requiring 21 semester hours of coursework (See Chapter 8.).

## Entrance Requirements

Requirements for admission to the college are the same as the requirements for admission to the university.

## Advising

The BSOS Undergraduate Advising Office coordinates advising and maintains student records for BSOS students. Advisors are available to provide information concerning university requirements and regulations, transfer credit evaluations, and other general information about the university by appointments taken on a walk-in basis from 9 a.m. to 4 p.m. daily. Undergraduate advisors for each undergraduate major are located in the department offices. These advisors are available to assist students

in selecting courses and educational experiences in their major area of study consistent with major requirements and students' educational goals.

The coordinators are Lola Hillman and Geri Scholl, 2115 Tydings Hall, 454-2301.

## Graduation Requirements

Each student must complete a minimum of 120 hours of credit with at least a 2.0 cumulative average. Courses must include the credits required in the University Studies Program, and the specific major and supporting course and grade requirements of the programs in the academic departments offering baccalaureate degrees.

All students are urged to speak with an academic advisor in the College Advising Office at least two semesters before graduation to review their academic progress and discuss final graduation requirements.

## Honors

Undergraduate honors are offered to graduating students in the Departments of Anthropology, Economics, Geography, Government and Politics, Psychology, and Sociology, and in the Institutes of Criminology and Criminal Justice and Urban Studies.

## Dean's Scholars

This is the highest academic award that a BSOS student can earn in the college. Dean's Scholars are those graduating seniors who have completed 90 credits at UMCP and have maintained a minimum cumulative grade point average of 3.800.

## Dean's List

Any student who has passed at least twelve hours of academic work in the preceding semester, without failure of any course and with an overall average grade of at least 3.5 will be placed on the Dean's List of Distinguished Students.

## Field Experiences/Pre-professional and Professional Training

Pre-professional training and professional opportunities in the behavioral and social sciences are available in many fields. The Department of Hearing and Speech Sciences offers training for students interested in careers as speech pathologists. Students interested in urban planning will find academic and professional training through courses offered by the Institute for Urban Studies, the Department of Geography, and the Afro-American Studies Program. Students may choose government and politics, criminal justice and criminology, or sociology for preparation for careers in the law and related fields. The internship programs offered by many departments in the college provide students with practical experience working in governmental agencies, nonprofit organizations, corporations, and the specialized research centers and laboratories of the College.

## Undergraduate Research Opportunities

Undergraduate research internships allow qualified undergraduate students to work with research laboratory directors and faculty in departments and specialized research centers, thus giving the student a chance for a unique experience in the design and conduct of research and scholarship. Students are advised to consult with their department advisors on research opportunities available in the major.

## Student Organizations and Honor Societies

Students who excel in their academic discipline may be selected for membership in an honorary society. Honoraries for which students in BSS are chosen include:

Alpha Kappa Delta—Sociology  
Alpha Phi Sigma—Criminal Justice  
Lambda Epsilon Gamma—Law  
Omega Delta Epsilon—Economics  
Pi Sigma Alpha—Political Sciences  
Psi Chi—Psychology

Students who major in the Behavioral and Social Sciences have a wide range of interests. The following is a list of student organizations in the disciplines and fields of the Behavioral and Social Sciences:

Anthropology Student Organization  
Conservation Club  
Criminal Justice Student Association  
Gamma Theta Upsilon (Geography)  
Minority Pre-Professional (Psychology Society)  
Pre-Medical Society (Pre-Med/Psychology Majors)  
Thurgood Marshall Pre-Law Society

For more information about these student organizations or starting a new student group, please contact the Office of Campus Activities, 1191 Adele H. Stamp Student Union, 454-5605.

## Special Resources and Opportunities

### The Center for Minorities in the Behavioral and Social Sciences

2201 LeFrak Hall; 454-4225  
Director: Miriam Langa (Acting)

The Center for Minorities provides academic and other support services designed specifically to meet the needs of minority students in the college. The center provides advising on academic and other concerns related to students' progress at the university; provides referrals, when appropriate, to other campus offices; and sponsors workshops and related activities on issues of particular relevance to minority students. Advisors are available on a walk-in basis and by appointment.

### The Center for Political Participation and Leadership

31 10 Art-Sociology Building; 454-6681  
Director: Georgia Sorenson  
Research Director: Gregory Lebel

The center was established in November of 1989 to foster and encourage young people to prepare for elective office and community and public service. Special attention is paid to students from groups historically underrepresented in the political spectrum. The Maryland Project for Women and Politics operates as an independent program within the center.

Closely affiliated with the academic departments in the college, the center has established internships and Fellowships with Maryland senators and delegates, the Women Legislators of Maryland, the Offices of the Governor and Lt. Governor and Cabinet members. The center has placements on Capitol Hill and in county and local elected officials' offices around the state. Research Fellowships for the study of global politics have been funded in the past.

Other activities of the center include seminars, training, technical assistance and prominent speakers related to political leadership. A yearly training program for political leaders, "Evolutionary Leadership", attracts participants from all over the country.

### The BSS Computer Laboratory

0221 LeFrak Hall; 454-3924  
Director: Robert Bennett

The college believes strongly that the study of behavioral and social sciences should incorporate both quantitative analysis and computational skills. Consequently, curricula in most departments require some coursework in statistics, quantitative research methods, and the use of computers. The BSS Computer Laboratory provides undergraduate students in the college with the facilities and staff assistance to satisfy a wide range of computer-related needs. The Laboratory's facilities include 150 fully networked computers, 40 fully networked terminals, a Prime 9650 mini-computer, 4 Micro-Vax computers, a substantial number of graphics terminals and peripheral equipment, and full access to campus UNISYS and IBM mainframe computers. The Laboratory operates eight computer classroom facilities and a special purpose graphics lab which are available for both in and out-of-class student use.

## Research and Service Units

### Bureau of Business and Economic Research

4118 Tydings Hall; 454-2303  
Director: John Cumberland

The functions of the Bureau of Business and Economic Research are research, education, and public service. The research activities of the

## 70 College of Business and Management

bureau are primarily focused on basic research and applied research in the fields of regional, urban, public finance, and environmental studies. Although the bureau's long-run research program is carried out largely by its own staff, faculty members from other departments also participate. The bureau also undertakes cooperative research programs with the sponsorship of Federal and State governmental agencies, research foundations, and other groups.

The educational functions of the bureau are achieved through active participation by advanced graduate and undergraduate students in the bureau's research program. This direct involvement of students in the research process under faculty supervision assists students in their degree programs and provides research skills that equip students for responsible posts in business, government and higher education.

The bureau fulfills its service responsibilities to governments, business, and private groups primarily through the publication and distribution of its research findings. In addition, the bureau staff welcomes the opportunity to be of service to governmental and civic groups by consulting with them on problems, especially in the fields of regional and urban economic development and forecasting, State and local public finance, and environmental management.

### Center for Global Change

Suite 402, 7100 Baltimore Avenue, 454-0941  
Director: Allan Miller

Founded in the summer of 1989 with a two-year \$1.8 million grant from the U.S. Environmental Protection Agency, the center coordinates the ongoing research of climatologists, botanists, geographers, engineers, and economists throughout the university system who are researching different facets of global environmental change. The Center for Global Change works to improve communication and dialogue between scientists, policy analysts, governments, corporations, developing countries, and industrialized nations. The center is co-sponsored by the Colleges of Agriculture, Behavioral and Social Sciences and Life Sciences.

### The Center for International Development and Conflict Management

2nd Floor Mill Building; 454-2506  
Director: Edward Azar

The Center for International Development and Conflict Management is a research center focusing on the management and resolution of protracted conflict in the world today. Established in 1981, the center has a staff composed of university faculty, visiting fellows and associates involved in study of contemporary international and intercommunal conflict; their causes, dynamics, management strategies and peaceful resolution.

### Industrial Relations and Labor Studies Center

4106 Tydings Hall; 454-5235  
Director: Paul Weinstein

The Industrial Relations and Labor Studies Center was organized in 1978 at UMCP and is concerned with two kinds of activity. The first is interdisciplinary research directed primarily toward the study of labor-management relations, employment, wages and related problems, the labor market, occupational safety and health, comparative studies and human resources problems. The center draws on the expertise and interests of faculty from the College of Business and Management, the School of Law, and the Departments of Economics, History, Psychology, Sociology, and Health Education. The second main activity consists of educational projects serving management, unions, the public, and other groups interested in industrial relations and labor-related activities. These projects consist of public lectures, conferences, and symposia as well as non-credit courses.

### Survey Research Center

1103 Art-Sociology Building, 454-6800  
Director: Stanley Presser

The Survey Research Center was created in 1980 as a special purpose research facility within the behavioral and social sciences. The center specializes in the design of questionnaires and the conduct of surveys for policy purposes, and has the capacity to conduct mini-surveys, survey experiments, and in-depth clinical interviews. The center annually conducts the Maryland Poll, a sampling of public opinion across the state on important issues to Maryland citizens; it also conducts periodic surveys of the Baltimore-Washington region and shares results of these surveys nationally through the Network of State Polls. The center provides

assistance to researchers in sample design, has technical expertise on the storage, manipulation, and analysis of very large data sets, and provides support services to archive and maintain such data sets.

The center supports undergraduate and graduate education by providing both technical training and practical experience to students. Also, the center has a strong community service mission through the provision of technical assistance on survey methods and survey design to units of state and local governments, and by conducting surveys on a contract or grant basis for these governmental units.

Course Code: BSOS

## COLLEGE OF BUSINESS AND MANAGEMENT (BMGT)

Office of Undergraduate Studies: 2136 Tydings Hall, 454-4314

Professor and Dean: Rudolph P. Lamone  
Professor and Associate Dean: Leete  
Assistant Dean and Director of EDP: Stocker  
Assistant Dean for External Relations: Kelly  
Professor and Director of Doctoral Program: Preston  
Director of the Masters' Programs: Waikart  
Assistant Dean for Undergraduate Studies: Mattingly  
Director of Undergraduate Student Services: Stuart  
Advisors/Consultants: Warsinsky and Mirhad

The College of Business and Management recognizes the importance of education in business and management to economic, social, and professional development through profit and non-profit organizations at the local, regional, and national levels. The faculty of the college have been selected from the leading doctoral programs in business. They are scholars, teachers, and professional leaders with a commitment to superior education in business and management, specializing in accounting, finance, decision and information sciences, management science and statistics, management and organization, marketing, and transportation, business and public policy. The College of Business and Management is accredited by the American Assembly of Collegiate Schools of Business, the official national accrediting organization for business schools.

## Degrees

The university confers the following degrees on students successfully completing programs of study in the college: Bachelor of Science (B.S.), Master of Business Administration (M.B.A.), Master of Science (M.S.), and Doctor of Philosophy (Ph.D.). Each candidate for a degree must file a formal application for a degree in the Office of Records and Registrations by the end of the Schedule Adjustment Period. Information concerning admission to the M.B.A. or M.S. program is available from the college's Director of the Masters' Programs.

## Undergraduate Program

The undergraduate program recognizes the need for professional education in business and management based on a foundation in the liberal arts. Modern society comprises intricate business, economic, social, and government institutions requiring a large number of men and women trained to be effective and responsible managers. The college regards its program leading to the Bachelor of Science in business and management as one of the most important ways it serves this need.

A student in business and management selects a major in one of several curricula: (1) Accounting; (2) Decision and Information Sciences; (3) Finance; (4) General Business and Management; (5) Management Science; (6) Marketing; (7) Personnel and Labor Relations; (8) Production Management; (9) Statistics; and (10) Transportation. For students interested in law as a career there is a combined business and law program. The Bachelor of Science degree in one of the above curricula is awarded after ninety semester hours and one year at the University of Maryland School of Law. (See specific requirements at the end of the curricula section to follow.)

Students interested in insurance, real estate, or international business may plan with their advisors to select elective courses to meet their specialized needs; however, this interest is in addition to completion of one of the above majors. (See specific suggestions at the end of curricula section to follow.)



## Advising

General advisement in the College of Business and Management is available Monday through Friday in the Office of Undergraduate Studies, 2136 Tydings Hall, 454-4314. It is recommended that students visit this office each semester to ensure that they are informed about current requirements and procedures. Student problems concerning advising should be directed to the Director of Undergraduate Student Services.

Transfer students entering the university can be advised during spring, summer, and fall transfer orientation programs. Contact the Orientation Office for further information, 454-5752.

## Entrance Requirements

Admission to the College of Business and Management is on a competitive basis for undergraduates at the junior level, except for a small number of academically talented freshmen. In order to be admitted as a junior, an applicant must have earned at least fifty-six semester credits, completed the required pre-business courses (i.e., freshman-sophomore core requirements), and meet the competitive cumulative grade point average (GPA) in effect for the academic year. This GPA will always be greater than 2.3 (on 4.0 scale); however, for Fall 1989—Spring 1990 this competitive cumulative GPA was 3.0. The competitive GPA for academic year 1990-91 will be determined in March 1990. In addition to all UMCP coursework, all courses from other colleges count toward the computation of the cumulative GPA for Business college admission regardless of whether the courses have been accepted for transfer credit to UMCP.

Freshman-Sophomore Core Requirements	Credit Hours
MATH 220 or 140 (AND 141*) .....	3 (8)
BMGT 220 and 221 .....	6
BMGT 230 (231*) .....	3
ECON 201 and 203 .....	6
SPCH 100 or 107 .....	3
Total .....	21 (26)

\*Required for Decision and Information Sciences, Management Science, and Statistics curricula.

## Statement of Policy on Transfer of Credit from Community Colleges

The College of Business and Management subscribes to the policy that a student's undergraduate program below the junior year should include no advanced, professional level courses. This policy is based on the conviction that the value derived from these advanced courses is materially enhanced when based upon a sound foundation in the liberal arts.

In adhering to this, it is the practice of the College of Business and Management to consider for transfer from a regionally accredited community college only the following courses in business administration: an introductory business course, business statistics, elementary accounting or business law. Thus, it is anticipated that students transferring from another regionally accredited institution will have devoted the major share of their academic effort below the junior year to the completion of basic requirements in the liberal arts. A total of sixty semester hours may be transferred from a community college and applied toward a degree from the College of Business and Management.

## Statement of Policy on the Transfer of Credits from Other Institutions

The College of Business and Management normally accepts transfer credits from regionally accredited four-year institutions. Junior and senior level business courses are accepted from colleges accredited by the American Assembly of Collegiate Schools of Business (AACSB). Junior and senior level business courses from other than AACSB accredited schools are evaluated on a course-by-course basis to determine transferability.

## Summary of Bachelor of Science Degree Requirements (all curricula)

At least 45 hours of the 120 semester hours of academic work required for graduation must be in business and management subjects. A minimum of fifty-seven hours of the required 120 hours must be in 300 or 400 level courses. These fifty-seven hours of upper level credits may not be

attempted without special permission until a student has earned a minimum of fifty-six credits. In addition to the requirement of an overall cumulative grade point average of 2.0 (C average) in all College Park coursework Effective Fall 1989, all business majors must earn a "C" or better in all required courses, including Economics, Mathematics, and Speech. Electives outside the ten curricula of the college may be taken in any department of the university, if the student has the necessary prerequisites.

Junior-Senior Core Requirements	Credit Hours
BMGT 301—Intro. to Data Processing .....	3
BMGT 340—Business Finance (Prerequisite BMGT 221 and 230) .....	3
BMGT 350—Marketing Principles and Organization (Prerequisite ECON 203) .....	3
BMGT 364—Management and Organizational Theory .....	3
BMGT 380—Business Law .....	3
BMGT 495 or 495A, Business Policies (open ONLY to seniors) ..	3
Economics (see below) .....	6
Total .....	24

## Economics Requirements

**Finance Curriculum:** ECON 430 or ECON 431, AND one course from ECON 305, 306, 402, 440 or 450.

**General Business and Management Curriculum:** One course from ECON 305, 306, 430, or 440, AND one course from an approved list of ECON, GEOG, PSYC, or SOCY courses. The approved list is available in 2136 Tydings Hall.

**All other curricula:** One course from ECON 305, 306, 430 or 440, AND one of the following courses: ECON 305, 306, 311, 315, 316, 317, 361, 370, 374, 375, 380 or any 400 level ECON course except 422, 423, or 425.

## Junior-Senior Major Curriculum Concentration

Refer to specific curriculum section which follows.

Credit Hours	
Total .....	15–21

## University Studies Program (USPs)

Fundamental Studies	
Freshman Composition (ENGL 101) .....	3
Upper Level Composition (ENGL 391, 392, 393, 394, 395)* .....	3

Distributive Studies	
Area A (minimum 2 courses) .....	6
Area B (Lab Science only) .....	4
Area C (must be from 2 different departments) .....	6

Advanced Studies (must be from two different departments outside major(s)): Development of Knowledge (not EDMS 451) .....	3
Analysis of Human Problems (not CNEC 437) .....	3
Total .....	28
*ENGL 394 (Business Writing) and ENGL 393 (Technical Writing) are recommended.	

## Electives

The remaining electives must bring the degree total to 120 semester hours. The student must have sufficient upper level electives to bring the total upper level courses (300 and 400 level) to fifty-seven semester hours. NOTE: All Finance majors are required to have one three-credit BMGT elective in order to fulfill 45 hours in business.

Grand Total .....	120
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## A Typical Program for the Freshman and Sophomore Years

Freshman Year	Credit Hours
USPs and/or electives .....	9 (8)
English 101 or equivalent .....	3
MATH 002*, 115, or 220 (or 140**) .....	3 (4)
First semester total .....	15
USPs and/or electives .....	9 (8)
SPCH 100 or 107 .....	3
MATH 115, (141**), 220 or elective .....	3 (4)
Second semester total .....	15

**Sophomore Year**

USPs and/or electives .....	6
BMGT 220 (Prereq. Sophomore Standing) .....	3
ECON 201 (Prereq. Sophomore Standing) .....	3
MATH 220 or BMGT 230 (231**) or elective .....	3
Third semester total .....	15

USPs and/or electives .....	6
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ECON 203 (Prereq. ECON 201) .....	3
BMGT 221 (Prereq. BMGT 220) .....	3
BMGT 230 (Prereq. MATH 220 ) or 231** .....	3
(Prereq. MATH 141) or elective .....	3
Fourth semester total .....	15

\*MATH 002 is a non-credit course which prepares a student for either 115 or 220 depending on the grade earned in 002.

\*\* Required for Decision and Information Sciences, Management Science, and Statistics curricula.

**Curricula**

**Accounting**

Chair: S. Loeb  
 Professors: Gordon, S. Loeb  
 Associate Professors: Bedingfield, Edelson, M. Loeb  
 Assistant Professors: Jang, Kandelin, LeClere, Main, Schick

Accounting, in a limited sense, is the analysis, classification, and recording of financial events and the reporting of the results of such events for an organization. In a broader sense, Accounting consists of all financial systems for planning, controlling and appraising performance of an organization. Accounting includes among its many facets: financial planning, budgeting, accounting systems, financial management controls, financial analysis of performance, financial reporting, internal and external auditing, and taxation.

The Accounting curriculum provides an educational foundation for careers in Accounting and other management areas whether in private business organizations, government and non-profit agencies, or public accounting firms.

Course requirements for the junior-senior curriculum concentration in Accounting are as follows:

	<b>Credit Hours</b>
BMGT 310, 311—Intermediate Accounting I and II .....	6
BMGT 321—Cost Accounting .....	3
BMGT 323—Income Tax Accounting .....	3
Three of the following courses: .....	9
BMGT 326—Accounting Systems	
BMGT 410—Fund Accounting	
BMGT 417—Advanced Tax Accounting	
BMGT 420, 421—Undergraduate Accounting Seminar	
BMGT 422—Auditing Theory and Practice	
BMGT 424—Advanced Accounting	
BMGT 426—Advanced Cost Accounting	
BMGT 427—Advanced Auditing Theory and Practice	
Total .....	21

The educational requirements of the Maryland State Board of Accountancy for certification are a baccalaureate or higher degree with a major in Accounting or with a non-accounting degree supplemented by coursework the Board determines to be substantially the equivalent of an Accounting major. Students planning to take the CPA examination for certification and licensing outside Maryland should determine the educational requirements for that state and arrange their program accordingly.

**Decision and Information Sciences**

Chair: Hevner  
 Professor: Yao  
 Associate Professors: Alavi, Hevner  
 Assistant Professors: Basu, Raschid

Computer-based information systems are an integral part of nearly all businesses, large and small. Decision and Information Sciences provides the data processing skills, the managerial and organizational skills, and the analytical skills required to design and manage business information processing systems. This program gives the student a firm basis in the

business functional areas: Marketing, Finance, Production, and Accounting. In addition it provides an in-depth knowledge of information processing technology, information processing implementation techniques, and Management Science and Statistics. These skills furnish the student with the expertise to analyze business problems both qualitatively and quantitatively, to propose computer based solutions, and to implement those solutions. There are many diverse employment opportunities available to graduates of this program. The typical job areas include application programmer/analyst, systems analyst, and computer system marketing analyst. Such positions are available in both large and small corporations, management consulting firms, and government agencies.

Students planning a major in this field must complete MATH 140, 141 and BMGT 231 prior to junior standing. Students considering graduate work in this field should complete MATH 240 or 400 as early as possible in their careers.

Course requirements for the junior-senior curriculum concentration in the Decision and Information Sciences are as follows:

	<b>Credit Hours</b>
BMGT 302—Information Systems Implementation Techniques .....	3
BMGT 402—Database and Data Communication Systems ...	3
BMGT 403—Systems Analysis .....	3
BMGT 404—Seminar in Decision Support Systems .....	3
BMGT 430—Linear Statistical Models in Business .....	3
BMGT 434—Introduction to Optimization Theory .....	3
BMGT 435—Introduction to Applied Probability Models .....	3
Total .....	21

**Finance**

Chair: Bradford  
 Professors: Bradford, Chen, Haslem, Kolodny, Senbet  
 Associate Professors: Chang, Eun, Madan  
 Assistant Professors: Soubra, Unal

The Finance curriculum is designed to familiarize the student with the institutions, theory, and practice involved in the allocation of financial resources within the private sector, especially the firm. It is also designed to incorporate foundation study in such related disciplines as economics and the quantitative areas.

The Finance curriculum provides an educational foundation for careers involving financial analysis and management, investment analysis and portfolio management, investment banking, insurance and risk management, banking, and international finance; it also provides a foundation for graduate study in business administration, quantitative areas, economics, and law.

Course requirements for the junior-senior curriculum concentration in Finance are as follows:

	<b>Credit Hours</b>
BMGT 343—Investments .....	3
One of the following courses: .....	3
BMGT 332—Operations Research for Management Decisions	
BMGT 434—Introduction to Optimization Theory	
Two of the following courses (Any combination except 443 and 444): .....	6
BMGT 440—Financial Management	
BMGT 443—Security Analysis and Valuation	
BMGT 444—Futures Contracts and Options	
BMGT 445—Commercial Bank Management	
One of the following courses (check prerequisites): .....	3
BMGT 302—Information Systems Implementation Techniques	
BMGT 430—Linear Statistical Models in Business	
BMGT 431—Design of Statistical Experiments in Business	
BMGT 433—Statistical Decision Theory in Business	
BMGT 435—Introduction to Applied Probability Models	
MATH 221/141 or higher advanced math	
Total .....	15

**Management and Organization**

Chair: Locke\*†  
 Professors: Bartol, Carroll†, Gannon, Levine, Locke, Sims  
 Associate Professors: Gupta, Olian, Power, Smith, Taylor  
 †Distinguished Scholar-Teacher  
 \*Joint Appointment with Psychology

Personnel Administration is the direction of human effort. It is concerned with securing, maintaining and utilizing an effective work force. People professionally trained in Personnel Administration find career opportunities in business, government, educational institutions, and charitable and other organizations.

Course requirements for the junior-senior curriculum in Personnel and Labor Relations are as follows:

	Credit Hours
BMGT 360—Personnel Management .....	3
BMGT 362—Labor Relations .....	3
BMGT 460—Personnel Management-Analysis and Problems .....	3
BMGT 462—Labor Legislation .....	3
BMGT 464—Organizational Behavior .....	3
One of the following courses (check prerequisites): .....	<u>3</u>
BMGT 385—Production Management	
BMGT 467—Undergraduate Seminar in Personnel Management	
GVPT 411—Public Personnel Administration	
JOUR 330—Public Relations	
PSYC 361—Survey of Industrial and Organizational Psychology	
PSYC 451—Principles of Psychological Testing	
PSYC 452—Psychology of Individual Differences	
SOCY 447—Small Group Analysis	
SOCY 462—Industrial Sociology	
Total .....	18

## Management Science and Statistics

Chair: Golden

Professors: Assad, Ball, Bodin, Gass, Golden, Kotz†, Lamone

Associate Professors: Alt, Fromovitz, Widhelm

Assistant Professors: Fu, Grimshaw, Kaku

†Distinguished Scholar-Teacher

In the Management Science and Statistics curriculum, the student has the option of concentrating primarily in Management Science, Production Management, or Statistics. All Management Science and Statistics students must take MATH 140, 141 and BMGT 231.

### Management Science

Management Science (operations research) is the application of scientific methods to decision problems, especially those involving the control of organized human-machine systems, to provide solutions that best serve the goals and objectives of the organization as a whole. Practitioners in this field are employed in industry, business, and federal, state, and local governments. Students planning to major in this field must complete MATH 140 and 141 prior to junior standing. Students considering graduate work in this field should complete MATH 240 and 241 as early as possible in their careers.

Course requirements for the junior-senior curriculum concentration in the Management Science are as follows:

	Credit Hours
BMGT 430—Linear Statistical Models in Business .....	3
BMGT 434—Introduction to Optimization Theory .....	3
BMGT 435—Introduction to Applied Probability Models .....	3
BMGT 436—Applications of Mathematical Programming in Management Science .....	3
Two of the following courses (check prerequisites): .....	<u>6</u>
BMGT 385—Production Management	
BMGT 432—Sample Survey Design for Business and Economics	
BMGT 433—Statistical Decision Theory in Business	
BMGT 438—Topics in Statistical Analysis for Business and Management	
BMGT 485—Advanced Production Management	
BMGT 402—Database and Data Communication Systems	
BMGT 403—Systems Analysis	
Total .....	18

### Production Management

This curriculum is designed to acquaint the student with the problems of organization and control in the field of Production Management. Theory and practice with reference to organization, policies, methods, processes, and techniques are surveyed, analyzed, and evaluated.

Course requirements for the junior-senior curriculum concentration in Production Management are as follows:

	Credit Hours
BMGT 321—Cost Accounting .....	3
BMGT 360—Personnel Management .....	3
BMGT 385—Production Management .....	3
BMGT 485—Advanced Production Management .....	3
Two of the following courses (check prerequisites): .....	<u>6</u>
BMGT 362—Labor Relations	
BMGT 332—Operations Research for Management Decisions	
BMGT 372—Traffic and Physical Distribution Management	
BMGT 433—Statistical Decision Theory in Business	
BMGT 453—Industrial Marketing	
Total .....	18

### Statistics

Statistics consists of a body of methods for utilizing probability theory in decision-making processes. Important statistical activities ancillary to the decision-making process are the systematization of quantitative data and the measurement of variability. Some specialized areas within the field of statistics are: sample surveys, forecasting, quality control, design of experiment, Bayesian decision processes, actuarial statistics, and data processing. Statistical methods, such as, sample survey techniques, are widely used in accounting, marketing, industrial management, and government applications. An aptitude for applied mathematics and a desire to understand and apply scientific methods to significant problems are important prerequisites for the statistician.

Course requirements for the junior-senior curriculum concentration in Statistics are as follows:

	Credit Hours
BMGT 430—Linear Statistical Models in Business .....	3
BMGT 432—Sample Survey Design for Business and Economics .....	3
BMGT 434—Introduction to Optimization Theory .....	3
BMGT 438—Topics in Statistical Analysis for Business and Management .....	3
Two of the following courses (check prerequisites): .....	<u>6</u>
BMGT 385—Production Management	
BMGT 433—Statistical Decision Theory in Business	
BMGT 435—Introduction to Applied Probability Models	
BMGT 436—Applications of Mathematical Programming in Management Science	
BMGT 450—Marketing Research Methods	
Total .....	18

### Marketing

Chair: Durand

Professors: Durand, Greer, Jolson

Associate Professors: Biehal, Krapfel, Nickels

Assistant Professors: Ali, Calfee, Seshadri, Stephens

Marketing, the study of exchange activities, involves the functions performed in getting goods and services from producers to users. Career opportunities exist in manufacturing, wholesaling, retailing, service organizations, government, and non-profit organizations, and include sales administration, marketing research, advertising, merchandising, physical distribution, and product management. Students preparing for work in marketing research are advised to elect additional courses in Management Science and Statistics.

Course requirements for the junior-senior curriculum concentration in Marketing are as follows:

	Credit Hours
BMGT 451—Consumer Analysis .....	3
BMGT 452—Marketing Research Methods .....	3
BMGT 457—Marketing Policies and Strategies .....	3
Three of the following courses (check prerequisites): .....	<u>9</u>
BMGT 332—Operations Research for Management Decisions	
BMGT 353—Retail Management	
BMGT 354—Promotion Management	
BMGT 372—Traffic and Physical Distribution Management	
BMGT 431—Design of Statistical Experiments in Business	
BMGT 453—Industrial Marketing	
BMGT 454—International Marketing	
BMGT 455—Sales Management	
BMGT 456—Advertising	
Total .....	18

**Transportation, Business, and Public Policy**

Chair: Corsi

Professors: Leete, Preston, Simon, Tall (emeritus)

Associate Professors: Corsi, Grimm, Poist

Assistant Professors: Dresner, Mattingly, Ostas, Scheraga, Scott,

Stockdale, Windle

**Transportation**

This curriculum involves the movement of persons and goods in the satisfaction of human needs. The curriculum in Transportation includes an analysis of the services and management problems, such as pricing, financing, and organization, of the five modes of transport, motor, pipelines, railroads and waterand covers the scope and regulation of transportation in our economy. The effective management of transportation involves a study of the components of physical distribution and the interaction of procurement, the level and control of inventories, warehousing, material handling, transportation, and data processing. The curriculum in Transportation is designed to prepare students to assume responsible positions with carriers, governmental agencies, and in traffic and physical distribution management in industry.

Course requirements for the junior-senior curriculum concentration in Transportation are as follows:

	<b>Credit Hours</b>
BMGT 370—Principles of Transportation .....	3
BMGT 372—Traffic and Physical Distribution Management ..	3
BMGT 470—Carrier Management .....	3
BMGT 476—Applied Computer Models in Transportation and Logistics .....	3
One of the following courses: .....	3
BMGT 473—Advanced Transportation Problems	
BMGT 475—Advanced Logistics Management	
One of the following courses: .....	3
BMGT 332—Operations Research for Management Decisions	
BMGT 454—International Marketing	
BMGT 473 or 475 (depending on choice above)	
BMGT 474—Urban Transportation and Development	
BMGT 477—International Transportation and Logistics	
BMGT 481—Public Utilities	
BMGT 482—Business and Government	
Total .....	18

**General Business and Management**

The General Curriculum is designed for those who desire a broader course of study in business and management than offered in the other college curricula. The General Curriculum is appropriate for example, for those who plan to enter small business management or entrepreneurship where general knowledge of the various fields of study may be preferred to a more specialized curriculum concentration.

Course requirements for the junior-senior curriculum concentration in General Business and Management are as follows:

	<b>Credit Hours</b>
<b>Accounting/Finance</b>	
One of the following courses: .....	3
BMGT 321—Cost Accounting	
BMGT 440—Financial Management	
<b>Management Science/Statistics</b>	
One of the following courses: .....	3
BMGT 332—Operations Research for Management Decisions	
BMGT 385—Production Management	
BMGT 431—Design of Statistical Experiments in Business	
BMGT 433—Statistical Decision Theory in Business	
<b>Marketing</b>	
One of the following courses: .....	3
BMGT 353—Retail Management	
or a higher number marketing course (check prerequisites)	
<b>Personnel/Labor Relations</b>	
One of the following courses: .....	3
BMGT 360—Personnel Management	
BMGT 362—Labor Relations	
<b>Public Policy</b>	
One of the following courses: .....	3
BMGT 481—Public Utilities	
BMGT 482—Business and Government	
<b>Transportation/Physical Distribution</b>	
One of the following courses: .....	3
BMGT 370—Principles of Transportation	

BMGT 372—Traffic and Physical Distribution Management

Total ..... 18

**Business and Law, Combined Program**

The College of Business and Management offers a combined business-law curriculum in which the student completes three years in the chosen curriculum concentration in the college and a fourth year of work at the University of Maryland School of Law. Admission to the law school is contingent on meeting the applicable standards of the school. Individual students are responsible for securing from the law school its current admission requirements. The student must complete all the courses required of students in the college, except BMGT 380 and BMGT 495. This means the student must complete all the pre-business courses; both upper level ECON courses; BMGT 301, 340, 350, and 364; all lower level and upper level USP requirements; the 15 to 21 hours in the student's specific business major; and enough additional electives to equal a minimum of ninety semester hours, thirty of which must be numbered 300 or above. No business law course can be included in the ninety hours. The last thirty hours of college work before entering law school must be completed in residence at College Park.

The Bachelor of Science degree is conferred by the college upon students who complete the first year in the law school with an average grade of "C" or better.

**Insurance and Real Estate**

Students interested in insurance or real estate may wish to concentrate in Finance or General Business and Management and plan with their advisors a group of electives to meet their specialized needs. College courses that are occasionally offered in insurance:

- BMGT 345—Property and Liability Insurance
- BMGT 346—Risk Management
- BMGT 347—Life Insurance

College courses that are occasionally offered in real estate:

- BMGT 393—Real Estate Principles
- BMGT 490—Urban Land Management

**Institutional Management**

Students interested in hotel-motel management or hospital administration must fulfill one of the ten majors such as General Business and Management, Finance, or Personnel and Labor Relations and then plan with their advisors a group of electives, such as the following.

- BMGT 440—Financial Management
- BMGT 482—Business and Government
- FSAD 300—Food Service Organization and Management

**International Business**

Students interested in international business must fulfill one of the ten majors, such as Marketing, Finance, Transportation, or General Business and Management, and then plan with their advisors courses such as these below while selecting their ECON, USP Advanced Studies, and elective courses:

- BMGT 392—International Business
- ECON 440—International Economics
- GVPT 300—International Political Relations
- GVPT 402—International Law
- GVPT 457—American Foreign Relations

and courses related to specific geographic areas.

**Honors****Honor Societies**

Beta Alpha Psi. National scholastic and professional honorary fraternity in accounting. Members are elected on the basis of excellence in scholarship and professional service from junior and senior students majoring in accounting in the College of Business and Management.

Beta Gamma Sigma. National scholastic honorary society in business administration. To be eligible students must rank in the upper five percent of their junior class or the upper ten percent of their senior class in the College of Business and Management. Students are eligible the semester after they have earned forty-five credits at the University of Maryland at College Park, and have earned a total of seventy-five credits.

Financial Management Association Honorary Society. National scholastic honorary society sponsored by the Financial Management Associa-

tion. To be eligible students must be finance majors with a cumulative grade point average of 3.5 for a minimum of ninety credits.

**Omega Rho.** National scholastic honorary society in operations research, management and related areas. Members are elected on the basis of excellence in scholarship from junior and senior students majoring in appropriate quantitative areas.

**Pi Sigma Phi.** National scholastic honorary society sponsored by the Propeller Club of the United States. Membership is elected from outstanding senior members of the University of Maryland chapter of the Propeller Club majoring in transportation in the College of Business and Management.

**Student Awards.** For high academic achievement, students in the college may receive recognition by the Dean's List; Delta Sigma Pi Scholarship Key; Distinguished Accounting Student Awards; and Wall Street Journal Student Achievement Award.

**Scholarships.** The college offers several scholarships, including the AIACC J. "Bud" Ecalono Memorial Scholarship #16; Alcoa Foundation Traffic Scholarship; Delta Nu Alpha Chesapeake Chapter No. 23 Scholarship; Delta Nu Alpha Washington, D.C. Chapter No. 84 Scholarship; Geico Achievement Award; William F. Holin Scholarship; National Defense Transportation Association Scholarship, Washington, D.C. Chapter; Propeller Club Scholarship; Warren Reed Scholarship (Accounting); Jack B. Sacks Foundation Scholarship (Marketing); Charles A. Taff Scholarship (Transportation); and William and Carolyn Witzel Scholarship.

## Student Professional Organizations

Students may choose to associate themselves with one or more of the following professional organizations: American Marketing Association; American Society for Personnel Administration (Personnel); Association of College Entrepreneurs (all business majors); Dean's Undergraduate Advisory Council; Delta Nu Alpha (Transportation); Delta Sigma Pi (all business majors); Finance, Banking and Investments Society (finance); National Association of Accountants; National Defense Transportation Association (Transportation); Phi Chi Theta (all business majors); Society for the Advancement of Management (all business majors); and Propeller Club of America (Transportation).

Course Code: BMGT

## COLLEGE OF COMPUTER, MATHEMATICAL AND PHYSICAL SCIENCES (CMPS)

2300 Mathematics Building, 454-4596

Dean: J.E. Osborn (Acting)  
Assistant Dean: Williams  
Advisor/Consultant: Lucas

The search for new knowledge is one of the most challenging activities of humankind. Universities are the key institutions in society where fundamental research is emphasized. The College of Computer, Mathematical and Physical Sciences at College Park contributes very substantially and effectively to the research activities of the University of Maryland. The College of Computer, Mathematical and Physical Sciences is like a technical institute within a large university. Students majoring in any one of the disciplines encompassed by the college have the opportunity of obtaining an outstanding education in their field.

The college serves both students who continue as professionals in their area of specialization, either immediately upon graduation or after post-graduate studies, and those who use their college education as preparatory to careers or studies in other areas. The focused specialist as well as the broad "Renaissance person" can be accommodated. Many research programs include undergraduates either as paid student helpers or in forms of research participation. Students in departmental Honors Programs particularly are given the opportunity to become involved in research. Other students too may undertake research under the guidance of a faculty member.

A major portion of the teaching program of the college is devoted to serving students majoring in disciplines outside of the college. Some of this teaching effort is directed toward providing the skills needed in support of such majors or programs. Other courses are designed as enrichment for

non-science students, giving them the opportunity to explore the reality of science without the technicalities required of the major.

The college is strongly committed to making studies in the sciences available to all regardless of their background. In particular, the college is actively pursuing an affirmative action program to rectify the present under-representation of women and minorities in these fields. There are in fact many career opportunities for women and members of minorities in the fields represented by the college.

## Structure of the College

The following departments, programs and research units comprise the college:

Department of Computer Science  
Department of Geology  
Department of Mathematics  
Department of Meteorology  
Department of Physics  
Applied Mathematics Program\*  
Astronomy Program  
Chemical Physics Program  
Physical Sciences Program  
Center for Automation Research  
Institute for Advanced Computer Studies  
Institute for Physical Sciences and Technology  
Laboratory for Plasma Research  
(Joint with College of Engineering)

\*See the separate listing for the Applied Mathematics Program in Chapter 8.

## Degree Programs

The following Bachelor of Science degree programs are offered to undergraduates by the departments and programs of the college: Astronomy, Computer Science, Geology, Mathematics, Physics, Physical Sciences.

## Mathematics Education

A student completing an undergraduate major in astronomy, physics, physical sciences, or math who wishes certification as a high school teacher in a subject represented by this college, must consult the College of Education in the second semester of the sophomore year. Early contact should be made with either Dr. John Layman (astronomy, physics, physical sciences) or Dr. James Fey (mathematics). Application for admission to the Teacher Education program is made at the time that the first courses in education are taken. Admission to the Teacher Preparation program is selective.

## Advising

The CMPS Undergraduate Office, 2300 Mathematics Building, 454-4596, is the central office for coordinating the advising, processing and updating of student records. Inquiries concerning university regulations, transfer credits, and other general information should be addressed to this office. Specific departmental information is best obtained directly from the departments.

## Entrance Requirements

With the exception of Computer Science, criteria and procedures for admission to the college are the same as admission to the institution. Admission to the Computer Science Department is on a competitive basis for both freshmen and transfer students. Freshmen are admitted on the basis of their Scholastic Aptitude Tests and high school grade point average. Transfer admission is based on a cumulative grade point average and completion of specific courses in mathematics and computer science.

## Graduation Requirements

1. A minimum of 120 semester hours with at least a C average is required of all Bachelor of Science degrees from the college.
2. Thirty-nine credit hours which satisfy the University Studies Program as presented under Academic Regulations and Requirements in this catalog. Courses taken to satisfy these requirements may also be used to satisfy major requirements. All students who matriculated in

the summer 1978 session or later must complete six credits of English Composition.

3. Major and supporting coursework as specified under each department or program.
4. The final thirty semester hours must be completed at College Park. Occasionally, this requirement may be waived by the dean for up to six of these thirty credits to be taken at another institution. Such a waiver is granted only if the student already has thirty credits in residence.
5. Students must be enrolled in the program in which they plan to graduate by the time they register for the last fifteen hours.

### Research and Service Units

#### Institute for Physical Science and Technology

4201 Computer and Space Sciences Building, 454-2639  
Professor and Director: James A. Yorke\*  
\*Joint with Mathematics

The faculty members of the Institute for Physical Science and Technology are engaged in the study of pure and applied science problems that are at the boundaries between those areas served by the academic departments. These interdisciplinary problems afford challenging opportunities for thesis research and classroom instruction. Courses and thesis research guidance by the faculty of the institute are provided either through the graduate programs in chemical physics and in applied mathematics or under the auspices of other departments. Students interested in studying with institute faculty members should direct inquiries to the Director, Institute for Physical Science and Technology, College Park, MD 20742.

Current topics of research interest in the institute include optical physics, statistical mechanics, chemical physics, physics of upper atmosphere and magnetosphere, fluid dynamics, physical oceanography, various aspects of space and planetary science, theoretical and applied numerical analysis, chaotic dynamics, and the history of science.

The institute administers the Graduate Program in Chemical Physics, which provides courses, seminars, and research direction for graduate students in the general area of chemical physics. Further information may be obtained from the director of the Chemical Physics Program at (301) 454-3839. The institute sponsors a wide variety of seminars in the various fields of its interest. Principal among these are the general seminars in optical physics, statistical physics, applied dynamics, space science, numerical analysis, fluid dynamics, chemical physics, and history of science. Information concerning the seminars may be obtained by writing to the director of the institute, or by calling 454-2636.

Financial support for qualified graduate students is available through research assistantships funded by grants and contracts, and through teaching assistantships in related academic departments.

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## COLLEGE OF EDUCATION (EDUC)

Benjamin Building, 454-2011

Dean: Dale Scannell  
Office of Student Services: 454-2017

The College of Education is a professional college committed to advancing the science and art of education including the practices and processes which occur from infancy through adulthood in both school and non-school settings. The college mission is to provide preparation for current and future teachers, counselors, administrators, educational specialists, and other related educational personnel, and to create and disseminate the knowledge needed by professionals and policy makers in education and related fields.

The college is organized into seven departments, three of which offer undergraduate majors in Teacher Education: the Department of Curriculum and Instruction which offers early childhood, elementary, and secondary education programs; the Department of Industrial, Technological, and Occupational Education; and the Department of Special Education. Admission to the teacher education programs in the above-mentioned departments is selective. See admission requirements below. The Department of Industrial, Technological, and Occupational Education also offers an Industrial Technology major leading to a career in industry.

The professional sequences in the teacher education program are open only to students who have been admitted to a Teacher Education Major. Students with other majors who have an interest in the area of education

may wish to enroll in a variety of courses offered by the college that deal with schooling, human development, learning styles and techniques, and interaction processes.

In carrying out its mission, the college is committed to a society which is open to and supportive of the educational aspirations of the widest population of learners and to continuous research and evaluation in relation to teaching and learning in a multicultural, high technology society. At times, students may be invited to actively participate with graduate students and faculty members in research undertakings and evaluation processes. Students also make use of the micro-teaching laboratory, the education technology and computer laboratory, and the curriculum laboratory.

In addition to the University Studies program, education majors have the opportunity to complete 45 to 55 credit hours of work in the arts, sciences and/or humanities. In the teacher education courses, students develop professional behaviors through active experiences in the college classroom and participate in exploring, learning and practicing with children and teachers in classrooms in the community. The capstone experience of student teaching brings classroom theory and practice together into a personal set of professionally appropriate skills and processes.

### Admission to Teacher Education

Applicants to the University of Maryland who have declared an interest in education are admitted to the university by the Office of Undergraduate Admissions as pre-education majors. University of Maryland undergraduates can declare themselves pre-education majors at any time although it is recommended that this choice be made prior to completion of 45 credit hours. Pre-education majors receive advising by staff of their particular department regarding admission to the Teacher Education Program in the College of Education. All teacher education pre-majors must apply for admission to, and be admitted as students by, the College of Education in order to pursue the professional teacher education degree program.

For admission into a teacher education program, a student must (1) complete the USP Fundamental Studies requirements (six credits); (2) earn forty-five semester hours with an overall cumulative grade point average of at least 2.5 on a 4.0 scale (granted by UMCP or some other institution) in all coursework prior to enrollment in EDHD 300; and (3) have a satisfactory score on the language and mathematics segments of the California Achievement Test Level 20. Transfer students with more than 45 semester hours of previously earned credit and post-Bachelor's degree students must apply for admission to the college as early as possible. Admission application forms are available in Room 1210 of the Benjamin Building. Only those who are admitted are able to enroll in the professional education sequence.

A student who initially fails to meet the admission criteria may apply to the college whenever the criteria for admission are met, with the stipulation, however, that a student may take the CAT test a maximum of three times. A plan for becoming eligible for admission will be developed by the student and the department advisor. A Teacher Education Appeals Board will review appeals from students who do not meet the admission, advancement or retention criteria.

Criteria for admission to the Teacher Education program apply to any teacher preparation program offered by the University of Maryland. Thus, students desiring a major in agriculture and extension education or a major in health or physical education should apply to the College of Education for admission to the professional program in Teacher Education. Students who are not enrolled in the College of Education but who, through an established cooperative program with another college are preparing to teach, must meet all admission, scholastic and curricular requirements of the College of Education. The professional education courses are restricted to degree-seeking majors.

### Student Teaching

Once the student has been admitted into the professional program, required courses must be completed in an appropriate sequence leading to the required student teaching experience. Prior to assignment to student teaching all students in teacher preparation programs must (1) have maintained an overall grade point average of at least 2.5 with a minimum grade of C in every course required for the major; (2) have satisfactorily completed all other required course work in their program; (3) apply for student teaching to the Office of Laboratory Experiences one semester in advance; (4) be recommended by their department; and (5) have on file favorable ratings from prior supervised experiences in school settings including evaluations of the EDHD 300 field experiences.

All students participating in any field experience in education are required to undergo a criminal background check. This is necessary because the counties in which students are placed for field experiences require such checks for their professional staff. The background check requires that students submit identification forms with finger prints.

A certificate indicating freedom from tuberculosis and proof of immunization for measles (rubella) is also required. This may be obtained from a private physician, a health department, or the campus Health Center.

The student teaching experience is for most students the final experience in a professional program preparing them for the beginning teaching years. This culminating phase of the teacher education program provides the prospective teacher with the opportunity to integrate theory and practice in a comprehensive, reality-based, experience. Student teaching placements, as well as all other field experiences, are arranged by the Office of Laboratory Experiences. Prior to receiving a student teaching placement, prospective student teachers must have been admitted to Teacher Education and have completed requirements as described in the previous section. In programs requiring more than one student teaching placement, the first placement must be satisfactorily completed before the student begins the succeeding placement.

Most student teaching placements and accompanying seminars are arranged in the Teacher Education Centers and other collaborative field sites jointly administered by the College of Education and participating school systems. The student teaching semester is a full-time commitment and interference with this commitment because of employment or coursework is not permitted. Living arrangements, including transportation for the student teaching assignments, are considered the responsibility of the student. Students should contact the Office of Laboratory Experiences if there are any questions regarding this policy.

## Graduation Requirements

The degrees of Bachelor of Arts and Bachelor of Science are conferred by the College of Education. The determination of which degree is conferred is dependent upon the amount of liberal arts study included in a particular degree program. Minimum requirements for graduation are 120 semester hours. Specific departmental program requirements for more than the minimum must be fulfilled.

In addition to the University Studies program requirements and the specific requirements for each curriculum, the college requires that all majors complete EDHD 300, EDPA 301, and three semester hours of an approved speech course. A grade of C or better is required in all pre-professional and professional coursework required for the major. An overall grade point average of 2.5 must be maintained after admission to Teacher Education. A grade of S is required in student teaching.

Exceptions to curricular requirements and rules of the College of Education must be recommended by the student's advisor and department chairperson and approved by the dean.

## Accreditation and Certification

All bachelor-degree teacher preparation programs are accredited by the National Council for Accreditation of Teacher Education and have been approved by the Office of Certification and Accreditation of the Maryland State Department of Education using standards of the National Association of State Directors of Teacher Education and Certification. Accreditation provides for reciprocal certification with other states that recognize national accreditation.

The Maryland State Department of Education issues certificates to teach in the public schools of the state. In addition to graduation from an approved program, the Maryland State Department of Education requires satisfactory scores on the National Teacher Exam (NTE) for certification. At the time of graduation, the college informs the Maryland State Department of Education of the graduate's eligibility for certification.

## Special Resources and Opportunities

The College of Education offers many special resources and facilities to students, faculty, and the community. The Center for Educational Research and Development, Institute for the Study of Exceptional Children and Youth, the Music Educators National Conference Historical Center, the Reading Center and the Center of Rehabilitation and Manpower Services all are part of the College of Education. In addition, undergrad-

ate education and pre-education majors are likely to find the following resources particularly useful:

### The Student Services Office 1210 Benjamin Building, 454-2017

The Student Services Office provides academic advising support for pre-education and education students during admission, orientation, registration, graduation and certification. At other times, pre-education majors and students who have been admitted to the College of Education receive academic advising through their departments.

### The Office of Laboratory Experiences 1209 Benjamin Building, 454-2029

The Office of Laboratory Experiences (OLE) is the liaison unit between the college and the public school systems that serve as laboratories for the preparation of teachers. While the primary role of the OLE is to provide teacher education students with sites for internships, student teaching and pre-student teaching classroom experience, the office also operates in-service programs for teachers with the schools and facilitates research and staff development activities in the schools. Placement coordinators are available in the OLE to answer questions, provide orientation programs and arrange all field experience placements.

### University Credentials Service, Career Development Center 3121 Hornbake Library, 454-2813/4

All seniors graduating in the College of Education (except Industrial Technology majors) are required to complete a credentials file with the Career Development Center. Credentials consist of a record of a student's academic preparation and recommendations from academic and professional sources. An initial registration fee of \$20.00 enables the Career Development Center to send a student's credentials to interested educational employers, as indicated by the student. Students who are completing teacher certification requirements, or advanced degrees and are interested in a teaching, administrative or research position in education may also file credentials. (This service is also available to alumni.)

Other services include job vacancy listings in secondary schools and institutions of higher learning, on-campus interviews with state and out-of-state school systems, and information about and applications for school systems throughout the country.

### Curriculum Laboratory 2230 Benjamin Building, 454-5466

The Curriculum Laboratory is a learning resource center serving the information needs of preservice and inservice teacher education students. The professional staff provides reference assistance and offers both general and subject-specific classroom orientations. Included in the collection are curriculum guides, reference and professional books, elementary and high school textbooks, exemplary instructional materials, research documents, standardized test specimens, professional journals, and material placed on faculty reserve.

### Educational Technology Center 0307 Benjamin Building, 454-4017

The Educational Technology Center is designed as a multi-media service facility for students and faculty of the college. It distributes closed-circuit television throughout the building, provides audio-visual equipment and service, houses a computer lab, and offers instruction in all aspects of instructional materials, aids, and new media. Production and distribution facilities as well as studio facilities are available for a videotaping system and closed-circuit television. Laboratories are available for graphic and photographic production with facilities for faculty research and development in the use of instructional media. Supporting the professional faculty in the operation of the center are media specialists.

### Center for Mathematics Education 2119 Benjamin Building, 454-2031

The Center for Mathematics Education provides a mathematics laboratory for undergraduate and graduate students, and a program of clinical diagnostic and corrective/remedial services for children and adolescents. Clinic services are offered in conjunction with the graduate program in elementary and secondary school mathematics. Center faculty are engaged in basic research in mathematics education, serve as consultants to school systems and instructional publishers, and provide inservice teacher education in addition to graduate degree programs.

**Center for Young Children**

Cambridge Complex East, 454-2341

The Center for Young Children, a research and demonstration nursery-kindergarten program providing child care for the university community (1) serves as a center in which individual professors or students may conduct research; (2) serves as a unit for undergraduate and graduate students to have selected experiences with young children, such as student teaching, child study, and observation of young children; (3) provides a setting in which educators from within and without the university can come for sources of ideas relative to the education of young children.

**Science Teaching Center**

0227 Benjamin Building, 454-2024

The Science Teaching Center offers programs related to undergraduate and graduate science teacher education, science supervisor training, and basic research in science education, provides aid to inservice teachers, to districts and science supervisors, and maintains consulting services at all levels, kindergarten through community college.

The Science Teaching Center has served as the headquarters for the International Clearinghouse on Science and Math Education in collaboration with AAAS, NSF, UNESCO, and the National Academy of Sciences.

**Student and Professional Organizations**

The college sponsors a chapter of Phi Delta Kappa, a Student National Education Association, and a Chapter of Kappa Delta Pi, an Honorary Society in education. A student chapter of the Council for Exceptional Children is open to undergraduate and graduate students in Special Education. A student chapter of the Music Educators National Conference (MENC) is sponsored by the Department of Music, and the Industrial Education Department has a chapter of the American Society of Tool and Manufacturing Engineers and a chapter of the American Industrial Arts Association.

In several departments there are informal organizations of students. Students should contact the individual departments for additional information.

**COLLEGE OF ENGINEERING (ENGR)**

1131 Engineering Classroom Building, 454-2421

Dean: George E. Dieter

Undergraduate Student Affairs: 454-2421

Cooperative Engineering Education: 454-5191

Center for Minorities in Science and Engineering: 454-7219

The mission of the College of Engineering is to provide quality engineering education, with sufficient scope to include both fundamental and specialized engineering training, so that graduates are prepared to serve the current and emerging needs of society. Just as the boundary between the functions of engineers and applied scientists or mathematicians is becoming less distinct, the various branches of engineering increasingly interact as technical problems become more sophisticated and require interdisciplinary approaches to their solutions. In addition to its teaching role, the college feels a related responsibility to conduct strong research programs that contribute to the advancement of knowledge.

Engineers also occupy an intermediary position between scientists and the public because, in addition to understanding scientific principles, they are concerned with the timing, economics, and values that define the use and application of those principles. With this in mind the college fosters a close partnership with industry and government, and also reaches out to both the campus community and the community at large with its services.

**Entrance Requirements**

Preparation for pursuing an engineering degree begins in the freshman or sophomore year of high school. The time required to complete the various degree programs may be extended beyond the four years cited in this catalog to the extent that incoming students may be deficient in their high school preparation. Therefore, students interested in studying engineering should enroll in the appropriate academic program in high school. This course of study should include 3-1/2 to 4 years of college preparatory mathematics (including algebra, geometry, trigonometry, and pre-calculus mathematics). In addition, students should complete one year each of physics and chemistry.

Admission to the College of Engineering is competitive for both freshmen and transfer students. Applicants who have designated a major within the College of Engineering will be selected for admission on the basis of academic promise and available space. Because of space limitations, the College of Engineering may not be able to offer admission to all qualified applicants. The College Park campus urges early application. Applicants admissible to the university but not to the college will be offered admission to pre-engineering. A pre-engineering major does not assure eventual admission to the College of Engineering. For consideration of appeals for admission contact the Office of Undergraduate Admissions. Minority and women students are encouraged to apply for admission.

**Freshmen**

Freshmen applicants who have designated a major offered within the College of Engineering will be selected for admission directly to the college on the basis of SAT scores and GPA earned in academic subjects during the 9th, 10th, and 11th grades. A minimum combined SAT score of 1100 (with at least 580 on the mathematics portion) and a 3.0 cumulative GPA will be required for all majors except Aerospace and Electrical Engineering. Direct admission into Aerospace Engineering requires a combined SAT score of 1100 (with at least 580 on the mathematics portion) and a 3.5 cumulative GPA. Direct admission into Electrical Engineering requires a combined SAT score of 1250 (with at least 650 on the mathematics portion) and a 3.5 cumulative GPA.

Academically talented freshmen are admitted directly to the college. We define these as: 1) National Merit and National Achievement Finalists and Semifinalists; 2) Maryland Distinguished Scholar Finalists; 3) Francis Scott Key or Banneker Scholars; and 4) students having participated in the "Study in Engineering" and the "Minority Scholars in Computer Science and Engineering" summer programs.

**Transfer**

All new transfer students, as well as students currently enrolled at the University of Maryland at College Park asking to be admitted to the College of Engineering, must meet the competitive admission requirements in effect for the semester in which they plan to enroll. The requirements for admission to Aerospace, Agricultural, Chemical/Nuclear, Civil, Fire Protection, Mechanical, Pre-Electrical, undecided, and undesignated engineering are:

1. Minimum Cumulative GPA:  
Maryland Residents: 3.0  
Out-of-State: 3.2  
International: 3.5
2. Completion of the following five prerequisite courses or their equivalents with a minimum grade of "C" in each: MATH 140, MATH 141, CHEM 103, CHEM 113, and PHYS 161.
3. Completion of 28 semester hours, including ENGL 101: Introduction to Writing.

The requirements for admission to Electrical Engineering are:

1. Admission to the College of Engineering
2. Minimum Cumulative GPA: 3.0\*
3. Completion of the following 49 credits (14 courses) with a minimum cumulative GPA for these courses of 3.0\* and a maximum of 17 registrations in the courses (i.e., a maximum of 3 of the 14 courses may be repeated):

CHEM 103	ENES 101	MATH 140
CHEM 113	ENES 110	MATH 141
PHYS 161	ENES 221	MATH 241
PHYS 262	ENEE 204	MATH 246
PHYS 263	ENES 240	

The requirements for admission to Aerospace Engineering are:

1. Admission to the College of Engineering.
2. Minimum cumulative GPA: 2.5\*
3. Completion of the following 46 credits (13 courses) with a minimum GPA of 2.5\* in these courses with no grade lower than a "C" and a maximum of 16 registrations in the courses.

ENGL 101	MATH 140
CHEM 103	MATH 141
CHEM 113	MATH 241
PHYS 161	MATH 246
PHYS 262	ENES 101
PHYS 263	ENES 110
ENES 221	



## Special Notes

1. Students with a previous B.A. or B.S. degree will be admitted to the College of Engineering with a minimum GPA of 3.0 and completion of the five prerequisites (MATH 140, MATH 141, CHEM 103, CHEM 113, and PHYS 161).
2. UMBC and UMES students will be admitted to the College of Engineering with official verification of their enrollment in engineering programs at their respective universities.
3. Maryland community colleges and Northern Virginia Community College students who meet the freshmen admission requirements but choose to attend a community college have the following options:
  - a. Remain at the community college in an articulated engineering program and complete at least 56 credits, after which time the student will be admitted to the college on application provided that he/she has at least a 2.0 GPA at the community college. (This will apply to all majors within the college except aerospace and electrical engineering.) The student must supply the high school transcript and SAT scores. In the event that the community college does not offer a 56-credit articulated engineering program, the student may transfer earlier.
  - b. Transfer immediately to the college (except aerospace and electrical engineering) provided the student has completed the five required courses (MATH 140, MATH 141, CHEM 103, CHEM 113, and PHYS 161) and meets the competitive GPA for the semester of intended enrollment on the College Park campus. \*Please Note That Minimum GPAs Are Subject To Change Each Semester.

## Graduation Requirements

Structure of Engineering Curricula: Courses in the normal curriculum or program and prescribed credit hours leading to the degree of Bachelor of Science (with curriculum designation) are outlined in the sections describing each department in the College of Engineering. No student may modify the prescribed number of hours without special permission from the Dean of the college. The courses in each curriculum may be classified in the following categories:

1. Courses in the University Studies Program.
2. Courses in the physical sciences—mathematics, chemistry, physics.
3. Related technical courses—engineering sciences and other courses approved for one curriculum but offered by another department.
4. Courses in the major department. A student should obtain written approval for any substitution of courses from the department chair and the Dean of the college. The courses in each engineering curriculum, as classified below, form a sequential and developmental pattern in subject matter. In this respect, curricula in engineering may differ from curricula in other colleges. Some regulations which are generally applicable to all students may need clarification for purposes of orderly administration among engineering students (see the Academic Regulations section of this catalog). Moreover, the College of Engineering establishes policies which supplement the university regulations.

## College Regulations

1. The responsibility for proper registration and for satisfying stated prerequisites for any course must rest with the student as does the responsibility for proper achievement in courses in which the student is enrolled. Each student should be familiar with the provisions of this catalog, including the Academic Regulations.
2. Required courses in mathematics, physics, and chemistry have highest priority; and it is strongly recommended that every engineering student register for mathematics and chemistry or mathematics and physics each semester until the student has fully satisfied requirements of the College of Engineering in these subjects.
3. To be eligible for a bachelor's degree in the College of Engineering, a student must have an overall average of at least a C (2.0) and a grade of C or better in all engineering courses (courses with an EN prefix). Responsibility for knowing and meeting all graduation requirements in any curriculum rests with the student.
4. All students are required to complete a number of general education courses and must follow the university's requirements regarding completion of the University Studies Program. Consult the Academic Regulations section of this catalog for additional information. Engineering students who began college level work (either at the University of Maryland or at other institutions) during the Fall 1989 semester or later are required to complete a junior level English course (with the exception of Agricultural Engineering

students) regardless of their performance in Freshmen English classes. This represents a college policy, not a university-wide policy. Students beginning college-level work in the Fall 1989 semester must also plan their University Studies Program courses to reflect depth as well as breadth. They should plan to take at least two courses (preferably a lower level and upper level course) which follow a theme area or provide more than simply introductory level study in one general studies department of their choice.

5. All degree programs in the College of Engineering require a minimum of 120 credits plus satisfaction of all department, college, and University Studies Program requirements. Students should be aware that for all currently existing engineering programs the total number of credits necessary for the degree will exceed 120 by some number that will depend on the specific major and the student's background.

Curricula for the various engineering departments are given in this catalog to illustrate how the programs can be completed in four years. These curricula are rigorous and relatively difficult for the average student. Surveys have shown that only about one-third to one-half of the students actually receive an engineering degree in four years. The majority of students (whether at Maryland or at other engineering schools nationwide) complete the engineering program in four and one-half to five years. It is quite feasible for a student to stretch out any curriculum; this may be necessary or desirable for a variety of reasons. However, students should seek competent advising in order to ensure that courses are taken in the proper sequence.

All students are urged to speak to a counselor in the College of Engineering Student Affairs Office at least two semesters before graduation to review their academic progress and discuss final graduation requirements.

## Advising

Advising is available by appointment Monday through Friday, from 8:30 a.m. to 11:30 a.m. and 1:00 p.m. to 3:30 p.m., and on a walk-in basis from 11:30 a.m. to noon and 3:30 p.m. to 4:30 p.m. in the College of Engineering Student Affairs Office, 1131 Engineering Classroom Building, 454-2421. In addition, advising is available in the departments; see advising section in the specific engineering department for times and location.

## Department and Degrees

The College of Engineering offers the degree of Bachelor of Science in the following fields of study:

Aerospace Engineering  
 Agricultural Engineering (see also College of Agriculture)  
 Chemical Engineering  
 Civil Engineering  
 Electrical Engineering  
 Fire Protection Engineering  
 Mechanical Engineering  
 Nuclear Engineering  
 Undesignated Engineering (Engineering Option and Applied Science Option)

All of the above programs are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology except the Applied Science Option of the Undesignated Engineering degree.

## The Freshman-Sophomore Years

The freshman and sophomore years in engineering are designed to lay a strong foundation in mathematics, physical sciences, and the engineering sciences upon which the student will later develop a professional program during the upper division (junior and senior) years. The college course requirements for the freshman year are the same for all students, regardless of their intended academic program, and about 75 percent of the sophomore year course requirements are common, thus affording the student maximum flexibility in choosing a specific engineering specialization.

## Engineering Sciences

Engineering Science courses represent a common core of basic material offered to students of several different departments. All freshman and sophomore students of engineering are required to take ENES 101 and ENES 110. Other ENES courses, 220, 221, 230, and 240, are specified

by the different departments or taken by the student as electives. The responsibility for teaching the engineering science courses is divided among the Chemical/Nuclear, Civil, Electrical, and Mechanical Engineering departments. In addition to the core courses noted above, several courses of general interest to engineering or non-engineering students have been given ENES designations. See the List of Approved Courses in this catalog for further descriptions of these courses.

## Freshman Curriculum

All freshmen in the College of Engineering are required to complete the following basic curriculum regardless of whether the student plans to proceed through one of the designated baccalaureate degree programs or follow any of the multidisciplinary nondesignated degree curricula that are sponsored by the college.

	Semester Credit Hours	
	I	II
CHEM 103, 113—General Chemistry I, II.....	4	4
PHYS 161—General Physics .....		3
MATH 140, 141 Calculus I, II .....	4	4
ENES 101—Introductory Engineering Science .....	3	3
ENES 110 Statics .....		3
University Studies Program Requirements .....	6	3
ENGL 101—Introduction to Writing (Freshman English)* .....		
Total .....	17	17

\*ENGL 101: Freshman English must be attempted before completion of thirty (30) credit hours.

Entering freshmen math placements are determined by performance on math placement exams. Placement in MATH 002 or MATH 115 will delay by a semester eligibility to take certain engineering courses.

## Sophomore Year

During the sophomore year the student selects a sponsoring academic department (Aerospace, Agricultural, Chemical, Civil, Electrical, Fire Protection, Mechanical, or Nuclear Engineering) and this department assumes the responsibility for the student's academic guidance, counseling, and program planning from that point until the completion of the degree requirements of that department as well as the college. For the specific requirements, see the curriculum listing in each engineering department.

## Dual Degree Program

The Dual Degree Program is a cooperative arrangement between the College of Engineering and selected liberal arts colleges which allows students to earn undergraduate degrees from both institutions in a five-year program. A student in the Dual Degree Program will attend the liberal arts college for approximately three academic years (minimum ninety semester hours) and the College of Engineering at the University of Maryland for approximately two academic years (minimum hours required determined individually approximately sixty semester hours).

Dual degree candidates may participate in any of the baccalaureate degree programs in the College of Engineering.

At the present time the participating institutions in Maryland and the District of Columbia are American University, Bowie State University, Columbia Union College, Coppin State College, Frostburg State University, Morgan State University, College of Notre Dame of Maryland, St. Mary's College of Maryland, Salisbury State University, Towson State University, Western Maryland College, Trinity College, and Washington College. Also participating in the program are Kentucky State University, King College in Tennessee, Shippensburg State University in Pennsylvania, and Xavier University in Louisiana.

## Dual Degree Program in Engineering and German

As the nation increases its global perspective, the College of Engineering recognizes its responsibilities to promote technological and cultural development among students. To that end, the College of Engineering has established a formal Dual Degree Program in Engineering and German. The aim of this program is to educate future engineers to use communication skills in German and possess cultural literacy skills which are essential to the individual working within a global market.

Students may participate in the Dual Degree Program in Engineering and German with no prior knowledge of German. Students complete the requirements for two degrees simultaneously. The program will take a minimum of five years to complete and students will earn two baccalaureate degrees, one in engineering and the other in German. As part of the program, students will spend a semester in Germany in intensive study at the Goethe Institute and in an internship with a German engineering company.

For further information about this program, students should contact the Engineering Student Affairs Office (454-2421) or the Department of German and Slavic Languages and Literature, 454-4301.

## Engineering Transfer Programs

Most of the community colleges in Maryland provide one- or two-year programs which have been coordinated to prepare students to enter the sophomore or junior year in engineering at the University of Maryland. These curricula are identified as Engineering Transfer Programs in the catalogs of the sponsoring institutions. The various associate degree programs in technology do not provide the preparation and transferability into the professional degree curricula as the designated transfer programs. A maximum of one-half of the degree credits (sixty to sixty-five semester hours) may be transferred from a two-year community college program.

There may be six to eight semester hours of major departmental courses at the sophomore level which are not offered by the schools participating in the engineering transfer program. Students should investigate the feasibility of completing these courses in summer school at the University of Maryland before starting their junior coursework in the fall semester.

## Financial Assistance

The College of Engineering awards some merit-based scholarships. These awards are designated primarily for juniors and seniors in the college. Students must submit an application and all supporting documents by February 15 in order to be considered for scholarship assistance for the ensuing year. For additional information, contact the Student Affairs Office, 1131 Engineering Classroom Building, 454-2421.

## Honors

The College of Engineering offers an Engineering Honors Program that provides eligible students the opportunity to pursue an enriched program of studies which will broaden their perspectives and increase the depth of their knowledge. This program is available to students who meet the following criteria:

1. 3.5 overall GPA
2. 3.5 engineering GPA
3. Junior standing or 65 applicable credits.

In completing the program, all engineering Honors students must:

1. Submit an Honors research project necessitating a paper and oral presentation worth three hours of credit.
2. Successfully complete two semesters of the Engineering Honors Seminar (ENES 388, 1 credit each).
3. Maintain a 3.3 GPA.

For additional information, contact the Student Affairs Office, 1131 Engineering Classroom Building, 454-2421.

## Research and Service Units

### The Center for Minorities in Science and Engineering

1134 Engineering Classroom Building, 454-7219  
Director: Rosemary L. Parker

The center is dedicated to increasing the graduation rates for black, hispanic, and native American students majoring in engineering and computer science. It provides minority students with academic advising and free tutorial assistance in mathematics, chemistry, physics, engineering, and computer science.

Through its scholarship and mentor programs, the center builds partnerships with various public and private organizations. The mentor program is designed to help minority students learn about their disciplines from professionals working in the field and to enable organizations to identify engineering students for employment upon graduation.

**Cooperative Engineering Education**

1137 Engineering Classroom Building, 454-5191  
 Director: Heidi Winick Sauber

Cooperative education (co-op) is an optional academic program that combines classroom theory with career-related work experience. Through co-op, students alternate semesters of full-time study with semesters of full-time paid employment for a total of fifty work weeks. Co-op is designed to enhance a student's academic training, professional growth, and personal development. Co-op students earn a Bachelor of Science degree with co-op distinction and complete the same academic requirements as all other students.

The benefits of co-op include: 1) Integration of theory and application, bringing new meaning to classroom studies and work experiences, 2) Professional level experience to offer potential employers after graduation, 3) Confirmation of career decisions and invaluable professional contacts, 4) Development of leadership skills and self-confidence, and 5) Ability to finance educational expenses.

Students are eligible after completing their freshman and sophomore engineering requirements provided they maintain a minimum 2.0 grade point average. All students are expected to work for the same employer throughout their co-op assignments so that they can be given progressively increasing levels of responsibility.

**Instructional Television System**

2104 Engineering Classroom Building, 454-5190  
 Director: Arnold E. Seigel

The University of Maryland's Instructional Television System (ITV) is headquartered in the College of Engineering. Each semester, over fifty regularly scheduled graduate and undergraduate classes are held in ITV's studio classrooms and broadcast "live" to government agencies and businesses in the greater Washington and Baltimore area. Students in the remote classrooms watch the broadcasts on large TV monitors. They are able to talk to the instructors and other students using a phone-line "talk back" system. Through the ITV system, working adult students are able to progress toward graduate degrees, primarily in engineering and computer science, without leaving their places of work.

**Student Organizations****Professional Societies**

Each of the engineering departments sponsors a student chapter or student section of a national engineering society. The student chapters sponsor a variety of activities including technical meetings, social gatherings, and college or university service projects. Students who have selected a major are urged to affiliate with the chapter in their department. These organizations are: American Helicopter Society, American Institute of Aeronautics and Astronautics, American Institute of Chemical Engineers, American Nuclear Society, American Society of Agricultural Engineers, American Society of Civil Engineers, American Society of Mechanical Engineers, Black Engineers Society, Institute of Electrical and Electronics Engineers, Society of Asian Engineers, Society of Automotive Engineers, Society of Fire Protection Engineers, Society of Hispanic Engineers, and Society of Women Engineers.

**Honor Societies**

The College of Engineering and each of the engineering departments sponsor honors societies. Nominations or invitations for membership are usually extended to junior and senior students based on scholarship, service and/or other selective criteria. Some of the honors organizations are branches of national societies; others are local groups: Tau Beta Pi—College Honorary; Alpha Epsilon—Agricultural Engineering; Alpha Nu Sigma—Nuclear Engineering; Chi Epsilon—Civil Engineering; Eta Kappa Nu—Electrical Engineering; Omega Chi Epsilon—Chemical Engineering; Pi Tau Sigma—Mechanical Engineering; Salamander—Fire Protection Engineering; and Sigma Gamma Tau—Aerospace Engineering.

**Undergraduate Research Programs**

Undergraduate research programs allow qualified undergraduate students to work with research laboratory directors in departments, thus giving students a chance for a unique experience in research and engineering design. Projects in engineering allow undergraduate students to do independent study under the guidance of faculty members in an area of mutual interest. For more information contact your designated engineering department.

**COLLEGE OF HEALTH AND HUMAN PERFORMANCE (HLHP)**

(Formerly College of Physical Education, Recreation and Health)

3310 PERH Building, 454-5616, Records, 454-3192

Dean: Dr. John J. Burt  
 Associate Dean: Wrenn  
 Records: Hoxie

The College of Health and Human Performance provides preparation leading to the Bachelor of Science degree in the following professional areas: Physical Education (three certification options), Health Education (school and community), and Recreation. The college also offers curricula in Kinesiological Sciences and Safety Education. In addition, each department offers a wide variety of courses for all university students. These courses may be used to fulfill the general education requirements and as electives.

Programs combining research, service and instruction are provided by the Children's Health and Developmental Clinic, the Adults' Health and Developmental Program, and the Sports Medicine and Physical Fitness Center. More detailed information regarding these program offerings is available through the individual departments.

**Advising**

At the time of matriculation and first registration, each student is assigned to a member of the faculty of the college who acts as the student's academic advisor. These assignments are made by the individual departments and depend upon the student's chosen major. Students who are enrolled in the college, but who are undecided regarding their major, should contact the Associate Dean, 3310H PERH Building, 454-3192.

**Departments and Degrees**

The College of Health and Human Performance offers the baccalaureate degree in the following fields of study: Physical Education, Kinesiological Sciences, Health Education and Recreation. The degree of Bachelor of Science is conferred upon students who have met the conditions of their curricula as herein prescribed by the College of Health and Human Performance.

Each candidate for a degree must file a formal application with the Registrations Office according to the scheduled deadlines for the anticipated semester of graduation.

**Honors**

Phi Alpha Epsilon. Honorary Society of the College of Health and Human Performance. The purpose of this organization is to recognize academic achievement and to promote professional growth by sponsoring activities in the fields of physical education, kinesiology, recreation and health, and related areas.

Students shall qualify for membership at such times as they shall have attained junior standing in physical education, kinesiology, recreation, or health, and have a minimum overall average of 2.7 and a minimum professional average of 3.1. Graduate students are invited to join after ten hours of work with a 3.3 average. For additional information, please contact Dr. Donald Steel, 454-3382.

**Special Resources and Opportunities**

Gymkana Troupe. The Gymkana troupe is a group of highly disciplined young men and women who place a high priority on education and who engage in gymnastics for purposes of recreation, health and personal development. Each member has pledged himself or herself to a drug-free lifestyle in hopes of acting as a role model so others might be motivated to do the same. Gymkana travels throughout the United States during February and March, performing once a week, and ending the season with its annual gymnastic performance at the university. Membership is open to all students regardless of their gymnastic ability. Gymkana is co-sponsored by the College of Health and Human Performance and the Student Government Association. For additional information, please contact Dr. Joe Murray, 454-3358.

## Research and Service Units

### Center on Aging

2304 PERH Building, 454-5393

Director and Professor: Dr. Laura B. Wilson

Associate Director: Dr. Edward F. Ansello

Associate Professor: Dr. James M. Hagberg

Research Associate: Dr. Mark R. Meiners

The Center on Aging stimulates and supports aging related activities within existing departments, colleges, and schools throughout all of the various campuses of the University of Maryland. The center coordinates the Graduate Gerontology Certificate (Master's and Doctoral levels), the university's first approved graduate certificate program. The center assists undergraduate and graduate students interested in the field of gerontology and helps them to devise educational programs to meet their goals. It is a research center working in physiological, economics and policy. It also sponsors a colloquium series on aging, conducts community education programs, assists faculty in pursuing research activities in the field of aging, publishes a newsletter, conducts conferences on adulthood and aging-related topics, and provides on- and off-campus technical assistance to practitioners who serve older adults.

For further information on any of the center's activities call, write or visit the Center on Aging.

Course Code: HLHP

## COLLEGE OF HUMAN ECOLOGY (HUEC)

1100 Marie Mount Hall, 454-2136

Dean: Dr. Laura S. Sims

Assistant Dean for Student Affairs: Paoletti (Acting)

Human ecology can be described as the way people relate to the environment in which they live and make decisions. The study of human ecology applies scientific methods to learn how people interact with their surroundings and how they make choices to satisfy basic human needs: food, clothing, shelter, and interpersonal relationships. Human ecology also examines the workplace, and the delivery of human services. Within the unifying framework of human ecology are several specialized disciplines, each of which has a direct impact on the quality of life of the future.

With its mission of promoting and enhancing quality of life, the college trains professionals who will be able to assist people to function effectively in complex and changing circumstances. Human ecology students have numerous career choices; some will be nutritionists, consumer economists, marriage and family counselors, textile researchers, fashion merchandisers, food scientists...and some will become experts in new and undreamed-of fields.

Areas of study leading to a major in the College of Human Ecology are organized into three departments: Family and Community Development (FMCD), Human Nutrition and Food Systems (HNFS), and Textiles and Consumer Economics (TXCE).

Within this interdisciplinary professional college, students are offered a balance of laboratory, practical and field experiences. In each department, students are encouraged toward innovative discovery, individual achievement and creative applications of knowledge to the social and physical systems in which we function. A student honor society, a minority student group, and the Dean's Ambassador-Scholars offer additional opportunities for student involvement within the college.

Faculty members have distinguished themselves in professional practice, teaching and research; they are augmented by visiting professors and lecturers whose individual areas of expertise provide students a broad exposure to the issues facing individuals and systems in contemporary society.

## Admission

All students desiring to enroll in the College of Human Ecology must apply to the Director of Admissions of the University of Maryland-College Park. One of the majors, Consumer Economics, is a selective admissions program. Specific information concerning the selective admissions can be obtained by contacting the Department of Textiles and Consumer Economics.

## Degrees

The degree of Bachelor of Science is conferred for the satisfactory completion, with an average of C or better, of a prescribed curriculum of 120 academic semester hour credits. No grade below C is acceptable in the departmental courses which are required for a departmental major.

## Curricula

A student may elect one of the following sequences, or a combination of curricula: experimental foods, dietetics, human nutrition and foods, food-service administration, family studies, apparel design, textile marketing/fashion merchandising, textile science, or consumer economics.

All students in the College of Human Ecology, in addition to meeting the University Studies Requirements, are required to complete a series or sequence of courses to satisfy college and department requirements. The remaining courses needed to complete a program of study are elected by the student with the approval of his or her advisor.

The final responsibility of meeting all the requirements for a specific major rests with each individual student.

### College of Human Ecology Requirements (for every student depending on the major):

	Credit Hours
Human Ecology Electives* .....	6
SOCY 100 .....	3
PSYC 100 .....	3
ECON 205—Fundamentals of Economics or	3
ECON 201—Principles of Economics .....	3
SPCH 100, 107, or 125 .....	3

\*Human Ecology Electives to be taken in the college in the two departments other than the major department.

## Advising

The College of Human Ecology maintains a Student Advising and Support Services Center in 1300 Marie Mount Hall. The Advise Center is open 8:30 a.m. to 4:30 p.m., Monday through Friday. Advising is mandatory for all students majoring in programs in Human Ecology. Students may walk in or make an appointment for advising by calling 454-0135.

## COLLEGE OF JOURNALISM (JOUR)

Journalism Building, 454-2228

Dean and Professor: Cleghorn

Associate Dean and Professor: Levy

Assistant Dean: Stewart

Professors: Beasley, Blumler, Gurevitch, J. Grung, Hiebert, Holman, Martin (Emeritus),

Associate Professors: Barkin, Zanot, Stepp

Assistant Professors: L. Grung, McAdams, Paterson, Roche, Smith

Lecturer: Keenan

Instructor: Rhodes

Lois Kay, Director of Career Development, Internship Coordinator

Frank Quine, Director of Development

Carroll Volchko, Director of Business Administration

Located just nine miles from the nation's capital and 30 miles from the bustling commercial port of Baltimore, the College of Journalism at the University of Maryland is one of only six comprehensive journalism schools in the 10 states stretching from New York to Virginia—the nation's most populous region. But the college has a lot more than geography going for it. In a study by the Gannett Center for Media Studies at Columbia University, the college recently was designated one of "Eleven Exemplary Journalism Schools" nationwide: those that surpass others in criteria including teaching, research, facilities and job placement.

Founded in 1947, the college has been accredited for close to three decades by the Accrediting Council on Education in Journalism and Mass Communication. Since it is within easy reach of the offices of Washington and Baltimore newspapers and the Washington bureaus of news organizations such as The New York Times, the Associated Press and the major networks, it is an ideal place for the study of journalism and mass communication. Students have internship opportunities at a variety of

media, non-profit, government and international agencies. Talented adjunct faculty members are also tapped from these organizations to enhance curriculum offerings.

After successful completion of a basic writing and editing skills series, majors are provided the following sequences in which to focus their remaining journalism curriculum: News-Editorial, Public Relations, Broadcast News, Advertising. Within the News-Editorial Sequence, emphases are provided in the areas of News, Magazine, Photojournalism, Literary, Journalism and Science Communication.

## Entrance Requirements

### Freshman Admission

A small number of academically talented freshmen are admitted directly to the college, but most students apply after completing 28 credits. For direct admission as freshmen, students must be either recipients of university scholarships, or have earned both a minimum of 1,200 on the SAT examination (with a minimum of 550 in the verbal section) and a 3.0 (on a 4.0 scale) academic grade point average in high school.

### Upperclass Admission

The majority of students are admitted after having earned 28 credits with a minimum designated grade point average on all previous college level work. Of those credits, a "C" or better must have been earned in Freshman English. Students also must demonstrate English grammar skills competency by either passing the "Test of Language Skills" or the "Test of Standard Written English" or have earned at least a score of 22 on the American College Testing Program (ACT) English usage subsection. These criteria entitle the applicant to "Provisional" journalism major status. Students have two semesters to become full majors by earning at least a "C" in Writing for the Mass Media (JOUR 201) together with maintaining the GPA set for admission which varies from time to time.

### Pre-Journalism

Students not meeting the above criteria yet who are willing to work toward the admissions standards are permitted to register for "Pre-Journalism" status. "Pre-Journalism" is not a major but a program, and this status does not assure eventual admission to the college.

## Degrees

The College of Journalism offers the B.S., M.A. and Ph.D. degrees. At the undergraduate level, students are required to specialize in one of the four sequences offered. All diplomas are in Journalism.

## Graduation Requirements

Students are required to earn a minimum of 121 credits. Accrediting regulations require three-fourths of a student's coursework (a minimum of 90 credits) to be in areas other than mass communication (such as radio-television-film or speech) or journalism. The required public speaking course is exempt from this regulation. A grade of "C" or better must be earned in all journalism courses for which JOUR 201, Writing for the Mass Media serves as a prerequisite.

Students are also required to demonstrate abstract thinking skills. As a measure, majors are offered either a language or mathematics option. Language skills must be demonstrated by taking coursework through the intermediate level. The Math option requires that students complete the following courses: statistics, calculus and computer science.

A support area consisting of four upper-level courses in a concentrated field is also required of Journalism majors. Students must also complete a minimum of 57 credits at the upper level. Finally, in addition to university graduation requirements, Journalism majors must complete additional liberal arts coursework with one course each in government and politics, public speaking, psychology and economics and one course in sociology, anthropology or history.

## Journalism Academic Programs

### 1. Required courses for all Journalism majors:

#### A. Non-journalism course requirements

#### 1. Abstract thinking skills: Students must satisfy one of the following:

- A. Demonstrate foreign language proficiency through the intermediate level. Or
- B. The following Math sequence:
  - i. MATH 140, 150 or 220, or any MATH course for which any of these courses is a prerequisite, except MATH 143.
  - ii. One statistics course (AREC 484, BIOM 301, BMGT 230, CNEC 400, ECON 421, EDMS 451, GEOG 305, GVPT 422, PSYC 200, SOCY 201, TEXT 400, URBS 350. Credit for the degree will be given for the successful completion of only one of the above.
  - iii. Computer Science 103 or 110.

#### 2. A course in public speaking chosen from SPCH 100, 107, 200 or 230.

#### 3. One of the following:

- A. Sociology 100 or 105
- B. Anthropology 101
- C. HIST 156 or 157.

#### 4. PSYC 100 or 221.

#### 5. ECON 201, 203 or 205.

#### 6. GVPT 170. (For news-editorial students, GVPT 260 is also required.)

#### 7. Four upper level (numbered 300 or higher) courses for a minimum of 12 credits in a supporting field (may not be in Speech or Radio-TV-Film).

#### B. Journalism course requirements:

Credit	
JOUR 101—Professional Orientation .....	1
JOUR 201—Writing for the Mass Media .....	3
JOUR 202—Editing for the Mass Media .....	3
JOUR 400—Law of Mass Communication .....	3

#### 2. Required courses for Journalism sequences:

#### A. Advertising

JOUR 340—Advertising Communication .....	3
JOUR 341—Advertising Techniques .....	3
JOUR 342—Advertising Media Planning .....	3
JOUR 396—Supervised Internship .....	3
JOUR 477—Mass Communication Research .....	3
JOUR 484—Advertising Campaigns .....	3
At least one additional journalism course numbered 410–480 .....	3
Journalism Elective (330, 350, 372 recommended) .....	3

#### B. Broadcast News

JOUR 360—Broadcast News 1 .....	3
JOUR 361—Broadcast News 2 .....	3
JOUR 365—Theory of Broadcast Journalism .....	3
At least one additional journalism course numbered 410–480 .....	3
Journalism and Radio-TV-Film electives .....	9
(chosen with permission of advisor)	

#### C. Public Relations

JOUR 330—Public Relations Theory .....	3
JOUR 331—Public Relations Techniques .....	3
JOUR 396—Supervised Internship .....	3
JOUR 477—Mass Communication Research .....	3
Advanced Writing Course (320, 360, .....	3
371 or 380 recommended)	
Journalism Electives (333, 335, 483 .....	6
and 350 recommended)	

#### D. News-Editorial

(GVPT 260 460 is a News-Editorial Sequence requirement for all specializations.)

#### i. News Specialization

JOUR 320—News Reporting .....	3
JOUR 350—Photojournalism of .....	3
JOUR 373—Graphics .....	3
JOUR 321—Public Affairs Reporting or .....	3
JOUR 322—Beats and Investigations .....	3
Advanced Writing and Reporting Course .....	3
(323, 326, 328, 371 and 380 recommended)	

Elective Journalism course (between 410 and 480)	3
Journalism Electives (396 recommended)	6
ii. Magazine Specialization	
JOUR 320—News Reporting	3
JOUR 371—Feature Writing	3
JOUR 373—Graphics	3
JOUR 487—Literary Journalism	3
JOUR 396 Internship	3
Elective Journalism course (between 410 and 480)	3
Journalism Elective	3
iii. Science Communication Specialization	
JOUR 320—News Reporting	3
JOUR 371—Feature Writing	3
JOUR 380—Journalism for Science and Technology	3
JOUR 481—Advanced Science Writing	3
JOUR 396—Internship	3
Elective Journalism course (between 410 and 480)	3
Journalism Electives (JOUR 330 recommended)	3
iv. Photojournalism Specialization	
JOUR 320—News Reporting	3
JOUR 350—Photojournalism	3
JOUR 351—Advanced Photojournalism	3
JOUR 373—Graphics	3
JOUR 396—Internship	3
Elective Journalism course (between 410 and 480)	3
Journalism Elective	3
v. Literary Journalism Specialization	
JOUR 320—News Reporting	3
One of the following:	3
JOUR 321—Advanced Reporting: Public Affairs	3
JOUR 322—Advanced Reporting: Beats and Investigations	3
JOUR 326—News Commentary and Critical Writing	3
JOUR 398—Independent Study	3
JOUR 371—Magazine Article and Feature Writing	3
JOUR 440—Readings in Journalism Literature	3
JOUR 481—Writing the Complex Story	3
JOUR 487—Literary Journalism	3
Elective Journalism course between 410 and 480	3

## Advising

The Office of Student Services, 1117 Journalism Building, 454-2228, provides academic advising to majors on an appointment basis.

Pre-Journalism students are welcomed on a space-available basis. Otherwise, advising is provided in the College of Arts and Humanities in 1111 Francis Scott Key.

## Financial Assistance

The Dean's Scholarship is a four-year scholarship awarded to an outstanding Maryland high school print journalist. This scholarship's application deadline is March 1st of each year.

The Baltimore Sunpapers Scholarship for Minority Journalists is a four-year scholarship awarded to an outstanding minority who shows promise for a career in journalism. This scholarship provides for tuition, room, board and books, as well as a paid summer internship at the Sun. This scholarship's application falls in February.

## Honors and Awards

Although no departmental honors program currently exists within the college, academically outstanding students are recognized through Kappa Tau Alpha, the Journalism academic honor society

**Adams Group Award.** Awarded annually to the outstanding graduate in the Advertising sequence.

**Broadcast News Sequence Award.** Awarded at each commencement to the outstanding graduate in the Broadcast News Sequence.

**Public Relations Award.** Awarded at each commencement to the outstanding graduate in the Public Relations Sequence.

**News-Editorial Award.** Awarded at each commencement to the outstanding graduate in the News-Editorial sequence and its specializations.

**Sigma Delta Chi Society of Professional Journalists Citation.** Awarded annually to an outstanding journalism student.

**Kappa Tau Alpha Citation.** Awarded at each commencement to the journalism student earning the highest academic achievement for all undergraduate study.

## Field Work and Internship Opportunities

Supervised internships are required for the Public Relations (if academically qualified) and Advertising sequences along with the Photojournalism and Science Communication specializations within the News-Editorial sequence. Other students may take advantage of an internship as a journalism elective. No more than four internship credits may be applied toward a student's degree. Ms. Lois Kay is the Coordinator of the Journalism Internship Program, 1118 Journalism Building, 454-6939.

For students in the Broadcast News Sequence, opportunity to gain experience with a cable news program entitled "Tuesday Weekly" is presented within the curriculum.

Students may also earn internship or independent study credit through supervised experience gained at The Diamondback, the award-winning student daily newspaper for the College Park campus. Other co-op and volunteer experiences are available to Journalism students through the university's Office of Experiential Learning in Hornbake.

## Student Organizations

The college sponsors student chapters of the Society for Professional Journalists (Sigma Delta Chi), the Public Relations Student Society of America, the National Association of Black Journalists and the Advertising Club. These organizations provide students with opportunities to practice skills, establish social relationships with other students both on and off campus and meet and work with professionals in the field.

Campus media opportunities abound. The campus radio station is WMUC. The student daily publication is The Diamondback. Student newspapers of interest to special populations include The Eclipse and Mitzpeh.

For information on the organizations listed, contact the Student Services Office, 1117 Journalism Building, 454-2228.

## Special Resources and Opportunities

The college owns the prestigious monthly Washington Journalism Review, with a national circulation of 30,000. Extensive career programs for professional journalists, including the Knight Center for Specialized Journalism, enhance the school's national prestige.

The Annapolis bureau of the Capital News Service is staffed by students. Through curricular programs, students cover state and legislative news for client papers around the region. Students are required to report breaking news by afternoon deadlines, write profiles and cover state agencies.

Students are informed about the college and special opportunities through a newsletter, Deadline, published monthly and available in the Lobby of the Journalism building and the Office of Student Services. The Jobs Bulletin is published regularly to inform students about full-time and part-time positions.

## Accreditation

The College of Journalism became accredited in 1961 by the Accrediting Council on Education in Journalism and Mass Communications. Standards set by the council are generated from professional and academic

ethics and principles. This accrediting body underscores the liberal arts foundation of a journalism curriculum, limiting professional and skills courses to one-fourth of a student's academic program.

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## COLLEGE OF LIBRARY AND INFORMATION SERVICES (CLIS)

Dean: Dr. Claude E. Walston

The College of Library and Information Services is a graduate program accredited by the American Library Association. The undergraduate portion of the program has been discontinued.

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## COLLEGE OF LIFE SCIENCES (LFSC)

1114 Symons Hall, 454-5257

Dean: Dr. Paul H. Mazzocchi (Acting)

The College of Life Sciences offers educational opportunities for students in subject matters relating to living organisms and their interaction with one another and with the environment. Programs of study include those involving the most fundamental concepts of biological science and chemistry and the use of knowledge in daily life as well as the application of economic and engineering principles in planning the improvement of life. In addition to pursuing the baccalaureate degree, a number of students in this college engage in pre-professional education in such fields as pre-medicine, pre-dentistry, and pre-veterinary medicine.

The student may obtain a Bachelor of Science degree with a major in any of the departments and curricula listed below. Students in pre-professional programs may, under certain circumstances, obtain a B.S. degree following three years on campus and one successful year in a professional school. For additional information on combined degree programs, see Chapter 8.

The College of Life Sciences includes the following departments and programs:

- a. Departments: Botany, Chemistry and Biochemistry, Entomology, Microbiology, Zoology.
- b. Program: General Biological Sciences

## Admission

Requirements for admission to the college are the same as those for admission to the university. Application must be made to the Director of Admissions, The University of Maryland, College Park, Maryland 20742.

Students desiring a program of study in the College of Life Sciences should include the following subjects in their high school program: English, four units; college preparatory mathematics (algebra, plane geometry), four units; biological and physical sciences, two units; history and social sciences, one unit. They should also include chemistry and physics.

## Advising

A faculty advisor will be designated to help select and design a program of courses to meet the needs and objectives of each entering student. As soon as a student selects a major field of study, an advisor representing that department or program will be assigned. All students must see their advisor at least once each semester.

Students following pre-professional programs will be advised by knowledgeable faculty. For further information on the pre-professional programs offered at College Park, see Chapter 8.

## Area Resources

In addition to the educational resources on campus, students with specific interests have an opportunity to utilize libraries and other resources of the several government agencies located close to the campus. Research laboratories related to agriculture or marine biology are available to students with special interests.

## Degree Requirements

Students graduating from the college must complete at least 120 credits with an average of 2.0 in all courses applicable towards the degree. Included in the 120 credits must be the following:

1. University Studies Program Requirements (40 credits)
2. College Requirements: As of Fall 1988, all students in the College of Life Sciences must complete the following core curriculum: CHEM 103,113, or 105, 115  
CHEM 233,243 or 235, 245  
MATH 220,221 or 140, 141  
PHYS 121,122 or 141, 142 BIOL 105 and 106

Chemistry and Biochemistry majors substitute CHEM 321 for BIOL 106.

## Honors

Students may apply for admission to the honors programs of Botany, Chemistry, General Biological Sciences, Microbiology, and Zoology. On the basis of the student's performance during participation in the Honors Program, the department may recommend candidates for the appropriate degree with (departmental) honors, or for the appropriate degree with (departmental) high honors. Successful completion of the Honors Programs will be recognized by a citation in the Commencement Program and by an appropriate entry on the student's record and diploma.

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## SCHOOL OF PUBLIC AFFAIRS (PUAF)

2105 Morrill Hall, 454-6193

Dean: Michael Nacht

The School of Public Affairs provides graduate-level, professional education to men and women interested in careers in public service. Five disciplines are emphasized: accounting, statistics, economics, politics, and ethics. Students specialize in issues of government/private sector interaction and trade policy, national security and arms control, public sector financial management, environmental policy, or social policy.

The school offers separate degrees for pre-career and mid-career college graduates. Recent college graduates may enroll in the fifty-one credit Master of Public Management (MPM) program which can be completed in two years by full-time students. This program combines a rigorous applied course of study with practical, hands-on experience. The school also offers joint degree programs with the College of Business and Management (MPM/MBA) and the School of Law (MPM/JD), and accepts a small number of Ph.D. candidates each year.

Public sector employees with a minimum of three years' work experience seek the Master of Public Policy (MPP) degree. This is generally a part-time, three-year, thirty-six credit program, but individuals wishing to complete the program sooner may do so by attending full-time.

Individuals who wish to improve their analytical and management skills without pursuing a degree may enroll in an 18-credit certificate program which mirrors the areas of specialization found in the masters degree programs.

For further information, call or write the School of Public Affairs.

# DEPARTMENTS AND CAMPUS WIDE PROGRAMS

## ACCOUNTING

For information, consult College of Business and Management entry.

## AEROSPACE ENGINEERING (ENAE)

### College of Engineering

0151 Engineering Classroom Bldg., 454-2426

Professor and Chair: Chopra (Acting)

Professors: Anderson, Donaldson, Gessow, Lee, Melnik

Associate Professors: Barlow, Jones, Winkelmann

Assistant Professors: Celli, Leishman, Lewis, Vizizini

Lecturers: Chandler, Chien, Haggar, Heimerdinger, Korkegi, Lekoudis, Brinski, Regan, Russell, Schindell, Stanzione, Vamos, VanWie, Waltrup, Weissman, Winblade, Yanta

### The Major

Aerospace engineering is concerned with the physical understanding, related analyses, and creative processes required to design aerospace vehicles operating within and beyond planetary atmospheres. Such vehicles range from helicopters and other vertical takeoff aircraft at the low speed end of the flight spectrum to spacecraft operating at thousands of miles per hour during entry into the atmospheres of the earth and other planets. In between are general aviation and commercial transports flying at speeds well below and close to the speed of sound, and supersonic transports, fighters, and missiles which cruise at many times the speed of sound. Although each speed regime and each vehicle type poses its own special research, analysis and design problems, each can be addressed by a common set of technical specialties or disciplines.

These include aerodynamics, the study of how airflow produces effects on temperature, forces, and moments; flight dynamics, the study of the motion and flight path of vehicles; flight structures, the study of the mechanical behavior of materials, stresses and strains, deflection, and vibration; flight propulsion, the study of the physical fundamentals of how engines work; and the synthesis of all these principles into one system with a specific application such as a complete transport aircraft, a missile, or a space vehicle through the discipline of aerospace vehicle design.

The facilities of the department include several subsonic wind tunnels with sections ranging from a few inches up to the Glenn L. Martin Wind Tunnel with a 7.75 by 11 foot cross section which is the best of its class located at any university. There is a supersonic tunnel, equipment for the static and dynamic testing of structural components, and a flight simulator. The Center for Rotorcraft Education and Research (CERER) has established some unique experimental facilities to test helicopter models in simulated environments, including an automated model rig and computer-controlled vacuum chamber. The Composite Research Laboratory (CORE) has the facilities necessary to the manufacturing, testing and inspection of composite materials and structures, including an autoclave, an x-ray machine, and a 220 Kip Uniaxial test machine with hydraulic grips. The department's computing facilities include microcomputers, Sun workstations, and terminals. There is network access to many minicomputers, the campus mainframes, and several supercomputing centers.

CORE (general education) replaces USP for students enrolling as of May 1990 with 8 or fewer credits.

## Requirements for Major

The Freshman curriculum is the same for all Engineering departments. Please consult the College of Engineering entry.

<b>Sophomore Year</b>		<b>I</b>	<b>II</b>
University Studies Requirements .....	3	3	
MATH 246—Differential Equations .....			3
MATH 241—Calculus III .....	4		
PHYS 262,263—General Physics .....	4	4	
ENES 240—Engineering Computation .....	3		
ENES 221—Dynamics .....			3
ENAE 201, 202—Introduction to Aerospace			
Engineering I, II .....	2	2	
Total .....	16	15	

### Junior Year

University Studies Requirements .....	3	3	
MATH 240—Introduction to Linear Algebra .....	4		
ENES 220—Mechanics of Materials .....	3		
ENME 217—Thermodynamics .....			3
EENE 300—Principles of Electrical Engineering .....	3		
ENAE 305—Aerospace Laboratory I .....			3
ENAE 345—Flight Dynamics .....			3
ENAE 451—Flight Structures I .....	4		
ENAE 371—Aerodynamics I .....			3
ENAE 471—Aerodynamics II .....			3
Total .....	17	18	

### Senior Year

ENAE 452—Flight Structures II .....	3		
ENAE 475—Viscous Flow and Aerodynamic Heating .....	3		
ENAE 401—Aerospace Laboratory II (Fall) .....	2		
ENAE 402—Aerospace Laboratory III (Spring) .....	1		
ENAE 461—Flight Propulsion I .....	3		
University Studies Requirements .....	9		
Design Elective [1] .....	3		
Applied Dynamics Elective [2] .....	3		
Spacecraft Elective [3] .....	3		
Technical Elective [4] .....	3		
Total .....			33

Minimum Degree Credits: 120 credits and the fulfillment of all department, college, and university requirements.

<sup>1</sup> The students shall take one of the following design courses:

ENAE 411—Aircraft Design

ENAE 412—Design of Aerospace Vehicles

<sup>2</sup> The student shall take one of the following:

ENAE 445—Stability and Control of Aerospace Vehicles

ENAE 355—Aircraft Vibrations

ENAE 488E—Aerospace Control Systems

<sup>3</sup> These three credits must be upper level Aerospace courses which are not used to satisfy other requirements. Courses listed under [1] or [2] and not used to meet those requirements are acceptable. Other courses frequently offered include:

ENAE 415—Computer-aided Structural Design Analysis

ENAE 453—Matrix Methods in Computational Mechanics

ENAE 473—Aerodynamics of High-Speed Flight

ENAE 488—Topics in Aerospace Engineering

ENAE 499—Elective Research



\* These three credits must be a 400 level course in Engineering, Mathematics, or Physical Science that has been approved for this purpose by the department. A list is maintained and is available from the advisors. Courses listed under [1], [2], and [3] above and which are not used to meet one of those requirements may be elected to fulfill requirement [4].

**Admission**

Admission requirements are different from those of other Engineering departments (see College of Engineering section on Entrance Requirements).

**Advising**

Advising is mandatory. Each student is assigned to one of the full time faculty members who must be consulted and whose signature is required on the request for course registration each semester. The list of advisor assignments is available in the main office. 454-2426.

**Cooperative Program**

Participation in the Co-op program is encouraged. See College of Engineering entry for details.

**Financial Assistance**

The department offers Glenn L. Martin Scholarships and a Zonta Scholarship. Students may obtain information/application forms in the main office.

**Honors and Awards**

The department makes the following awards: Academic Achievement Award for highest overall academic average at graduation; R.M. Rivello Scholarship Award for highest overall academic average through the junior year; Sigma Gamma Tau Outstanding Achievement Award for scholarship and service to the Student Chapter; American Helicopter Society Outstanding Achievement Award for service to the student chapter; American Institute of Aeronautics and Astronautics Outstanding Achievement Award for scholarship and service to the student chapter. Eligibility criteria are available in department office.

**Student Organizations**

The department is home to student chapters of the American Institute of Aeronautics and Astronautics and the American Helicopter Society. Aerospace Engineering students are also frequent participants in student activities of the Society of Automotive Engineers.

Course Code: ENAE

**AFRO-AMERICAN STUDIES PROGRAM (AASP)**

**College of Behavioral and Social Sciences**

2169 Lefrak Hall, 454-5665

Professor and Director: Myers\*  
Associate Professor: Harley  
Assistant Professors: M. Lashley, W. Sabol\*\*, R. Williams\*  
Lecturers: L. Ammons, T. Chan, L. Cornelius, H. Felder, W. Hill, H. Smead

\* Joint Appointment with Economics  
\*\* Joint Appointment with Criminal Justice and Criminology

The Afro-American Studies Program offers an interdisciplinary Bachelor of Arts degree in the study of the life and history of African Americans. The curriculum emphasizes the historical development of African American social, political and economic institutions, while it prepares students to apply analytic, social science skills in the creation of solutions to the pressing socio-economic problems confronting African American communities.

Two program options lead to the Bachelor of Arts degree. Both require a twelve-credit core of course work that concentrates on Afro-American history and culture.

**The general concentration** provides a broad cultural and historical perspective. It requires 18 additional credit hours in one or more specialty areas within Afro-American Studies such as history, literature, government and politics, sociology or anthropology, as well as departmental seminars and a thesis.

**The public policy concentration** provides in-depth training for problem solving in minority communities. It requires 21 additional credit hours in analytic methods, such as economics and statistics, 9 credit hours of electives in a policy area (with departmental approval) and an internship or a thesis or a departmental seminar. Substantive areas of study include the family, criminal justice, employment, health care, discrimination, and urban development.

**Requirements for Major**

Core Courses: AASP 100, 101 (formerly 300), 200, 202.

**General Concentration:** In addition to the core requirements, 18 credits of AASP Upper Division Electives (300-400 numbers), AASP 402 and AASP 397.

**Public Policy Concentration:** In addition to the core, three credits of statistics (e.g., STAT 100 or SOCY 201 or an equivalent statistics course); six credits of elementary economics (ECON 201 and 203); AASP 301, AASP 303, AASP 305 or approved courses in other departments; nine credits of upper division AASP electives in the policy area (AASP numbers 300-400) or, with approval, elective courses outside of AASP; and one of AASP 386/387 or AASP 397 or AASP 497.

**Public Policy Concentration**

	Semester Credit Hours
Core Liberal Arts and Sciences .....	43
AASP CORE .....	12
AASP 100 Introduction to Afro-American Studies .....	3
AASP 101 (Formerly 300) Public Policy and the Black Community .....	3
AASP 200 African Civilization .....	3
AASP 202 Black Culture in the United States .....	3
ANALYTIC COMPONENT: .....	21
AASP 301 (Formerly 428J) Applied Policy Analysis and the Black Community .....	3
AASP 303 (Formerly 428P) Computer Applications in Afro-American Studies .....	3
AASP 305* (Formerly 401) Theoretical, Methodological and Policy Research Issues in Afro American Studies ....	3
ECON 201 Principles of Economics I .....	3
ECON 203 Principles of Economics II .....	3
STAT 100 Elementary Statistics and Probability OR SOCY 201 Introductory Statistics for Sociology OR Equivalent Statistics Course3 One additional analytical course outside of AASP, with AASP approval .....	3
POLICY ELECTIVES: .....	9
AASP 441 (Formerly 428A) Science, Technology and the Black Community .....	3
AASP 443 (Formerly 298C) Blacks and the Law .....	3
AASP 499 Advanced Topics in Public Policy and the Black Community .....	3

Students may select, with AASP approval, elective courses from other departments.

**FINAL OPTION:** One of the following courses is required:

AASP 386/378 Internship .....	6
AASP 397 Senior Thesis .....	3
AASP 497 Policy Seminar in Afro-American Studies .....	3

**General Concentration**

CORE Liberal Arts and Sciences .....	43
AASP Core .....	12
AASP 100 Introduction to Afro-American Studies .....	3
AASP 101 (Formerly 300) Public Policy and Black Community .....	3
AASP 200 African Civilization .....	3
AASP 202 Black Culture in the United States .....	3

## 88 Agricultural Chemistry

Upper Division Electives .....	18
AASP 310 African Slave Trade .....	3
AASP 312 Social and Cultural Effects of Colonization and Racism .....	3
AASP 400 Independent Study in Afro-American Studies .....	3
AASP 410 Contemporary African Ideologies .....	3
AASP 412 Black Resistance Movements .....	3
AASP 498 Special Topics in Black Culture .....	3
Students may select, with AASP approval, elective courses from other departments.	

### Seminars

AASP 402 Classic Readings in Afro-American Studies .....	3
AASP 397 Senior Thesis .....	3

Students must earn a grade of C (2.0) or better in each course that is to be counted toward completion of degree requirements. All related or supporting courses in other departments must be approved by an AASP faculty advisor.

### Options for Study with AASP

For students who major in other departments, the Afro-American Studies Program offers three options for study:

1. The AASP Certificate in the general concentration or in the public policy concentration. Students may obtain a certificate by completing twenty-one credit hours of course work. To qualify for the certificate in AASP, students must take AASP 100, AASP 101 and AASP 200 or AASP 202; nine credits of upper division AASP electives\*\*; and AASP 402.
2. AASP assists in finding internships for students.
3. AASP is the supporting area of study for Computer Science and Urban Studies majors, as it can be for other fields of study such as pre-Business and/or pre-Engineering. Students may designate Afro-American Studies as an alternate major.

## Admissions and Advising

Undergraduates in good academic standing may enroll in the Afro-American Studies Program or obtain more information about available options and services by contacting Undergraduate Academic Advisor, Afro-American Studies Program, 2169 Lefrak Hall, University of Maryland, College Park, Maryland 20742, (301) 454-5665.

\*Required if you select the Senior Thesis option or Policy Seminar in Afro-American Studies.

\*\*Three of these credits may be taken outside of the department but permission is required by the AASP Advisor.

Course Code: AASP

## AGRICULTURAL CHEMISTRY (AGCH)

### College of Agriculture, 454-6332

This curriculum combines the fundamentals of chemistry with flexibility through electives to prepare the student for graduate work in agricultural and life sciences programs, technical work in government and private research and quality control laboratories, and production and sales work in specialized chemical industries and food production and processing industries. Program revisions are under consideration. Each student should see an advisor; advising is mandatory.

	Semester Credit Hours
University Studies Program requirements* .....	30
Requirements for Major	
CHEM 103—General Chemistry I or CHEM 105 .....	4
CHEM 113—General Chemistry II or CHEM 115 .....	4
CHEM 233—Organic Chemistry I or CHEM 235 .....	4
CHEM 243—Organic Chemistry II or CHEM 245 .....	4
CHEM 321—Quantitative Analysis .....	4

Eight Credits from the Following Courses:

AGRO 302—General Soils .....	4
BOTN 221—Plant Pathology .....	4
ENTM 204—General Entomology .....	4
GEOL 100—Physical Geology .....	3
GEOL 110—Physical Geology Laboratory .....	1

### Additional Requirements:

MATH 140—Analysis I .....	4
MATH 141—Analysis II .....	4
PHYS 141—Principles of Physics .....	4
PHYS 142—Principles of Physics .....	4
Electives in Biology .....	6
Approved Agricultural Electives, chosen from the following: any 400 level courses in CHEM or BCHM; FDSO 421 or 423; or ENTM 452 .....	12
Electives** .....	28

\*These courses should be selected after consultation with the Agricultural Chemistry Advisor. The advisor may approve other courses, in special cases, to meet the career objectives of the student.

Six to ten of the elective credits must be for upper-level courses to meet the curriculum requirement of thirty-five credits of total upper-level work.

Course Code: CHEM

## AGRICULTURAL ENGINEERING (ENAG)

### College of Agriculture/Engineering

1130 Shriver Laboratory, 454-3901

Chair: Stewart

Professors: Johnson, Wheaton

Associate Professors: Grant, Ross, Stewart

Assistant Professors: Magette, Shirmohammadi

Instructors: Carr, Smith,

Senior Specialist: Brodie

Emeriti: Felton, Green, Harris, Krewatch, Merrick

The major in Agricultural Engineering is offered through both the College of Agriculture and the College of Engineering. Students enrolled in this program through the College of Agriculture are required to complete that College's core requirements in addition to the requirements defined in the program below. Students should consult their advisors.

### The Major

This program is for students who wish to become registered professional engineers but who are also seriously interested in biological systems and how the physical and biological sciences interrelate. The biological and the engineering aspects of plant, animal, food processing and natural resource systems are studied. Agricultural Engineering graduates are prepared to apply engineering, mathematical and computer skills to design systems and facilities within the food production and processing system, in the protection of natural resources (soil, water, air) associated with this system and in other bioengineering applications. Graduates find employment in design, management, research, education, sales, consulting or international service.

### Requirements for Major

The curriculum is composed of: (1) the required USP (general education) requirements of the institution; (2) a core of mathematics, physics, chemistry, and engineering sciences required of all engineering students; (3) sixteen credits of agricultural engineering design; and (4) twenty-two hours of electives to allow development of special student interests. Emphasis areas include aquacultural engineering, biological engineering, plant systems engineering, animal systems engineering, food process engineering and natural resources engineering.

### Freshman Year

The Freshman curriculum is the same for all Engineering departments except Agricultural Engineering students must also take BIOL 105. Please consult the College of Engineering entry.

	Semester I	Semester II
<b>Sophomore Year</b>		
MATH 241—Analysis III .....	4	
MATH 246—Differential Equations for Scientists and Engineers .....		3
PHYS 262, 263—General Physics .....	4	4
ENES 220—Mechanics of Materials .....	3	

ENES 221—Dynamics .....	3	
ENME 217—Thermodynamics .....	3	
Free Elective .....	3	
University Studies Program Requirements .....	3	3
Total .....	17	16

**Junior Year<sup>2</sup>**

ENCE 300 (or ENME 401 <sup>3</sup> ) Engineering Materials .....	3	
ENME 342 (or ENCE 330)—Fluid Mechanics .....	3	
ENEE 300—Principles of Electrical Engineering .....	3	3
ENCE 350—Structural Analysis .....	3	
ENAG 454—Biological Process Engineering .....	4	4
Technical Electives <sup>4</sup> .....	4	6
University Studies Program Requirements .....	3	3
Total .....	16	16

**Senior Year**

ENAG 421—Power Systems .....	3	
ENAG 444—Functional Design of Machinery and Equipment .....	3	3
ENAG 422—Soil and Water Engineering .....	3	
ENAG 424—Functional and Environmental Design of Agricultural Structures .....	3	3
Technical Electives <sup>5</sup> .....	3	3
Free Electives .....	3	
University Studies Program Requirements .....	3	6
Total .....	15	15

Minimum Degree Credits—120 credits and fulfillment of all department, college and university requirements.

<sup>1</sup>Students must consult with an advisor on selection of appropriate courses for their particular area of study.

<sup>2</sup>No 300 level and above courses may be attempted without special permission until fifty-six credits have been earned.

<sup>3</sup>ENME 310 must be taken as a technical elective prerequisite or corequisite with ENME 401.

<sup>4</sup>Technical electives, related to field of concentration, must be selected from a departmentally approved list. Nine credits must be 300 level and above.

Agricultural Engineering students are exempt from ENGL 391, 393.

**Admission**

Students in agricultural engineering may enroll through either the College of Agriculture or the College of Engineering. However, all Agricultural Engineering Majors must meet admission, progress and retention standards of the College of Engineering.

**Advising**

Advising for Agricultural Engineering majors is mandatory. Call 454-3901 and ask to talk to an advisor to schedule an appointment.

**Fieldwork/Internships**

Contact Departmental academic advisors to arrange teaching or research internships.

**Financial Assistance**

The department offers three scholarships specifically for Agricultural Engineering majors. Cooperative education (work study programs) are available through the College of Engineering. Part-time employment is available in the department and in USDA laboratories located near campus.

**Honors and Awards**

Outstanding junior and senior students are recognized each year for scholastic achievement and for their contribution to the department, college and university. Top students are selected for Alpha Epsilon, the Honor Society of Agricultural Engineering.

**Student Organization**

Students operate the professional club of the American Society of Agricultural Engineers. Academic advisors will tell you how to become a

participant.

Course Code: ENAG

**AGRICULTURAL SCIENCES, GENERAL (AGRI)**

**College of Agriculture**

0102 Shriver Laboratory, 454-3901

Coordinator: L.P. Grant

Agriculture is a complex scientific field, encompassing all other scientific and professional fields. However, majoring in Agricultural Sciences does not require an agricultural background. Students in this major have backgrounds as varied as is the field itself. The Agricultural Sciences program is designed for students who are interested in a broad education in the field of agriculture. It is ideal for students who would like to survey agriculture before specializing, and for those who prefer to design their own specialized programs, such as International Agriculture or Agricultural Journalism. To supplement their classroom work, students in this major are encouraged to obtain summer positions that will provide technical laboratory or field experience in their chosen area. Advising is mandatory.

**Requirements**

	Semester Credit Hours
University Studies Program Requirements .....	30
BIOL 105—General Biology I* .....	4
BIOL 106—General Biology II* .....	4
CHEM 103—General Chemistry I .....	4
CHEM 104—Fundamentals of Organic and Biochemistry or (CHEM 113 General Chemistry II and CHEM 233 Organic CHEM I) .....	4-8
MATH 115 or higher .....	3
ENAG 100—Basic Agricultural Engineering Technology .....	3
ENAG 200—Introduction to Farm Mechanics .....	2
AGRO 100—Crop Production Laboratory .....	2
AGRO 302—General Soils .....	4
ANSC 101—Principles of Animal Science .....	3
ANSC 203—Feeds and Feeding .....	3
ANSC or AGRO —* .....	3
AREC 250—Elements of Agricultural and Resource Economics .....	3
AREC —** .....	3
BOTN 221—Diseases of Plants or ANSC 412 Introduction to Diseases of Animals .....	4
ENTM 252—Agricultural Insect Pests <sup>3</sup> .....	3
HORT —** .....	3
AEED 464—Rural Life in Modern Society .....	3
AEED 466—Rural Poverty in an Affluent Society, or SOCY 305—Scarcity and Modern Society .....	3
Community Development Related, Non-agricultural Life Science, Biometrics, Computer, or Accounting .....	6
Electives (eighteen credit hours 300 or above) .....	22-29

\*Includes eleven required credits listed below.

\*\*Student may select any course(s) having required hours in the department indicated.

Course Code: AGRI

**AGRICULTURAL AND EXTENSION EDUCATION (AEED)**

**College of Agriculture**

0220 Symons Hall, 454-3738

Professor and Chair: Miller (Acting)

Professor: Longest

Associate Professors: Rivera, Seibel, Smith

Assistant Professors: Gibson

Instructors: Adams, Sieling, Wisler

Adjunct Professors: Cooper, Ross

Affiliate Professors: Booth, Ingle, Oliver, Shelton

A degree in agricultural and extension education may lead to career opportunities in educational and developmental programs, public service, business and industry, communications, research, or college teaching.

The program prepares individuals to teach agriculture at the secondary or postsecondary levels. It also prepares individuals to enter community development and other agriculturally related careers which emphasize working with people. Students preparing to become teachers of agriculture, including horticulture, agribusiness and other agriculturally related subjects, should have had appropriate experience with the kind of agriculture they plan to teach or should arrange to secure that experience during summers while in college. Advising is mandatory.

Students in the agricultural education curriculum are expected to participate in the Collegiate FFA Chapter for developing skills necessary for advising FFA groups. Students may major in preagricultural education and choose a second major until they complete a minimum of 56 credits. Then they may apply for the admission to the teacher education program in agricultural education. Contact the Teacher Education Coordinator in AEED for application forms and procedures.

**Agricultural and Extension Education Program**

	Semester Credit Hours
University Studies Program Requirements .....	40
AGRO 100—Crops Laboratory	
AGRO 102—Crop Production or	
AGRO 406—Forage Crop Production (3) .....	2
AGRO 302—General Soils .....	4
ANSC 101—Principles of Animal Science .....	3
ANSC 203—Feeds and Feeding .....	3
AREC 306—Farm Management or	
AREC 407—Financial Analysis of Farm Business .....	3
BIOL 105, 106—Principles of Biology I, II .....	4,4
BOTN 221—Diseases of Plants .....	4
CHEM 103, 104—General Chemistry I, Fundamentals of Organic and Biochemistry .....	4,4
EDHD 300—Human Development and Learning .....	6
EDPA 301—Foundations of Education .....	3
ENAG 100—Basic Agricultural Engineering Technology .....	3
ENAG 200—Introduction to Farm Mechanics .....	2
ENAG 305—Farm Mechanics .....	2
ENTM 252—Agricultural Insect Pests .....	3
HORT 201—Environmental Factors and Horticultural Crop Production .....	4
HORT 202—Management of Horticultural Crop Production ..	4
MATH 110—Introduction Mathematics I .....	3
AEED 302—Introduction to Agricultural Education .....	2
EDIT 450—Training Aids Development .....	3
AEED 305—Teaching Young and Adult Farmer Groups .....	1
AEED 311—Teaching Secondary Vocational Agriculture .....	3
AEED 313—Student Teaching .....	5
AEED 315—Student Teaching .....	4
AEED 398—Seminar in Agricultural Education .....	1
AEED 464—Rural Life in Modern Society .....	3
AEED 489C—Field Experience: Teaching Agriculture .....	1
SPCH 107—Technical Speech Communication .....	3
Electives .....	6

Course Code: AEED

**AGRICULTURAL AND RESOURCE ECONOMICS  
(AREC)**

**College of Agriculture**

2200 Symons Hall, 454-3804

Professor and Chair: Hueth  
 Professors: Bender, Bockstael, Brown, Cain, Chambers, Curtis (Emeritus), Foster, Gardner, Just, Lessley†, McConnell, Poffenberger (Emeritus), Stevens (Emeritus), Strand, Tuthill, Wysong  
 Associate Professors: Hardie, Lopez, Russell  
 Assistant Professors: Commer, Horowitz, Leathers, Lichtenberg

†Distinguished Scholar-Teacher

The curriculum combines education in business and economic aspects of agricultural production, marketing and natural resource use with the biological and physical sciences. Depending on the option selected, graduates of the curriculum have appropriate background for management positions in the private sector, for positions in local, state, or federal agencies; for service in foreign agricultural trade and development; for research; for graduate school; or for farm management.

Course requirements for the freshman and sophomore years are essentially the same for all students. Freshman and sophomores must also fulfill the math, USP and College requirements in their first two years. All majors must complete a core of eight courses. In addition each student must complete the courses in one of the four options.

Courses in this department provide education in the application of economic principles to the production, processing, distribution, and merchandising of agricultural products and the effective management of our natural and human resources. The curriculum includes courses in general agricultural economics, marketing, farm management, prices, resource economics, agricultural policy, food policy and international agricultural economics.

**Advising**

Advising is mandatory. Appointments may be made in Room 2200 Symons Hall, 454-3804.

**Awards**

Scholarships honoring Arthur and Pauline Seidenspinner and Ray Murray are available. Applicants must complete the Financial Aid Form of the College Scholarship Service, available at the University Student Aid Office, 2130 Mitchell Building.

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

	Semester Credit Hours
<b>Core Courses</b>	
Biological Science with lab .....	4
AREC 250—Agricultural and Resource Economics .....	3
ECON 201—Macroeconomic Principles .....	3
ECON 203—Microeconomic Principles .....	3
ECON 306/406—Intermediate Microeconomic Theory .....	3
MATH 115—Precalculus .....	3
STAT 100 or MATH 111—Intro. Probability .....	3
MATH 220—Elementary Calculus .....	3
CMSC 103—Computer Applications or higher CMSC .....	3
<b>Agribusiness Option</b>	
AREC 306—Farm Management .....	3
AREC 407—Agricultural Finance .....	3
AREC 414—Agribusiness Management .....	3
AREC 427—Agricultural Marketing .....	3
BMGT 220—Accounting I .....	3
BMGT 221—Accounting II .....	3
BMGT 230—Business Statistics or other statistics .....	3
BMGT 340—Business Finance .....	3
BMGT 350—Marketing Principles .....	3
BMGT 364—Management and Organization Theory .....	3
BMGT 380—Business Law .....	3
Technical Agriculture* .....	6
<b>Agricultural Economics Option</b>	
Chemistry .....	3
AREC 306—Farm Management .....	3
AREC 404—Agricultural Prices .....	3
AREC 427—Agricultural Marketing .....	3
AREC 433—Food and Agricultural Policy .....	3
ECON 305—Macroeconomic Theory .....	3
Statistics .....	3
Technical Electives* .....	18

	Semester Credit Hours
<b>Resource Economics Option</b>	
Chemistry .....	3
AREC 240—Environmental and Human Ecology .....	3
AREC 404—Agricultural Prices .....	3
AREC 432—Introduction to Natural Resources Policy .....	3
AREC 453—Natural Resources and Public Policy .....	3
ECON 381—Environmental Economics .....	3
ECON 305 or 405—Macroeconomic Theory .....	3
Statistics .....	3
Technical Electives* .....	15

<b>International Agriculture Option</b>	
Chemistry .....	3
AREC 306—Farm Management .....	3
AREC 365—World Food Hunger .....	3
AREC 404—Agricultural Prices .....	3
AREC 433—Food and Agricultural Policy .....	3
AREC 445—Agricultural Development .....	3
ECON 305 or 405—Macroeconomic Theory .....	3
ECON 440—International Economics .....	3
Statistics .....	3
Technical Electives* .....	12
*Chosen with approval of advisor	

Course Code: AREC

## AGRONOMY (AGRO)

### College of Agriculture

1109 H.J. Patterson Hall, 454-3718

Professor and Chair: Aycock

Professors: Bandel, Fanning, McKee, Mulchi

Associate Professors: Angle, Dernoeden, Glenn, Kenworthy, McIntosh,

Rabenhorst, Ritter, Sammon†, Turner, Vough, Weil, Weismiller

Assistant Professors: Carroll, Hill, James, Slaughter Adjunct

Associate Professor: Lee

Adjunct Assistant Professor: Meisinger

Emeriti: Axley, Clark, Decker, Hoyert, Kuhn, Miller

†Distinguished Scholar-Teacher

### The Major

Agronomy instruction combines the principles of basic sciences with a thorough understanding of plants and soils. This amalgamation of basic and applied sciences provides the opportunity for careers involved in conserving soil and water resources, improving environmental quality, increasing crop production to meet the global need for food, and beautifying and conserving the urban landscape using turfgrass.

The agronomy curricula are flexible and allow the student either to concentrate on basic science courses that are needed for graduate work or to select courses that prepare for employment at the bachelor's degree level. Graduates with a bachelor's degree are employed by private corporations as golf course managers, seed, fertilizer, chemical, and farm equipment company representatives, or by county, state, or federal government as agronomists or extension agents. Students completing graduate programs are prepared for research, teaching, and management positions with industry, international agencies, or federal and state government.

Additional information on opportunities in agronomy and available scholarships may be obtained by writing to the Department of Agronomy. Advising is mandatory.

### Requirements for Major

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

**Agronomy Curricula.** University Studies Program Requirements (39 semester hours); Math and science requirements (9 hours) are satisfied by departmental requirements.

	Department Requirements (31 semester hours)	Semester Credit Hours
AGRO 101—Introductory Crop Science .....		4
AGRO 302—Fundamentals of Soil Science .....		4
AGRO 398—Senior Seminar .....		1
BIOL 105—Principles of Biology I .....		4
CHEM 103—General Chemistry I .....		4
CHEM 104—Fundamentals of Organic and Biochemistry* .....		4
MATH 110—Introduction to Mathematics or		
MATH 115—Pre-calculus (consult advisor) .....		3
PHYS 121—Fundamentals of Physics I .....		4
SPCH 100—Basic Principles of Speech Communication or		
SPCH 107—Technical Speech Communication .....		3

\*Students intending to take additional chemistry or attend graduate school should substitute CHEM 113, followed by CHEM 233 and CHEM 243.

#### Crop Science Curriculum

University and Department Requirements .....	61
AGRO—Advanced Crops Courses (Consult Advisor) .....	8
AGRO—Advanced Soils Courses (Consult Advisor) .....	6
BOTN 441—Plant Physiology .....	4
One of the following: .....	3-4
BOTN 212—Plant Taxonomy (4)	
BOTN 414—Plant Genetics (3)	
BOTN 416—Plant Structure (4)	
Electives .....	34-35

#### Soil Science Curriculum

University and Department Requirements .....	61
AGRO—Advanced Soils Courses (Consult Advisor) .....	3
AGRO—Advanced Crops Courses (Consult Advisor) .....	6
AGRO 414—Soil Morphology, Genesis and Classification .....	4
AGRO 417—Soil Physics .....	3
AGRO 421—Soil Chemistry .....	4
GEOG 100—Physical Geology .....	3
MICB 200—General Microbiology .....	4
Electives .....	33

#### Turf and Urban Agronomy Curriculum

University and Department Requirements .....	61
AGRO 411—Soil Fertility Principles .....	3
AGRO 310—Introduction to Turf Management .....	3
AGRO 453—Weed Science .....	3
BOTN 441—Plant Physiology .....	4
BOTN 425—Diseases of Ornamentals and Turf* .....	2
ENTM 453—Insects of Ornamentals and Turf* .....	3
HORT 160—Introduction to the Art of Landscaping .....	3
AGRO 415—Soil Survey and Land Use .....	3
Electives (HORT 453, 454 and RECR 495 suggested) .....	35
*BOTN 221, ENTM 204, and BOTN 212 serve as prerequisites	

#### Conservation of Soil, Water and Environment Curriculum

University and Department Requirements <sup>61</sup>	
AGRO 417—Soil Physics or	
AGRO 421—Soil Chemistry .....	3-4
AGRO 413—Soil and Water Conservation .....	3
AGRO 411—Soil Fertility Principles .....	3
AGRO 414—Soil Morphology, Genesis and Classification .....	4
AGRO 415—Soil Survey and Land Use .....	3
AGRO 423—Soil-Water Pollution .....	3
AGRO—Advanced Crops Courses (Consult Advisor) .....	5-6
Select one of the following courses: .....	3
BOTN 211—Ecology and Mankind (3)	
GEOG 445—Climatology (3)	
AREC 432—Introduction to Natural Resources Policy (3)	
Electives .....	30-31

### Journalism-Science Communication Option

A student following this option in the crop science or soil science curriculum must elect journalism and basic science and math courses in addition to the required curriculum courses. Many combinations will be acceptable. The advisor can aid in helping the student plan an appropriate program.

Course Code: AGRO

### AMERICAN STUDIES (AMST)

#### College of Arts and Humanities

2140 Taliaterro, 454-4661

Associate Professor and Chair: Kelly  
Associate Professor and Undergraduate Coordinator: Diner  
Associate Professors: Caughey, Lounsbury, Mintz  
Assistant Professor: Sies  
Emeriti: Bode

#### The Major

American Studies offers an interdisciplinary approach to the study of American culture and society, past and present, with special attention to the ways in which Americans, in different historical or social contexts, make sense of their experience. Emphasizing analysis and synthesis of diverse cultural products, the major provides valuable preparation for graduate training in the professions as well as business, government and museum work. Undergraduate majors, with the help of faculty advisors, design a program that includes courses offered by the American Studies faculty, and sequences of courses in the disciplines usually associated with American Studies (i.e., history, literature, sociology, anthropology, political science, and others), or pertinent courses grouped thematically (e.g., Afro-American studies, women's studies, ethnic studies, comparative cultures, popular culture, urban and environmental studies, and so forth).

#### Requirements for Major

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

The major requires forty-five hours, at least twenty-four of which must be at the 300-400 level. Of those forty-five hours, twenty-one must be in AMST courses, with the remaining twenty-four in two twelve-hour core areas outside the regular AMST departmental offerings.

No grade lower than a C may be applied toward the major. The department recommends that students fulfill the college's history requirement with an American history course, particularly if American history is not one of the core areas in the student's program. Lists of courses applicable to the major for each of the core areas are available from the department office. No courses other than those on the lists will be accepted for credit toward the major unless an advisor's permission has been granted in writing and placed in the student's file.

#### Distribution of the 45 hours:

AMST Courses (21 hours required)

1. AMST 201/Introduction to American Studies 1 (3): required of majors.
2. AMST 203/Popular Culture in America; AMST 205/Material Aspects of American Life; AMST 207/Contemporary American Cultures: three (3) hours minimum from this group, six (6) hours maximum may be applied toward the 21-hour AMST requirement.
3. AMST 330/Critics of American Culture (3): required of majors.
4. AMST 418/ Cultural Themes in America; AMST 426/Culture and the Arts in America; AMST 428/American Cultural Eras; AMST 429/Perspectives on Popular Culture; AMST 432/Literature and American Society: majors will take six to nine hours (depending upon number of hours taken at 200 level). No more than 6 hours of a repeatable number may be applied to the major.  
\*\*\*Students should take AMST 201 before taking any other AMST courses and will complete 330 before taking 400 level courses.
5. AMST 450/Seminar in American Studies (3): required of majors.

#### Core Areas Outside American Studies (24 hours required)

Majors will choose two outside core areas of twelve hours each. At least one of the cores must be traditionally associated with American Studies and the other core may be thematic. Upon entering the major, students must develop a plan of study for the core areas in consultation with an advisor; this plan will be kept in the student's file. All cores must be approved by an advisor in writing.

#### Traditional Disciplinary Cores

History, Literature, Sociology/Anthropology, Art/Architectural History, Media Studies (Radio-TV-Film).

#### Interdisciplinary or Thematic Cores

Afro-American Studies, Women's Studies, Urban Studies, Popular Culture, Personality and Culture, Creative and Performing Arts, Comparative Culture, Material Culture, Ethnic Studies, Business and Economic History, Folklore, Government and Politics, Education, Philosophy, Journalism, cultural Geography.

Additional interdisciplinary or thematic cores may be designed with the assistance and approval of an advisor.

#### Advising

Regular advising is an important element in the American Studies major, and students are expected to consult with their faculty advisor or with the Undergraduate Coordinator each semester.

Course Code: AMST

### ANIMAL SCIENCES (ANSC)

#### College of Agriculture

3113 Animal Sciences Center, 454-3926

#### Department of Animal Sciences

Chair: Westhoff  
Professors: Mather, Vandersall, Vijay, Westhoff, Williams  
Associate Professors: DeBarthe, Douglass, Erdman, Hartsock, Majeskie, Peters, Russek-Cohen, Stricklin, Varner  
Assistant Professors: Alston-Mills, Barao, Marshall  
Associate Specialist: Curry  
Emeriti: Foster, King, Leffel, Mattick, Morris, Young

#### Department of Poultry Science

Chair: Doerr (Acting)  
Professors: Heath, Kuenzel, Ottinger, Soares, Thomas  
Associate Professors: Doerr, Murphy, Wabeck  
Adjunct Professor: Kotula  
Assistant Professor: Mench  
Adjunct Associate Professors: Faila, Rattner  
Emerita: Shorb

#### The Major

The curriculum in animal sciences offers a broad background in general education, basic sciences, and agricultural sciences, and the opportunity for students to emphasize that phase of animal agriculture in which they are specifically interested. The following specific objectives have been established for the program in animal sciences:

1. To acquaint students with the role of animal agriculture in our cultural heritage.
2. To prepare students for careers in the field of animal agriculture. These include positions of management and technology associated with animal, dairy, or poultry production enterprises; positions with marketing and processing organizations; and positions in other allied fields, such as feed, agricultural chemicals, and equipment firms.
3. To prepare students for entrance to veterinary schools
4. To prepare students for graduate study and subsequent careers in teaching, research, and extension, both public and private.
5. To provide essential courses for the support of other academic programs of the University.

#### Requirements for Major

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

Curriculum requirements in animal sciences can be completed through the Departments of Animal Sciences or Poultry Science. Programs of elective courses can be developed that provide major emphasis on beef cattle, sheep, swine or horses, dairy or poultry. Each student is expected to develop a program of electives in consultation with an advisor by the beginning of the Junior year.

**Required of All Students**

	<b>Semester Credit Hours</b>
University Studies Program Requirements* .....	40
ANSC 101—Principles of Animal Science .....	3
FDSC 111—Contemporary Food Industry and Consumerism .....	3
ANSC 201—Basic Principles of Animal genetics .....	3
ANSC 211—Anatomy of Domestic Animals .....	4
ANSC 212—Applied Animal Physiology .....	3
ANSC 214—Applied Animal Physiology Laboratory .....	1
ANSC 401—Fundamentals of Nutrition .....	3
ANSC 412—Introduction to Diseases of Animals .....	3
CHEM 103—General Chemistry I .....	4
CHEM 104—Fundamentals of Organic and Biochemistry .....	4
MICB 200—General Microbiology .....	4
BIOL 105—Principles of Biology I .....	4
SPCH 107—Public Speaking .....	3
Two of the Following:	
ANSC 221—Fundamentals of Animal Production .....	3
ANSC 242—Dairy Production .....	3
ANSC 262—Commercial Poultry Management .....	3
One of the Following:	
ENAG 100—Basic Agricultural Engineering Technology .....	3
CHEM 233—Organic Chemistry I ** .....	4
CHEM 243—Organic Chemistry II *** .....	4
MATH 111—Introduction to Mathematics II .....	3
PHYS 121—Fundamentals of Physics I .....	4
****Electives .....	39-40

\*Includes eleven required credits listed below.  
 \*\*CHEM 113 is a prerequisite.  
 \*\*\*CHEM 233 is a prerequisite.  
 \*\*\*\*Electives must include at least twelve credits in upper-level animal science.

**Advising**

Advising is mandatory. Each student will be assigned to a faculty advisor to assist in planning his or her academic program. For information or appointment: 1101 Animal Sciences Center, 454-4641.

**Honors and Awards**

American Society of Animal Sciences Scholastic Recognition and Department of Animal Sciences Scholastic Achievement Awards are presented each year at the College of Agriculture Student Awards Convocation. For eligibility criteria see ANSC Undergraduate Studies Office, 1101 Animal Sciences Center.

**Student Organizations**

ANSC majors are encouraged to participate in one or more of the following social/professional student organizations: the Block and Bridle Club, The University of Maryland Equestrian Association, and the Veterinary Science Club. For more information see ANSC Undergraduate Studies Office, 1101 Animal Sciences Center.

Course Code: ANSC

**ANTHROPOLOGY (ANTH)**

**College of Behavioral and Social Sciences**

1111 Woods Hall, 454-4154

Associate Professor and Chair: Whitehead  
 Professors: Agar, Chambers, Gonzalez†, Williams  
 Associate Professors: Leone, Bolles\*\* (Women's Studies)  
 Assistant Professor and Assistant Chair: Stuart  
 Assistant Professors: Seidel, Wall  
 Lecturers: Cassidy (p.t.), Chase (p.t.), Eidson (p.t.), McDaniel\*  
 (Instructional Computing)  
 Research Associate: Little\* (Historic Annapolis)  
 Faculty Research Assistant: Aronson

†Distinguished Scholar-Teacher  
 \*Joint Appointment with unit indicated.  
 \*\*Affiliate from unit indicated

**The Major**

Anthropology has been defined as "the study of humanity" because it is the discipline that tries to understand humans as a whole—as an animal, as a social being, as a literate being—from the very beginning of time and all over the world. Anthropologists try to explain differences among humans—differences in their physical characteristics as well as their customs, behavior, and attitudes. Since children learn their culture from the preceding generation, who in turn learned it from the preceding generation, culture is a product of the past. Anthropologists study the way human culture has grown and changed through time, and the way the species has spread over the earth. This is not the history of kings and great women or men or of wars and treaties; it is the history, including the present, and science of human knowledge and behavior.

It is increasingly clear that a strong background in anthropology is definite asset in preparing for a variety of jobs in a number of fields ranging from business to the line arts. Whether one goes on to a Master's or a Ph.D.—striving to advance the frontiers of knowledge concerning our species and the cultural processor combines the anthropology B.A. with other specific knowledge—working, for example as a city planner, development consultant, or program evaluator—anthropology at UMCP offers a solid and rigorous background for a variety of career options.

**Academic Programs and Departmental Facilities**

The Anthropology Department offers beginning and advanced coursework in the four principal subdivisions of the discipline: ethnology (also known as cultural anthropology), archaeology, physical anthropology, and linguistics. Within each area, the department offers some degree of specialization and provides a variety of opportunities for research and independent study within the curriculum. Laboratory courses are offered in physical anthropology, archaeology, and anthropological methods; field schools are offered in archaeology and ethnography. The interrelationship of all branches of anthropology is emphasized.

The undergraduate curriculum is closely tied to the department's Master in Applied Anthropology (MAA) program; accordingly, preparation for non-academic employment upon graduation is a primary educational goal of the Department's undergraduate coursework and internship & research components.

Courses in these subdivisions may be used to fulfill the minor or "supporting courses" requirement in some programs leading to the Bachelor of Arts or Bachelor of Science degrees.

The Anthropology Department has a total of four laboratories located in Woods Hall, which are divided into teaching labs and research labs. The department's two archaeology labs, containing materials collected from field schools of the past several years, serve for both teaching and research purposes.

All students have access to a twenty-workstation (IBM PS/2 50s) computer laboratory located at 1101 Woods Hall and is operated by the BSOS Computer Laboratory.

Cultural Systems Analysis Group (CuSAG), a research and program development arm of the department, is located in Woods Hall.

**Requirements for Major**

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

A student who declares a major in anthropology will be awarded a Bachelor of Arts degree upon fulfillment of the requirements of the degree program. The student must complete at least thirty hours of courses with the prefix ANTH with a grade of C or better in each course and eighteen hours of supportive courses. The courses are distributed as follows:

- a. Eighteen hours of required courses that must include ANTH 101, 102, 397, 401, 451 (or 441), and 371 or 361 (or 461);
- b. Twelve hours of elective courses in anthropology of which nine hours must be at the 300 level or above;
- c. Eighteen hours of supporting courses (courses outside of anthropology offerings in fields that are complementary to the major's specific anthropological interests). Supporting courses are to be chosen by the student and approved by a faculty advisor. With the advisor's endorsement, up to six hours of anthropology courses may be counted as "supporting".

## 94 Applied Mathematics Program

In addition to the above requirements, anthropology majors must meet the requirements of the College of Behavioral and Social Sciences, as well as the forty credit hours of University Studies Program approved courses required of every degree-seeking student of the University

### Advising

Undergraduate advising is coordinated by the Director for Undergraduate Studies, Dr. William Stuart, who serves as the Administrative Advisor for all undergraduate majors and minors. All majors are required to meet with Dr. Stuart at least once per term, at the time of pre-registration. In addition, the Anthropology Department encourages students to select an academic advisor who will work closely with the student to tailor the program to fit the student's particular interests and needs. All Anthropology faculty members serve as academic advisors (and should be contacted individually). Each major is expected to select an academic advisor and to consult with him/her on a regular basis. For additional information, students should contact the Director of Undergraduate Studies, Dr. William Taft Stuart, 0100A Woods Hall, 454-1488.

### Honors

The Anthropology Department also offers an Honors Program that provides the student an opportunity to pursue in-depth study of his or her interests. Acceptance is contingent upon a 3.5 GPA in anthropology courses and a 3.0 overall average. Members of this program are encouraged to take as many departmental honors courses (either as HONR or as "H" sections of ANTH courses) as possible. The Honors Citation is awarded upon completion and review of a thesis (usually based upon at least one term of research under the direction of an Anthropology faculty member) to be done within the field of anthropology. Details and applications are available in the Anthropology Office, or contact your advisor for further information.

### Student Organizations

Anthropology Student Association (ASA). An anthropology student association meets regularly to plan student events and to help coordinate various student and faculty activities. Meeting times are posted outside 0133 Woods Hall.

The department and the ASA jointly sponsor a public lecture series, "Tea and Tell."

Course Code: ANTH

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## APPLIED MATHEMATICS PROGRAM (MAPL)

### College of Computer, Mathematical, and Physical Sciences

1104 Mathematics, 454-5331

Director: Cooper

Faculty: More than 100 members from 13 units of the campus

The Applied Mathematics Program is a graduate program in which the students combine studies in mathematics and application areas. The program is administered by the Applied Mathematics Program and all MAPL courses carry credit in mathematics. An undergraduate program stressing applied mathematics is available to majors in mathematics and such courses occur under the MATH and STAT label as well as the MAPL label. See Mathematics listing for details.

Course Code: MAPL

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## ARCHITECTURE (ARCH)

For information consult School of Architecture entry.

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## ART (ARTT)

### College of Arts and Humanities

1211-E Art/Sociology Building, 454-0344

Professor and Chair: Morrison  
Undergraduate Director: Richardson

Graduate Director: Pogue

Professors: DeMonte, Driskell, Lapinski, Truitt†

Associate Professors: Craig, Forbes, Gelman, Kehoe, Klank, Krushenick, Niese, Pogue, Richardson

Assistant Professors: Blotner, Humphrey, Ruppert

†Distinguished Scholar-Teacher

### The Major

An Art Department is a place where ideas become art objects. To accomplish this transformation, the art student must articulate and refine the concept, and then apply acquired knowledge and skills to the materials that comprise the object.

Human beings have made and embellished objects for thousands of years. In the Twentieth Century, Art Department faculties and students embody this fundamental human inclination and attempt to understand, convey, and celebrate it.

### Requirements for Major

Along with college and campus-wide general education requirements, the student may choose one of two Major Program Options: Program "A" or Program "B."

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

**Program "A" Requirements:** (39 Major credits, 12 Supporting Area credits)

ARTH 100 Introduction to Art (3)

ARTT 100 Elements of Design (3)

ARTT 110 Elements of Drawing (3)

ARTT 208 Intermediate Design or alternative course choice (3)

ARTT 210 Intermediate Drawing (3)

ARTT 200 (formerly 260) History of Art (Prehistoric to Renaissance) (3)

ARTT 201 (formerly 261) History of Art (Renaissance to present) (3)

ARTT 320 Elements of Painting (3)

ARTT 33x Elements of Sculpture (330, 334, or 335) (3)

ARTT 34x Elements of Printmaking (340, 341, or 344) (3)

ARTT 418 Advanced Drawing (3)

ARTT xxx Choice, 3/400 level (3)

ARTH xxx Choice, any level (3)

**Supporting Area:** Four related (not ARTT) courses approved by the advisor. Six credits must be taken in one department and must be at the 3/400 level. (12)

**Program "B" requirements:** (30 Major credits†, 12 Supporting Area)

ARTH 100 Introduction to Art (3)

ARTT 100 Elements of Design (3)

ARTT 110 Elements of Drawing (3)

ARTT 208 Intermediate Design or alternative course choice (3)

ARTT 210 Intermediate Drawing (3)

ARTT 320 Elements of Painting (3)

ARTT 33x Elements of Sculpture (330, 334, or 335)

ARTT 34x Elements of Printmaking (340, 341, or 344) (3)

ARTT 418 Advanced Drawing (3)

ARTT xxx Choice, 3/400 level (3)

**Supporting Area:** ARTH 200 (formerly 260) History of Art (Prehistoric to Renaissance) (3)

ARTH 201 (formerly 261) History of Art (Renaissance to present) (3)

ARTH xxx Choice, 3/400 level (3)

ARTH xxx Choice, 3/400 level (3)

†No course with a grade less than C may be used to satisfy Major or Supporting Area requirements.

### Advising

We strongly recommend that students see their advisor each semester. The department has four advisors. Students should contact Ms. Janet Crowe in the main office for specifics.



## Fieldwork and Internship Opportunities

Students in past internships have worked in a variety of settings. These have included assisting professionals complete public commissions, commercial or cooperative gallery and exhibition duties, and working in professional artists' workshops in the Baltimore and Washington metropolitan area. Additional information is available in the Art Department office.

## Financial Assistance

The Art Department administers eight Creative and Performing Arts Scholarships that are available to freshman and entering transfer students. This is a merit based scholarship that is awarded on a one-year basis. Additional information is available in the main office of the department.

## Honors and Awards

Our Honors Program is currently being developed. Students interested in further information are encouraged to contact Professor Richard Klank through the main office of the department.

## Student Art Exhibition

Graduating Art Majors have an exhibition in the West Gallery in December and in May of each academic year. The James P. Wharton Prize is awarded to the outstanding student in these exhibitions. The West Gallery (1309 Art Sociology Building) is an exhibition space devoted primarily to showing the student's art work. This exhibition space is devoted primarily to exhibitions of the student's art works and is administered by undergraduate art majors.

## Lecture Program

The Art Department has a lecture program in which artists and critics are brought to the campus to explore ideas in contemporary art. A strong component of this program is devoted to the art ideas of women and minorities.

Course Code: ARTT

## ART HISTORY (ARTH)

### College of Arts and Humanities

1211A or B Art/Sociology Building, 454-3431

Professor and Chair: Farquhar  
 Professors Emeritus: deLeiris  
 Professors: Burnham, Denny, Eyo, Miller, Rearick, Wheelock  
 Associate Professors: Hargrove, Pressly, Spiro, Venit, Withers  
 Assistant Professors: Peters-Campbell, Sandler  
 Slide Curator: Bonnell  
 Gallery Director: Owens

### The Major

A major in the department of Art History leads to a Bachelor of Arts degree through the study and scholarly interpretation of existing works of art, from the prehistoric era to the present.

The goal of the Art History Department is to develop the student's aesthetic sensitivity and understanding of art as well as to impart a knowledge of the works, the artists, and their place in history. In addition to courses in European art history and archaeology, the curriculum includes courses in African, American, Black American, Chinese, Japanese, and Pre-Columbian art history and archaeology, all taught by specialists in the fields. The department's 65,000 volume art library and the University's art gallery are located in the art building.

An Art History major is often combined for a double major with other academic disciplines, such as Anthropology, American Studies, Classics, Economics, History, languages and literature, or with professional disciplines, such as Architecture, Design, and Journalism. The Art History faculty encourages the development of language skills and writing. The program provides a good foundation for graduate study, for work in

museums and galleries, or for law, writing and publishing, teaching, and any profession for which clear thinking and writing are required.

**The Department of Art History offers two majors:**  
**Art History Major A with a non-art supporting area:**

Required courses:  
 ARTH 100, Introduction to Art (3)  
 ARTH 200 (formerly 260) Survey of Art History, part I (3)  
 ARTH 201 (formerly 261) Survey of Art History, part II (3)  
 Five 300-400 level ARTH courses, excluding the department's Master-piece Courses (15)  
 ARTT 100, Elements of Design (3)  
 ARTT 110, Elements of Drawing (3)  
 One more course in ARTT, any level (3)

**Supporting Area:** Twelve coherently related non-art credits approved by an advisor. Six of these credits must be taken in one department and must be at junior-senior level (12)

**Art History Major B, with the supporting area in studio art:**

Required courses:  
 ARTH 100, Introduction to Art (3)  
 ARTH 260 (or 200) Survey of Art History, part I (3)  
 ARTH 261 (or 201) Survey of Art History, part II (3)  
 Five 300-400 level ARTH courses (15)  
 Three more ARTH courses at any level (9)  
 ARTT 100, Elements of Design (3)  
 ARTT 110, Elements of Drawing (3)  
 Two upper level ARTT courses (6)

Total credit hours needed for Art History Major A or B, combined major and supporting area, are 45.

No course with a grade less than C may be used to satisfy major or supporting area requirements.

## Awards

The Department of Art History offers two undergraduate awards each year: the J.K. Reed Fellowship Award to an upper-level major who will be studying at the university for at least one more semester and the Frank DiFederico Book Award to a senior nearing graduation.

Course Code: ARTH

## ASTRONOMY PROGRAM (ASTR)

### College of Computer, Mathematical and Physical Sciences

2105 Space Sciences Bldg., 454-3001

Director: Bell  
 Associate Director: Trasco  
 Professors: A'Hearn, Harrington, Kundu, Papadopoulos, Rose, Wentzel, Wilson  
 Associate Professors: Blitz, Eichler, Heckman, Matthews, Vogel, Zipoy  
 Assistant Professor: Mundy  
 Adjunct/Part-Time Professors: Hauser, Holt, Trimble, Westerhout  
 Professors Emeriti: Erickson, Kerr

### The Major

The Astronomy Program offers courses leading to a Bachelor of Science in Astronomy as well as a series of courses of general interest to non-majors. Astronomy majors are given a strong undergraduate preparation in astronomy, mathematics and physics. The degree program is designed to prepare students for positions in government and industry laboratories or for graduate work in astronomy or related fields. A degree in astronomy has also proven valuable as preparation for non-astronomical careers such as law or business.

### Requirements for Major

Astronomy majors are required to take two basic courses in astronomy and astrophysics: ASTR 200 and ASTR 350. They are also required to

## 96 Biological Sciences Program

take ASTR 210 (Practical Astronomy) plus three 400-level astronomy courses, one of which must be ASTR 410.

Students majoring in astronomy are also required to obtain a good background in physics and in mathematics. The normal required sequence is PHYS 171, 272, 273 and the associated labs PHYS 275, 276 and 375. With the permission of the advisor, PHYS 161, 262, 263 plus 375 can be substituted for this sequence. Astronomy majors are also required to take a series of supporting courses in mathematics. These are MATH 140, 141, 240 and 241. In addition, MATH 246 is strongly recommended.

The program requires that a grade of C or better be obtained in all courses. Any student who wishes to be recommended for graduate work in astronomy must maintain a B average. He or she should also consider including several additional advanced courses beyond the minimum required, to be selected from astronomy, physics and mathematics.

Detailed information on typical programs and alternatives to the standard program can be found in the pamphlet entitled "Department Requirements for a Bachelor of Science Degree in Astronomy" which is available from the Astronomy Program office.

### Courses for Non-Science Majors

There is a variety of astronomy courses offered for those who are interested in learning about the subject but do not wish to major in it. These courses do not require any background in mathematics or physics and are geared especially to the non-science major. ASTR 100 is a general survey course that briefly covers all of the major topics in astronomy. ASTR 110 is the lab that can be taken with or after ASTR 100. Several 300-level courses are offered primarily for non-science students who want to learn about a particular field in depth, such as the Solar System, Galaxies and the Universe, and Life in the Universe. Non-science majors should not normally take ASTR 200 or ASTR 350.

### Honors

The Honors Program offers students of exceptional ability and interest in astronomy opportunities for part-time research participation which may develop into full-time summer projects. An honors seminar is offered for advanced students, credit may be given for independent work or study, and certain graduate courses are open for credit toward the bachelor's degree. Students for the Honors Program are accepted by the Department's Honors Committee on the basis of recommendations from their advisors and other faculty members. Most honors candidates submit a written report on their research project, which together with an oral comprehensive examination in the senior year, concludes the program which may lead to graduation "with honors (or high honors) in astronomy."

Further information about advising and the honors program can be obtained by calling the Astronomy Program office at (301) 454-3001.

Course Code: ASTR

## BIOLOGICAL SCIENCES PROGRAM

### College of Life Sciences

H.J. Patterson Hall, 454-3812

Coordinator: Berg

### The Major

This program is designed for the student who is interested in a broader education in the biological sciences than is available in the programs for majors in the various departments in the College of Life Sciences. It is appropriate for the entering student who wishes to explore the various areas of biology before specializing in the major offered by a single department, or for the student desiring to concentrate on a broad area of biology.

By the beginning of the junior year students select one of several areas to emphasize, including marine biology, ecology, physiology, genetics, animal sciences, botany, chemistry, entomology, microbiology, or zoology. Information pertaining to a specific emphasis or to the generalist program is available at the college office. Alternatively, the student may elect to remain a generalist throughout the program. Individual programs to meet specific career goals may be developed between the student and

the coordinator. In each case, advising will be carried out in the department in which most of the work is to be taken.

Preparation for graduate study in a specialized area of biology is readily accomplished under this program by the judicious selection of junior-senior level courses in the proposed area of graduate concentration. Students in the program who are attempting to meet the requirements of a pre-professional program should also seek advice from advisors of those respective programs. Students in the program who wish to prepare for secondary school science teaching should contact the staff of the Science Teaching Center of the College of Education for information concerning the requirements for certification.

### Requirements for Major

All students must complete the core requirements for the College of Life Sciences. In addition, the following courses are required:

	<b>Semester Credit Hours</b>
University Studies Program Requirements .....	30
College of Life Sciences Core Requirements .....	38-40
One of the following three courses: .....	4
BOTN 202—Plant Kingdom	
ENTM 205—Principles of Entomology	
ZOO 210—Animal Diversity	
MICB 200—General Microbiology .....	4
One of the following five courses: .....	3-4
BOTN 414—Plant Genetics	
ZOO 213—Genetics	
ANSC 201—Basic Principles of Animal Genetics	
HORT 274—Genetics of Cultivated Plants	
MICB 380—Bacterial Genetics	
Advanced Program .....	22
Electives .....	16-19

A grade of C or better is required for BIOL 105, 106, the diversity course, MICB 200 and genetics.

A C average is required for the other College of Life Sciences core courses (math, chemistry, and physics).

### Advanced Program

Students must complete an approved curriculum that includes one course in statistics (BIOM 301, BIOM 401, STAT 250, STAT 400, STAT 464, or PSYC 200) and 19 credits of biological sciences selected from the courses below. A minimum of ten credits must be taken in the area of emphasis. At least two courses must involve laboratory or fieldwork at the 300-400 level. At least 15 of the 19 credits of biological sciences must be completed in courses numbered 300 or above. Two participating departments must be represented by at least one course in the 15 credits of 300-400 work. No 386-387 credits (experiential learning) will be accepted. A grade of C or better is required in all courses within the Advanced Program. Courses currently approved for the advanced program include:

AGRI 411, 489.  
AGRO 105, 403, 422, 423. ANSC 101, 211, 212, 214, 252, 305, 327, 350, 370, 398, 399, 401, 406, 412, 413, 415, 416, 427, 443, 446, 447, 452, 462, 463, 466, 480.  
BIOL 398, 399.  
BOTN all courses except BOTN 100, 101, 103, 200, 202, 211 and 414.  
BCHM 261, 461, 462, 463, 464.  
CHEM 287, 487.  
ENTM all courses except ENTM 100, 111, 205, 252, and 303. GEOL 102, 331, 431, 432, 434, 452.  
HORT 171 and 271.  
MICB all courses except MICB 100, 200, 322.  
NUSC 402, 403, 450.  
NUTR 440, 450. Credit will be given for only one of these-NUSC 450 or NUTR 450.  
PHED 300. PSYC 400, 402, 403, 410, 412, and 479.  
ZOO 101, 146, 181, 207, 210, 213, 301, 346, and 381.  
ZOO 328Z requires prior approval of Coordinating Advisor.

Research experience in the various areas of biology is possible under this plan by special arrangement with faculty research advisors and prior approval of Coordinator. Not more than 3 hours of special problems or research can be taken as part of the advanced program requirement. All advanced program curricula are subject to the approval of the General Biological Sciences Program Committee.

In compliance with the University Studies Program, the following courses cannot be used by G.B.S. majors to fulfill USP requirements: EDMS 451, ZOOL 346.

## Advising

Academic advising is mandatory. Contact one of the following advisors: Berg, Coordinator (1225 H.J. Patterson (HJP), 454-3812); Barnett (3214 HJP, 454-3812); Bottrell (Symons room 2126, 454-3812); Koines (1227 HJP, 454-3812); Lamp (3110 Turner, 454-3812); Van Valkenburg (3226 HJP, 454-3812); Armstrong-Entomology Emphasis (2309 Symons, 454-7122); Bottino-Genetics Emphasis (3223 HJP, 454-3821); Cook-Microbiology Emphasis (3115 Microbiology, 454-5381); Klavon-Chemistry Emphasis (1220 Symons, 454-5257); Linder-Zoology Emphasis (3202 Zoology-Psychology, 454-6249); Motta-Botany Emphasis (4108 HJP, 454-3994).

## Honors

The General Biological Sciences Honors Program is a special program for exceptionally talented and promising students. It emphasizes the scholarly approach to independent study. Information about this honors program may be obtained from the Coordinating Advisor.

## Student Honor Society

Phi Sigma. Contact Linda Dalo, X5131, for information on membership and eligibility.

Course Code: BIOL

## BOTANY (BOTN)

### College of Life Sciences

H.J. Patterson Hall, 454-3812

Professor and Acting Chair: Teramura

Distinguished Professor: Diener

Professors: Bean, Corbett, Gantt, Kantzes, Krusberg, Kung, Lockard, Patterson, Reveal, Sisler

Associate Professors: Barnett, Bottino, Cooke, Forseth, Grybauskas, Motta, Racusen, Steiner, Sze, Wolniak

Assistant Professors: Dudash, Fenster, Hutcheson, Straney, Van Valkenburg, Watson

Lecturer: Berg

Instructors: Higgins, Koines

Emeriti: Brown, Sorokin

## The Major

This major is designed with a diverse range of career possibilities for students in botany or plant biology, and gives students a broad background in supporting areas of biological sciences, chemistry, math, and physics. In addition to the botany courses required of all majors, this major allows students to take a number of botany or related electives to develop the student's area of interest within botany. The department offers instruction in the fields of physiology, pathology, ecology, taxonomy, anatomy-morphology, genetics, mycology, nematology, virology, phycology, and general botany.

## Requirements for Major

Requirements of this major are under review and may be changed prior to the 1990-91 academic year. Students should consult an advisor. All students must complete the core requirements for the College of Life Sciences. In addition, the following courses are required:

	Semester Credit Hours
University Studies Program Requirements .....	30
College of Life Sciences Core Requirements .....	38-40
BOTN 202—Plant Kingdom .....	4
BOTN 212—Plant Taxonomy .....	4
BOTN 221—Diseases of Plants .....	4
BOTN 398—Seminar .....	1
BOTN 414—Plant Genetics .....	3

BOTN 416—Plant Structure .....	4
BOTN 441—Plant Physiology .....	4
BOTN 462—Plant Ecology .....	2
BOTN 464—Plant Ecology Laboratory .....	2
BOTN Electives or Related Electives .....	8-10
MCB 200 General Microbiology .....	4
Electives .....	10
	120

All required courses, including botany-related electives, require a grade of C or better. Botany-related electives may include no more than one lower-level course and must be approved by the advisor. In some areas of botany, an introductory course in geology or soils is highly recommended.

## Advising

Academic advising is mandatory. Contact the Botany Coordinating Advisor, Dr. Neal Barnett, 3214 H.J. Patterson, or Dr. Linda Berg, 1225 H.J. Patterson, 454-3812.

## Honors

The Botany Department offers a special program for exceptionally talented and promising students through the Honors Program, which emphasizes the scholarly approach to independent study. Information concerning this program may be obtained from the academic advisors.

Course Code: BOTN

## BUSINESS AND MANAGEMENT, GENERAL

For information, consult College of Business and Management entry.

## CHEMICAL AND NUCLEAR ENGINEERING (ENCH, ENNU)

### College of Engineering

2113 Chemical and Nuclear Engineering Bldg., 454-2432

Chair: Roush

The Chemical and Nuclear Engineering Department offers programs in chemical, nuclear and materials engineering. In addition, study programs in the specialty areas of applied polymer science, biochemical engineering, and process simulation and control are available. The latter programs are interdisciplinary with other departments at the university. The department programs prepare an undergraduate for graduate study or immediate industrial employment following the baccalaureate degree.

## Chemical Engineering Program (ENCH)

Director: McAvoy

Professors: Asbjorsen, Gentry, Regan, Sengers\*, Smith, Weigand

Associate Professors: Calabrese, Chol, Gasner

Assistant Professors: Bentley, Coppella, Davison, Lee, Mavrouniotis,

Payne, Rao, Wang, Zafiriou

Emeritus: Beckmann

\*Member of Institute for Physical Sciences and Technology

The chemical engineer is primarily concerned with research and process development leading to new chemical process ventures or a better understanding of existing ones; with the efficient operation of the complete chemical plant or its component units; with the technical services engineering required for improving and understanding plant operation and the products produced; with the sales and economic distribution of the plant products; and with the general management and executive direction of process industry plants and industrial complexes. The process may be a chemical, petrochemical, biochemical or petroleum process.

Because of this wide range of ultimate applications, the chemical engineer finds interesting and diverse career opportunities in such varied fields as chemical (inorganic and organic), food processing and manufacture, metallurgical, energy conversion, petroleum (refining, production, or petrochemical), and pharmaceutical industries. Additional opportunities are presented by the research and development activities of many public

and private research institutes and allied agencies.

### Requirements for Major

The curriculum is composed of: (1) the required USP (general education) requirements of College Park; (2) a core of mathematics, physics, chemistry, and engineering sciences required of all engineering students; (3) the required core of 30 credits of ENCH courses which includes ENCH 215, 280, 300, 333, 425, 427, 437, 440, 442, 444, and 446; (4) twelve credits of ENCH electives. A sample program follows:

**Freshman Year:** The freshman year is the same for all Engineering departments\*. Please consult The College of Engineering entry.

	Semester	
	I	II
<b>Sophomore Year</b>		
Math 241—Calculus III .....	4	
Math 246—Differential Equations for Scientists .....		3
and Engineers		
PHYS 262, 263—General Physics .....	4	4
ENES 230—Intro. to Materials and Their Applications .....		3
CHEM 233—Organic Chemistry I .....	4	4
CHEM 243—Organic Chemistry II .....		4
ENCH 215—Chem. Engr. Analysis .....	3	
ENCH 280—Transport Processes I: Fluid Mechanics .....		2
University Studies Program Requirements .....	3	
Total .....	18	16
<b>Junior Year</b>		
ENCH 300—Chemical Process Thermodynamics .....	3	
ENCH 440—Chemical Engineering Kinetics .....		3
ENCH 442—Chemical Engr. Systems Analysis .....		3
CHEM 481, 482—Physical Chemistry I, II .....	3	3
CHEM 483—Physical Chemistry Laboratory I .....		2
ENCH 425, 427—Transport Processes II: Heat Tran- .....	3	3
sfer; Transport Processes III: Mass Transfer		
EENE 300/Principles of Electrical Engineering .....		
(Recommended)	3	
University Studies Program Requirements .....	3	6
Total .....	17	18
<b>Senior Year</b>		
ENCH 437—Chemical Engineering Lab .....	3	
ENCH 444—Process Engr. Economics and Design I .....	3	
ENCH 446—Process Engr. Economics and Design II .....		3
ENCH 333—Seminar .....		1
Technical Electives** .....	6	6
University Studies Program Requirements .....	3	6
Total .....	15	16

Minimum Degree Credits: 120 credits and fulfillment of all department, college, and university requirements.

\*Qualified students may elect to take CHEM 105 and 115 (4 sem. hrs. each) instead of CHEM 103 and 113.

\*\*Students must consult with an advisor on selection of appropriate courses for their particular course of study.

### Technical Electives Guidelines

#### Chemical Engineering

Twelve credits of technical electives are required. It is recommended that they be taken during the senior year.

Additional guidelines are as follows:

1. Technical electives will normally be chosen from the list given. Upon the approval of your advisor and written permission of the department, a limited amount of substitution may be permitted. Substitutes, including ENCH 468—Research (1–3 cr.) must fit into an overall plan of study emphasis and ensure that the plan fulfills accreditation design requirements.

### Technical Electives—Chemical Engineering Program

#### Biochemical Engineering

ENCH 482 Biochemical Engineering (3)  
ENCH 485 Biochemical Engineering Laboratory (2), recommended only if ENCH 482 is taken. Simultaneous enrollment in ENCH 468 (1 credit) is recommended.

#### Polymers

ENCH 490 Introduction to Polymer Science (3)

ENCH 492 Applied Physical Chemistry of Polymers (3)  
ENCH 494 Polymer Technology Laboratory (3). Recommended if ENCH 490 or 492 is taken.

#### Chemical Processing

ENCH 450 Chemical Process Development (3)

#### Processing Analysis and Optimization

ENCH 452 Advanced Chemical Engineering Analysis (counts as Lab.) (3)  
ENCH 453 Applied Mathematics in Chemical Engineering (3)  
ENCH 454 Chemical Process Analysis and Optimization (3)

### Admission

All Chemical Engineering majors must meet admission, progress and retention standards of the College of Engineering.

### Advising

All students choosing Chemical Engineering as their primary field must see an undergraduate advisor each semester. Appointments for advising can be made at 2143 Chemical and Nuclear Engineering Building, 454-7898.

### Coop Program

The Chemical Engineering program works within the College of Engineering Cooperative Engineering Education Program. For information on this program consult the College of Engineering entry in this catalog or call 454-5191.

### Financial Assistance

Financial aid based upon need is available through the Office of Student Financial Aid. A number of scholarships are available through the College of Engineering. Part-time employment is available in the department.

### Honors and Awards

Annual awards are given to recognize scholarship and outstanding service to the department, college and university. These awards include the David Arthur Berman Memorial Award, the Engineering Society of Baltimore Award, and the American Institute of Chemists Award for the outstanding senior in chemical engineering. AIChE awards are given to the junior with the highest cumulative GPA as well as to the outstanding junior and outstanding senior in chemical engineering.

### Student Organization

Students operate a campus student chapter of the professional organization, the American Institute of Chemical Engineers.

Course Code: ENCH

### Nuclear Engineering Program (ENNU)

2309 Chemical and Nuclear Engineering, 454-2436

Director: Munno

Professors: Hsu, Munno, Roush, Silverman

Associate Professors: Almenas, Modarres, Pertmer

Assistant Professor: Moslein

Lecturer: Lee (p.t.)

### The Major

Nuclear Engineering deals with the practical use of nuclear energy from nuclear fission, fusion and radioisotope sources. The major use of nuclear energy is in electric power generation. Other uses are in the areas of chemical processing, medicine, instrumentation, and isotope trace analysis. The nuclear engineer is primarily concerned with the design and operation of energy conversion devices ranging from very large reactors to miniature nuclear batteries, and with the use of nuclear reactions in many environmental, biological and chemical processes. Because of the wide range of uses for nuclear systems, the nuclear engineer finds interesting and diverse career opportunities in a variety of companies and

laboratories. Students may use nuclear engineering as a field of concentration in the Bachelor of Science in Engineering degree program.

**Requirements for Major**

The curriculum is composed of: (1) the required USP (general education) requirements of the campus; (2) a core of mathematics, physics, chemistry, and engineering sciences required of all engineering students; (3) fifteen credits of courses selected within a secondary field; (4) twenty-seven credits of nuclear engineering courses including ENNU 215, 440, 450, 455, 460, 465, 480, and 490; (5) the course on environmental effects on materials, ENMA 464. A maximum degree of flexibility has been retained so that the student and advisor can select an elective ENES course, an elective ENNU course, and two technical elective courses. A sample program follows:

**Freshman Year.** The Freshman year is the same for all Engineering departments. Please consult The College of Engineering entry.

	Semester	
	I	II
<b>Sophomore Year</b>		
University Studies Program Requirements .....	3	3
Math 241—Calculus III .....	4	
Math 246—Differential Equations .....		4
PHYS 262, 263—General Physics .....	4	3
ENES 230—Intro. to Materials and Their Applications .....	3	
ENES 240—Engineering Computation or ENME 205—	3	
Secondary Field Elective .....		3
ENNU 215—Intro. to Nuclear Technology .....		3
Total .....	17	16

<b>Junior Year</b>		
University Studies Program Requirements .....	3	6
ENNU 440—Nuclear Technology Laboratory .....	3	
ENNU 450—Nuclear Reactor Engineering I .....	3	
Math-Physical Science Elective .....	3	
Secondary Field Courses .....	3	3
ENNU 455—Nuclear Reactor Engineering II .....	3	3
ENNU 460—Nuclear Heat Transport .....	3	3
ENMA 464—Environmental Effects on Engineering		
Materials .....	3	3
Total .....	15	18

<b>Senior Year</b>		
University Studies Programs Requirements .....	3	3
ENNU Elective .....	3	
ENNU 465—Nuclear Reactor Systems Analysis .....	3	3
Secondary Field Courses .....	3	3
Technical Electives .....	3	3
ENNU 480—Reactor Core Design .....	3	
ENNU 490—Nuclear Fuel and Power Management .....	3	3
ENES Elective .....	3	
Total .....	18	15

Minimum Degree Credits: 120 credits and fulfillment of all department, college, and University requirements.

\*Qualified students may elect to take CHEM 105 and 115 (4 sem. hrs. each) instead of CHEM 103 and 113.

\*\*Students must consult with an advisor on selection of appropriate courses for their particular course of study.

**Admission**

All Nuclear Engineering students must meet admission, progress and retention standards of the College of Engineering.

**Coop Program**

The nuclear engineering program works within the College of Engineering Cooperative Engineering Education Program. For information on this program, see the College of Engineering entry in this catalog, or call 454-5191.

**Advising**

Students choosing nuclear engineering as their primary field should follow the listed curriculum for nuclear engineers. They should submit a complete program of courses for approval during their junior year. Students electing nuclear engineering as their secondary field should seek advice from a member of the nuclear engineering faculty prior to their sophomore year. Call 454-2430 to talk to an advisor or to schedule an appointment.

**Financial Assistance**

Financial aid based upon need is available through the Office of Student Financial Aid. A number of scholarships are available through the College of Engineering. Part-time employment is available in the department. Of particular interest are scholarships available to qualified students at all undergraduate levels from the Institute for Nuclear Power Operations.

**Honors and Awards**

Annual awards are given to recognize scholarship and outstanding service to the department, college and university. These awards include the American Nuclear Society Award for Leadership and Service and the Award for Outstanding Contribution to the ANS Student Chapter. The American Nuclear Society also provides awards to recognize the highest GPA for a student at the senior, junior and sophomore levels and to a senior with greatest scholarship improvement. The Baltimore Gas and Electric Company also grants, through the program, an award for the Outstanding Junior of the year and a scholarship which includes the opportunity for summer employment to an academically qualified student with demonstrated interest in utility employment.

**Student Organization**

Students operate a campus student chapter of the professional organization, the American Nuclear Society.

Course Code: ENNU

**Materials Engineering Program (ENMA)**

1110C Chemical and Nuclear Engineering Building, 454-2434

Director: Wuttig  
 Professors: Arsenault, Dieter\*, Wuttig  
 Associate Faculty: Armstrong  
 Assistant Professors: Ankem, Lloyd, Salamanca-Riba  
 \*Member of mechanical engineering department

**The Major**

The development and production of novel materials has become a major issue in all fields of engineering. Materials which are strong and light at the same time are needed for space structures; faster electro-optical switching materials will result in improved mass communications; and high temperature plastics would improve the efficiency of transportation systems. Many of today's materials requirements can be met by composites. The materials engineering program provides the student with an interdisciplinary science-based education to understanding the structure and resulting properties of metallic, ceramic and polymeric materials. A wide variety of careers is open to graduates of this program ranging from production and quality control in the traditional materials industries to the molecular construction of electronic materials in ultra-clean environments.

Students may use Materials Engineering as a field of concentration in the Bachelor of Science in Engineering degree program.

**Requirements for Major**

The curriculum is composed of: (1) the required USP (general education) requirements of the campus; (2) a core of mathematics, physics, chemistry, and engineering courses required of all engineering students; (3) twelve credits of courses selected within a secondary, minor field; (4) twenty-three credits of materials engineering courses; and (5) technical electives to be selected by the student and his or her advisor to enrich, specialize or expand certain areas of knowledge within the chosen field.

**Freshman Year**

The Freshman curriculum is the same for all Engineering departments. Please consult The College of Engineering entry.

	Semester	
	I	II
<b>Sophomore Year</b>		
University Studies Program Requirements .....		3
Math 241—Calculus III .....	4	
Math 246—Differential Equations for Scientists		3
and Engineers		

## 100 Chemistry and Biochemistry

PHYS 262, 263—General Physics .....	4	4
ENES 220—Mechanics of Materials .....	3	
CHEM 233, 243—Organic Chemistry I, II .....	4	4
ENES 230—Introduction to Materials and Their Ap .....	3	
ENME 205—Engineering Analysis and Computer Prog .....	3	
Total .....	17	16

In general, students should not register for 300-400 level engineering subjects until and unless they have satisfactorily completed Math 241 and 246.

### Junior Year

University Studies Program Requirements .....	3	3
CHEM 481, 482—Physical Chemistry I, II .....	3	3
ENMA 300—Materials Science and Engineering .....	3	
ENMA 301—Materials Engineering Laboratory .....	1	
ENMA 462—Deformation of Engineering Materials .....	3	
ENMA 463—Chemical, Liquid and Powder Process of .....		3
Engineering Materials		
Minor Courses .....	3	3
Technical Electives .....		3
Total .....	16	18

### Senior Year

University Studies Program Requirements .....	6	6
ENMA 470—Structure and Properties of Engr. ....	3	
ENMA 471—Phys. Chem. of Engineering Materials .....	3	
ENMA 472—Technology of Engineering Materials .....	3	
ENMA 473—Processing of Engineering Materials .....		3
Minor Courses .....	3	3
Technical Electives .....		3
Total .....	15	18

Minimum Degree Credits: 120 credits and the fulfillment of all department, college, and university requirements.

\*Qualified students may elect to take CHEM 105 and 115 (4 sem. hrs. each) instead of CHEM 103 and 113.

\*\*Students must consult with an advisor on selection of appropriate courses for their particular course of study.

## Admission

All Materials Engineering students must meet admission, progress and retention standards of the College of Engineering.

## Advising

Students choosing materials engineering as their primary field should follow the listed curriculum for materials engineers. They should submit a complete program of courses for approval during their junior year. Students electing materials engineering as their secondary field should seek advice from the director of the materials engineering faculty prior to their sophomore year. Call 454-2434 to talk to the director or to schedule an appointment.

## Coop Program

The materials engineering program works within the College of Engineering Cooperative Engineering Education Program. For details, see the College of Engineering entry in this catalog.

## Financial Assistance

Financial Aid based upon need is available through the Office of Student Financial Aid. A number of scholarships are available through the College of Engineering. Part-time employment is available in the department.

## Honors and Awards

Each of the large number of professional materials oriented societies such as the metallurgical and ceramic societies sponsor awards to recognize outstanding scholarship and undergraduate research. All students enrolled in the materials engineering program are encouraged to select a faculty advisor who in their junior and senior year will guide them towards the nomination for these awards.

## Student Organization

All major professional materials societies invite students to become active in their undergraduate divisions. The materials faculty members specializing in certain areas of materials engineering will guide the students toward the society of their choice.

Course Code: ENMA

## CHEMISTRY AND BIOCHEMISTRY (CHEM, BCHM)

### College of Life Sciences

1309 Chemistry Building, 454-4114

Student Information: 1320 Chemistry Building, 454-2605

Professor and Chair: Greer

Associate Chair: Castellan

Director, Undergraduate Programs: Harwood

Professors: Alexander, Ammon, Bailey, Bellama, Castellan, Dunaway-Mariano, Freeman, Gerit, Gordon, Greer, Hansen, Helz, Henery-Logan, Holmlund, Huheey, Jarvis, Khanna, Kozarich, Mariano, Mazzocchi, Mignerey†, Miller, Moore, Munn, O'Haver, Ponnampuruma, †Stewart, Tossell, Walters, Weiner

Associate Professors: Armstrong, Boyd, DeShong, DeVoe, Kasler, Murphey, Ondov, Sampugna

Assistant Professors: Eichhorn, Falvey, Herndon, Julin, Poli, Ruett-Robey, Thirumalai Emeriti: Adler, Jaquith, Keeney, McNesby, Pratt, Rollinson, Sturtz, Swirbely, Vanderslice, Veitch

†Distinguished Scholar - Teacher

## The Majors

The Department of Chemistry and Biochemistry offers the B.S. degree in both Chemistry and Biochemistry. Either curriculum is designed to prepare major students for entering graduate school, for career opportunities in chemical and pharmaceutical industries, for basic research positions in government and academic laboratories or to attend professional schools.

### Requirements for Chemistry Major

The major in chemistry requires thirty-nine credits in chemistry, of which sixteen are lower-level and twenty-three are upper-level. Six credits of the twenty-three upper-level requirements must be selected from approved chemistry courses. The program is designed to provide the maximum amount of flexibility to students seeking preparation for either the traditional branches of chemistry or the interdisciplinary fields. In order to meet requirements for a degree to be certified by the American Chemical Society, students must complete two additional laboratory courses selected from CHEM 433, 443, 425, 487 and BCHM 463.

A sample program, listing only the required or recommended courses, is given below. It is expected that each semester's electives will include courses intended to satisfy the general requirements of the University or of the College of Life Sciences, plus others of the student's choice.

Each required chemistry course must be passed with a minimum grade of C. Required supporting courses must be passed with a C average.

	Semester Credit Hours
University Studies Program Requirements .....	30
College of Life Sciences Core Requirements .....	20
Departmental Requirements .....	39
CHEM 481—Physical Chemistry I .....	3
CHEM 483—Physical Chemistry Laboratory I .....	2
CHEM 482—Physical Chemistry II .....	3
CHEM 484—Physical Chemistry Laboratory II .....	2
CHEM 401—Inorganic Chemistry .....	3
400-Level Chemistry courses .....	6
Electives .....	31
Total .....	120

### Requirements for Biochemistry Major

The department also offers a major in biochemistry. In addition to the sixteen credits of lower-level chemistry, the program requires CHEM 321 and BCHM 461, 462, and 464; CHEM 481, 482 and 483; MATH 140 and

141; PHYS 141 and 142; and nine credits of approved biological science that must include at least one upper-level course.

A sample program, listing only the required courses, is given below. It is expected that each semester's electives will include courses intended to satisfy the general requirements of the university or of the College of Life Sciences, plus others of the student's choice.

Each required chemistry and biochemistry course must be passed with a minimum grade of C. Required supporting courses must be passed with a C average.

	<b>Semester Credit Hours</b>
University Studies Program Requirements .....	30
College of Life Sciences Core Requirements .....	20
Departmental Requirements .....	43-44
Approved Biological Science Elective	
CHEM 481—Physical Chemistry I .....	3
CHEM 483—Physical Chemistry Laboratory I .....	2
CHEM 482—Physical Chemistry II .....	3
CHEM 484—Physical Chemistry Laboratory II .....	3
BCHM 461—Biochemistry I .....	3
BCHM 462—Biochemistry II .....	3
BCHM 464—Biochemistry Laboratory II .....	2
Approved Upper-level Biological Science .....	3-4
Electives .....	27
Total .....	120-121

## Advising

Prior to registration for each semester, advising is mandatory. Appointments for advising can be made by contacting the secretary in the Office of Undergraduate Studies, 1320 Chemistry Building, 454-2605.

## Financial Assistance

Two outstanding juniors who are Chemistry or Biochemistry majors are selected in the spring of each year to receive \$600 tuition scholarships from the John J. Leidy Foundation to be used during the senior year. No application is necessary since all juniors are automatically reviewed by the members of the Awards Committee.

## Honors and Awards

In the junior or senior year, CHEM 398, Special Problems for Honor Students, is an opportunity for students with a GPA of 3.0 or better to conduct honors research. Dr. Harwood (1320 Chemistry Building, 454-5231) is the coordinator. After successful completion of a senior thesis and seminar, graduation "with honors" or "with high honors" in Chemistry can be attained.

## Student Organizations

Alpha Chi Sigma Chemistry Fraternity is a professional co-ed fraternity which recruits members from Chemistry, Biochemistry, and related science majors during each fall and spring semester. Members must have completed 1 year of General Chemistry and are expected to complete a minimum of 4 semesters of Chemistry. The fraternity, which averages 50 members, holds weekly meetings and provides tutoring once a week for students in lower division chemistry courses. The office is 1403 Chemistry Building (454-1385). Dr. Boyd (1206 Chemistry Building, 454-3876) is the faculty moderator.

Course Codes: CHEM, BCHM

# CIVIL ENGINEERING (ENCE)

## College of Engineering

1173D Engineering Classroom Building, 454-2438

Chair: Colville

Professors: Aggour, Albrecht, Birkner, Carter, McCuen, Pilcher, Ragan, Sternberg, Witczak, Wolde-Tinsae

Associate Professors: Ayyub, Chang, P., Garber, Goodings, Hao, Schelling, Schonfeld, Schwartz, Vannoy

Assistant Professors: Austin, Bernold, Chang, L., Davis, Kartam

Senior Research Associate: Rib

## The Major

Civil Engineering is a people-serving profession, concerned with the planning, design, construction and operation of large, complex systems such as buildings and bridges, water purification and distribution systems, highways, rapid transit and rail systems, ports and harbors, airports, tunnels and underground construction, dams, power generating systems and structural components of aircraft and ships. Civil engineering also includes urban and city planning, water and land pollution and treatment problems, and disposal of hazardous wastes and chemicals. The design and construction of these systems are only part of the many challenges and opportunities faced by civil engineers. The recent revolution in computers, communications and data management has provided new resources that are widely used by the professional civil engineer in providing safe, economical and functional facilities to serve our society.

## Requirements for Major

At both the undergraduate and graduate levels, the department offers programs of study in all six major areas of concentration in civil engineering: construction engineering and management, environmental engineering, geotechnical engineering, structural engineering, transportation engineering, and water resources and remote sensing. A total of 132 credit hours is required for a Bachelor's degree with emphasis in basic science (mathematics, chemistry and physics), engineering science (mechanics of materials, statics and dynamics), basic civil engineering core courses, and sixteen credits of technical electives that may be selected from a combination of the six areas of civil engineering concentration. The undergraduate curriculum listed below is new, beginning in the Fall 1990 semester. This curriculum provides a sensible blend of required courses and electives, which permits students to pursue their interests without the risk of overspecialization at the undergraduate level. Mandatory student evaluations of teaching and a recent departmental peer evaluation of teaching indicates that the quality of teaching and instruction within the department is outstanding.

	<b>Semester Credit Hours</b>	
	I	II
<b>Sophomore Year</b>		
Math 241—Calculus III .....	4	
Math 246—Differential Equations for Scientists and Engineers .....		3
PHYS 262, 263—General Physics II, III .....	4	4
ENES 220—Mechanics of Materials .....	3	
ENES 221—Dynamics .....		3
ENCE 201—Computational Methods in Civil Engineering I .....	3	
ENCE 255—Elementary Structural Analysis .....		3
University Studies Program Requirements .....	3	3
Total .....	17	16
<b>Junior Year</b>		
ENCE 300—Fundamentals of Engineering Materials .....	3	
ENCE 301—Computational Methods in Civil Engineering II ..		3
ENCE 315—Introduction to Environmental Engineering .....	3	
ENCE 320—Construction Engineering and Management .....		3
ENCE 321—Engineering Survey Measurements .....		1
ENCE 330—Basic Fluid Mechanics .....	3	
ENCE 340—Fundamentals of Soil Mechanics .....		3
ENCE 355—Elementary Structural Design .....	3	
ENCE 370—Fundamentals of Transportation Engineering .....		3
ENME 320—Thermodynamics .....	3	
ENGL 393—Technical Writing .....		3
University Studies Program Requirements .....	3	
Total .....	18	16
<b>Senior Year</b>		
ENCE—Technical Electives (Group A, B, C, D, E, or F)* .....	7	3
ENCE—Technical Electives* .....	3	3
ENEE 300—Principles of Electrical Engineering .....		3
ENCE 466—Design of Civil Engineering Systems .....		3
University Studies Program Requirements .....	6	3
Total .....	16	15

Minimum Degree Credits—120 credits and the fulfillment of all department, college and university requirements.

\* See notes concerning Technical Electives

Additional semester credits will be involved to the extent that courses carrying more than three credits are selected.

**Notes Concerning Technical Electives in Civil Engineering**

A minimum of 16 credit hours of technical electives are required as follows:

- (1) All 3 courses from one area of concentration A, B, C, D, E or F.
- (2) Two other courses from the entire technical elective list.

**Areas of Concentration**

- A. Structures: ENCE 453 (4); 454 (3); 455 (3).
- B. Water Resources: ENCE 430 (4); 431 (3); 432 (3).
- C. Environmental: ENCE 433 (3); 435 (4); 436 (3).
- D. Transportation: ENCE 470 (4); 473 (3); 474 (3).
- E. Geotechnical: ENCE 440 (4); 441 (3); 442 (3).
- F. Construction Engineering Management: ENCE 423 (4); 424 (3); 425 (3).
- G. Support Courses: ENCE 410 (3); 462 (3); 463 (3); 464 (3); 465 (3); 489 (1-3).

**Admission**

See College of Engineering entrance requirements.

**Advising**

All students are assigned a faculty advisor who assists in course selection and scheduling throughout the student's entire undergraduate program. For advising contact Dr. Garber, 454-2225, 1163 Engineering Classroom Building.

**Fieldwork and Internship Opportunities**

Several excellent co-op opportunities are available for Civil Engineering students. See the College of Engineering entry in this catalog for a full description of the Engineering co-op program, or contact Heidi Sauber, 454-5191.

**Financial Assistance**

The Department of Civil Engineering awards a number of academic scholarships. These awards are designated primarily for junior and senior students. A department scholarship committee solicits and evaluates applications each year.

**Honors and Awards**

See College of Engineering Honors Program. The Department of Civil Engineering offers the following awards: 1) The Civil Engineering Outstanding Senior Award; 2) The ASCE Outstanding Senior Award; 3) The Woodward-Clyde Consultants Award; 4) The Bechtel Award; 5) The Chi Epsilon Outstanding Senior Award; 6) The Ben Dyer Award; and 7) The ASCE Maryland Section Award.

**Student Organizations**

Student organizations include the American Society of Civil Engineers Student Chapter which is open to all civil engineering students. The Civil Engineering Honor Society, Chi Epsilon, elects members semi-annually. Information on membership and eligibility for these student organizations may be obtained from the president of each society, 0401 Engineering Classroom Building.

Course Code: ENCE

**CLASSICS (CLAS)****College of Arts and Humanities**

4220 Jimenez, 454-2510

Professor and Chair: Rowland  
Associate Professors: Duffy, Hallett, Hubbe, Staley  
Assistant Professors: Doherty, Stehle  
Visiting Faculty (1989/90): Berlin, Dexter, Kazazis, Levine

**The Major**

Classics is the study of the languages, literature, culture and thought of ancient Greece and Rome. Students at the University of Maryland at College Park may major in Classics with four options and may enroll in a variety of courses on the classical world. These options include Latin, Greek, Greek and Latin, and Classics in Translation.

**Requirements for Major****Option A: Latin**

Thirty credits of Latin at the 200-level or higher, at least twelve of which must be at the 400-level or higher, plus nine credits of supporting courses (for example, CLAS 170, HIST 130, and one 300- or 400-level course in Roman history).

**Option B: Greek**

Thirty credits of Greek at the 200-level or higher, at least twelve of which must be at the 400-level or higher, plus nine hours of supporting courses (for example, CLAS 170, HIST 130, and a 300- or 400-level course in Greek history).

**Option C: Greek and Latin**

Thirty credits of either Greek or Latin and twelve hours of the other classical language, plus nine hours of supporting courses (for example, CLAS 170, HIST 130, and a 300- or 400-level course in Greek or Roman history). Students with no previous training in the second language may count introductory level courses as part of the twelve hour requirement.

**Option D: Classics in Translation (Classical Humanities)**

Eighteen credits in CLAS courses including CLAS 100 (Classical Foundations) and a senior seminar or thesis; twelve credits in Greek or Latin courses; twelve credits in supporting courses (normally in Art History, Archaeology, Architecture, Government, History, Linguistics or Philosophy). Note: CLAS 280 and CLAS 290 do not count toward this degree; 300- and 400-level courses in LATN and GREK may, with permission, be included among the eighteen required hours in CLAS.

Course Codes: CLAS, GREK, LATN

**COMPARATIVE LITERATURE PROGRAM (CMLT)**

College of Arts and Humanities  
4223 Jimenez Hall, 454-2685

Professor and Director: Heyndels

Professors: Beck, Beicken, Berlin, Best, Bryer, Clignet, R. Cohen, Freedman, Fuegi, Gillespie, Gramberg, Haber, Herin, Holton, Jones, Lifton, MacBain, Oster, Pacheco, Panichas, Pfister, Price, Rimer, Rowland, J. Russell, Schoenbaum, Sosnowski, Thernen, Trousdale  
Associate Professors: Aguilar-Mora, Barry, Bennett, Blik, R. Brown, Caramello, Coogan, David, Duffy, Fink, Fieger, Fredericksen, Glad, Grmsted, Gullickson, Hage, Hallett, Handelman, J. Harris, Herman, Igel, Joyce, Kelly, Kerkham, Klein, Leinwand, Levinson, Loizeaux, Mintz, Peterson J. Robinson, C. Russell, Staley, Tanca  
Assistant Professors: Falvo, Kristal, Levine, Strauch, Zappala

Undergraduates may emphasize Comparative Literature as they work toward a degree in one of the departments of literature or in another department associated with the Comparative Literature Program. Each student will be formally advised by the faculty of the "home" department in consultation with the Director of the Comparative Literature Program. In general, every student will be required to take CMLT 401 and CMLT 402. The various departments concerned with have additional specific requirements.

Students emphasizing comparative literature are expected to develop a high degree of competence in at least one foreign language.

Coursework may not be limited to the nineteenth and twentieth centuries. CLAS 170 is highly recommended for those contemplating graduate work in comparative literature.

Course Code: CMLT



## COMPUTER SCIENCE (CMSC)

### College of Computer, Mathematical and Physical Sciences

1103 A. V. Williams Building, 454-2002

Professor and Chair: Tripathi

Professors: Agrawala, Basili, Chu, Davis, Edmundson<sup>1</sup>, Gannon, Kanal,

Miller, Minker, O'Leary, Rosenfeld, Samet, Sheidnerman, Stewart

Associate Professors: Austing, Kruskal, Nau, Perlis, Reggia, Roussopoulos,

Shankar, Smith, Zelkowitz

Assistant Professors: Aioimonos, Amir, Carson, Elman, Faloutsos, Furuta,

Gasarch, Hendler, Jalote, Johnson, Mark, Mount, Pugh, Purtilo, Ricart<sup>2</sup>,

Rombach, Salem, Sellis, Stotts, Subrahmanian

Instructor: Kaye

Professor Emeritus: Atchison

<sup>1</sup>Jointly with Mathematics

<sup>2</sup>Jointly with Computer Science Center

### The Major

Computer science is the study of computers and computational systems: their theory, design, development, and application. Principal areas within computer science include artificial intelligence, computer systems, database systems, human factors, numerical analysis, programming languages, software engineering, and theory of computing. Computer science incorporates concepts from mathematics, engineering, and psychology.

A computer scientist is concerned with problem solving. Problems range from abstract (determining what problems can be solved with computers and the complexity of the algorithms that solve them) to practical (design of computer systems easy for people to use). Computer scientists build computational models of systems including physical phenomena (weather forecasting), human behavior (expert systems, robotics), and computer systems themselves (performance evaluation). Such models often require extensive numeric or symbolic computation. Computer scientists design and analyze algorithms to solve problems, and develop and study the performance of computer hardware and software.

### Requirements for Major

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

The course of study for a Computer Science major must satisfy all of the following requirements:

1. A minimum of 37 credit hours of CMSC courses which satisfy the following conditions:
  - a. A grade of C or better in each course.
  - b. CMSC 150, 113, 251, and 280. (Some students may also need CMSC 112).
  - c. A grade of C or better must be obtained in CMSC 150 and 112 before taking CMSC 113 or CMSC 251; in CMSC 113 before taking CMSC 280, 330 and in CMSC 280 before taking CMSC 311. Advanced placement may substitute for the CMSC 112 requirement.
  - d. At least 24 credit hours at the 300-400 levels, including CMSC 311, CMSC 330 and at least 15 credit hours of the following courses:
    - Computer Systems: CMSC 411; 412;
    - Information Processing: 420; one of 421, 424, or 426;
    - Software Engineering and Programming Languages: 430; 435;
    - Theory of Computation: 451; 452;
    - Numerical Analysis: one of 460 or 466; 467.

These 15 hours must be taken in at least three of the five areas with no more than two courses from any area.

2. MATH 140, 141, and at least two MATH, STAT or MAPL courses that require MATH 141 (or a more advanced mathematics course) (of the two courses, on must be a STAT course) as a prerequisite, and one other MATH, STAT, or MAPL course that requires MATH 141 (or a more advanced mathematics course) as a prerequisite. A grade of C or better must be achieved in each course. No course that is cross-listed as CMSC may be counted in this requirement.

3. A minimum of 12 additional credit hours of 300-400 level courses (plus their prerequisites) in one discipline outside of computer science with an average grade of C or better. No course that is cross-listed as CMSC may be counted in this requirement.
4. 37 credit hours to satisfy the general education CORE Program requirements of the University. Courses taken to satisfy these requirements may also be used to satisfy major requirements.
5. Electives to obtain at least the minimum 120 credit hours needed for graduation.

The above requirements are effective Fall 1990. Students who entered the major prior to Fall 1990 and transfer students who enter a Maryland community college by Fall 1990 and transfer to UMCP no later than Spring 1993 under the articulated transfer program may satisfy the older version of the requirements.

### Selective Admissions Policies

**Freshmen:** Admission to the major is competitive for incoming freshmen. Applicants who have designated a computer science major will be selected for admission on the basis of academic promise and available space. Applicants admissible to the university but not to the major will be offered admission to pre-computer science. A pre-computer science major takes the same freshman and sophomore level courses as a major, but is not assured eventual admission to the major. Because of space limitations the university may not be able to offer admission to all qualified applicants. The University of Maryland at College Park strongly urges early application.

**Transfer:** Admission to the major is competitive for transfer students. Applicants who have designated a computer science major will be selected for admission on the basis of academic promise and available space. Because of space limitations the University may not be able to offer admission to all qualified applicants. The University of Maryland at College Park strongly urges early application.

**Pre-majors:** Pre-computer science majors may apply for admission to the major after completion of at least 28 credits, including CMSC 150 and 113 and MATH 140 and 141. Admission is competitive, with a minimum GPA, currently 2.8, set each semester. Pre-majors may not take computer science courses beyond the 200-level.

Computer Science majors should take CMSC 150 and CMSC 113 in their first year. These courses emphasize the use of formal techniques in computer science: grammars, discrete mathematics, functional semantics, and program correctness.

### Advising

Computer science majors may schedule advising through 1103 A.V. Williams. Interested students should call (301) 454-2002 to receive further information about the program. Advisors for pre-majors are located in the CMPS Dean's Office, 2300 Mathematics Bldg.

### Financial Assistance

Many scholarships are available through the university, and others (for advanced students) are administered directly by the department. There are opportunities for student employment as a tutor or as a member of the department's laboratory staff. Professors may also have funds to hire undergraduates to assist in research. Many students also participate in internship or cooperative education programs, working in the computer industry for a semester during their junior or senior years.

### Honors

A departmental honors program provides an opportunity for outstanding undergraduates to take graduate level courses or to begin scholarly research in independent study with a faculty member. Students are accepted into the program after their sophomore year based on their academic performance.

### Student Organizations

Computer-related extracurricular activities are arranged by our student chapter of the ACM, the professional group for computer scientists and by the Minority Computer Science Society. Meetings include technical lectures and career information. The department also participates in the

## 104 Counseling and Personnel Services

programming contest run by the national ACM, and our teams have been very successful in this competition.

### Computer Science Courses for Non-Majors

CMSC 103, a terminal course for liberal arts majors, provides an introduction to the use of computer software. CMSC 110 (FORTRAN Programming) and CMSC 120 (Pascal Programming) offer an introduction to computing for students with little background. Other courses for non-majors include CMSC 211 and CMSC 220.

Course Code: CMSC

## COUNSELING AND PERSONNEL SERVICES (EDCP)

### College of Education

3218 Benjamin Building, 454-2026

Professor and Chair: Hershenson

Professors: Birk, Magoon, Marx, Power, Pumroy, Schlossberg

Associate Professors: Boyd, Greenberg, Hoffman, Lawrence, Leonard, Medvene, Rhoads, Scales, Sedlacek, Strein, Teglas, Westbrook  
Assistant Professors: Clement, Cook, Fassinger, Freeman, Komives, Lucas, McEwen, Thomas

Programs of preparation are offered by the Department of Counseling and Personnel Services at the master's degree, advanced graduate specialist, and doctoral degree levels for counselors in elementary and secondary schools, rehabilitation agencies, community agencies, business and industry, and college and university counseling centers. The department also offers graduate programs of preparation for other personnel services: college student personnel administrators, and school psychologists. The department offers a program jointly with the Department of Psychology which leads to a Ph.D. in counseling psychology.

While the department does not offer an undergraduate major, it does offer a number of courses which are open to undergraduates and are suggested for students considering graduate work in counseling or other human service fields.

Course Code: EDCP

## CRIMINAL JUSTICE AND CRIMINOLOGY (CRIM, CJUS)

### College of Behavioral and Social Sciences

LeFrak Hall, 454-4538

Director and Professor: Wellford

Criminal Justice Curriculum

Professor: Sherman

Associate Professors: Ingraham, Paternoster

Lecturers: Brooks, Katzenelson, Mauriello, Verchot

Criminology Program

Professor: Loftin

Associate Professors: Maida, Smith

Assistant Professors: Gottfredson, Simpson

Lecturer: Siman

Professor Emeritus: Lejins\* (Sociology)

\*Joint Appointment with unit indicated.

The purpose of the Institute of Criminal Justice and Criminology is to provide an organization and administrative basis for the interests and activities of the university, its faculty and students in the areas usually designated as criminal justice, criminology, and corrections. The institute promotes study and teaching concerning the problems of crime and delinquency by offering and coordinating academic programs in the areas of criminal justice, criminology, and corrections; managing research in these areas; and conducting demonstration projects. The institute sponsors the annual Alden Miller Lecture, the Criminal Justice Student Association, Alpha Phi Sigma, and an annual job fair. The institute comprises as its component parts:

1. The Criminology Program, leading to a Bachelor of Arts degree.
2. The Criminal Justice Curriculum, leading to a Bachelor of Arts degree.
3. Graduate Program offering M.A. and Ph.D. degrees in Criminal Justice and Criminology.

### The Criminology Major

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

The major in criminology comprises thirty hours of coursework in Criminology and Criminal Justice. Eighteen hours of social or behavioral science disciplines are required as a supporting sequence. In these supporting courses a social or behavioral science statistics is required. In addition, two psychology elective courses and a general social psychology course are required. Regarding the specific courses to be taken, the student is encouraged to consult with an advisor. No grade lower than C may be used toward the major or the supporting courses.

Major Requirements	Semester Credit Hours
CRIM 220 .....	3
CRIM 450 .....	3
CRIM 451 .....	3
CRIM 452 .....	3
CJUS 453 .....	3
CRIM 454 .....	3
CRIM/CJUS Elective .....	6
CJUS 100 .....	3
CJUS 230 .....	3
Total .....	30

Supporting Sequence	Credit Hours
PSYC 330 or 353 .....	3
Social Psych—such as PSYC 221, SOCY 230, SOCY 430, or SOCY 447 .....	3
PSYC Electives .....	3
Social Science Statistics .....	3

**Total for Major and Supporting ..... 48**

### The Criminal Justice Major

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

The major in criminal justice comprises thirty hours of course work in criminal justice and criminology, the latter being offered as courses in the Criminology Program, divided as follows: eighteen, but not more than twenty-four hours in criminal justice; six, but not more than twelve hours in criminology. In addition to major requirements, a student must take six hours in methodology and statistics, and a supporting sequence of courses totalling eighteen hours must be taken in government and politics, psychology, sociology, business management, counseling, or Afro-American Studies or other areas if approved by an advisor. No grade lower than C may be used toward the major, or to satisfy the statistics-methodology requirement. An average of C is required in the supporting sequence courses.

Major Requirements (Core)	Semester Credit Hours
CJUS 100 .....	3
CJUS 230 .....	3
CJUS 234 .....	3
CJUS 300 .....	3
CJUS 340 .....	3
CRIM 220 .....	3
CRIM 450 .....	3
CJUS/CRIM Elective .....	3
Total .....	30
Social Science Statistics (e.g., BMGT 230, ECON 421, EDMS 451, GVPT 422, PSYC 200, SOCY 201) .....	3

**Supporting sequence:** Eighteen credit hours of specific recommended courses in GVPT, SOCY, BMGT, PSYC, AASP, and CAPS (see recommended list in institute office). PSYC 100 must be taken by all students. .... 18

**Total for Major and Supporting ..... 51**

Electives for CRIM and CJUS Majors	
CJUS 320 .....	3
CJUS 330 .....	3
CJUS 352 .....	3
CJUS 360 .....	3
CJUS 398 .....	3
CJUS 399 .....	3
CJUS 400 .....	3
CJUS 352 .....	3
CJUS 444 .....	3
CJUS 462 .....	3
CJUS 432 .....	3
CRIM 330 .....	3
CRIM 451 .....	3
CRIM 452 .....	3
CRIM 454 .....	3
CRIM 455 .....	3
CRIM 456 .....	3
CRIM 457 .....	3

## Advising

Advising for Criminology and Criminal Justice majors is available in the institute (454-4538). All majors are strongly encouraged to see an advisor at least once each semester.

## Internships

Internships are available through CJUS 398 and CRIM 359 in a variety of federal, state, local, and private agencies.

Each semester the institute selects the outstanding graduating senior for the Peter P. Lejins award.

## Honors

The Honors Program provides superior students the opportunity for advanced study in both a seminar format and independent study under the direction of the faculty. The Honors Program is a three-semester (nine-credit hour) sequence that a student begins in the spring semester, three or four semesters prior to graduation. CRIM/CJUS 388H, the first course in the sequence, is offered only during the spring semester. The second and third courses in the sequence consist of a year-long research project (six credits, three each semester) or an honors thesis (one semester, three credits) followed by a graduate seminar in the institute (one semester, three credits). Honors students may count their Honors courses toward satisfaction of their curriculum requirements: if they are criminal justice majors, they may count their Honors courses toward satisfaction of the basic 30-hour requirement; if they are criminology majors, they may count their Honors courses in place of the psychology electives and social psychology supporting course requirements. Requirements for admission to the Honors Program include a cumulative grade-point average of at least 3.25, no grade lower than B for any criminology or criminal justice course, and evidence of satisfactory writing ability.

Course Codes: CRIM, CJUS

## CURRICULUM AND INSTRUCTION (EDCI)

### College of Education

2311 Benjamin Building, 454-7346/7

Professor and Chair: Howe

Professors: E. G. Campbell, Fein, Fey\* (Mathematics), Folstrom\* (Music), Gambrell, Guthrie, Holliday, Jantz, Johnson, Layman\* (Physics), Lockard\* (Botany), Roderick, Weaver, Wilson

Associate Professors: Amershek, Borko, Brigham, P. Campbell, Cirrione\* (Geography), Craig, Davey, Davidson, DeLorenzo, Dreher, Eley, Farrell\* (History), Heidelbach, Henkelman, Herman, Klein, McCaleb\* (Theatre), McWhinnie, Saracho, Slater

Assistant Professors: Dierking, Graeber, Krajcik, Markham, O'Flahaven, Owens\* (Physical Education) H. Williams\* (Library Science)

Emeriti: Blough, Carr, Duffey, Leeper, Risinger, Schindler, Stant

\*Joint Appointment with unit indicated

## The Major

The Department of Curriculum and Instruction offers three undergraduate curricula leading to the Bachelor of Science or Bachelor of Arts degree.

1. Early Childhood Education—for the preparation of teachers in preschool, kindergarten, and grades 1-3
2. Elementary Education—for the preparation of teachers of grades 1-8 and
3. Secondary Education for the preparation of teachers in various subject areas for teaching in middle schools and secondary schools, grades 7-12. The subject areas include, art, English, foreign language, mathematics, music, science, speech/English, social studies, and theatre/English.

## Requirements for Major Including Program Options

All Teacher Education Programs have designated pre-professional courses and a specified sequence of professional courses. Before students can enroll in courses identified as part of the professional sequence, they must first gain admission to the College of Education's Teacher Education Program.

## Admission

Application for admission to teacher education must be made early in the semester prior to beginning professional courses. The deadlines for making application are October 1 and February 1. Admission procedures and criteria are explained in "Entrance Requirements" in the section headed College of Education.

## Advising

Advising is mandatory for all pre-education majors. Students will receive advising through advising workshops which will be held during the pre-registration period. Information regarding advising workshop schedules will be available each semester with pre-registration materials.

## Honors and Awards

Early Childhood Education majors are eligible for the Ordwein Scholarship. Information is available in the Department office.

### EARLY CHILDHOOD EDUCATION

Graduates of the Early Childhood Education program receive a Bachelor of Science degree and meet the requirements for teaching preschool, kindergarten and primary grades in Maryland, the District of Columbia and most other states.

### Required courses

Courses which are required in the program of studies for Early Childhood and which will also satisfy University Studies program requirements are the following: PSYC 100 (3) USP Area D  
\*Social Science or History Courses: ANTH, GEOG, GVPT, ECON, SOCY, HIST (6) USP Areas A and D  
HIST 156 (3) USP Area A  
Biological Science with Lab: BOTN, ZOOL, MICB, ENTM (4) USP Area B  
Physical Science/Lab: ASTR, GEOL, PHYS (4) USP Area B

### Other Pre-Professional Requirements

SPCH (100, 110 or 125 recommended) (3)  
MATH 210, 211 (4, 4)  
Creative Arts: KNES 181, 183, 421; THET 120, 311 (3)  
One of the following: FMCD 332, SOCY 343, NUTR 100, EDCI 416 (3)  
EDCI 280 School Service Semester

### Professional Courses

The Early Childhood Professional Block 1 starts only in Fall Semester and is a prerequisite to Professional Block 2. All pre-professional requirements must be completed before beginning the Early Childhood Professional Blocks. All pre-professional and professional courses must be completed with a grade of C or better prior to student teaching.

### Professional Block 1:

EDCI 313—Creative Activities and Materials for the Young Child (3)  
EDCI 314—Teaching Language, Reading, Drama & Literature (3)  
EDHD 419A—Human Development and Learning in School Settings (3)

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EDCI 312—Professional Development Seminar (3)  
EDCI 365—Computer Education for Teachers (3)

### *Professional Block II:*

EDCI 315—The Young Child in the Social Environment (3)  
EDCI 316—The Teaching of Reading: Early Childhood (3)  
EDCI 317—The Young Child and the Physical Environment (3)  
EDCI 443A—Literature for Children and Youth (3)  
EDHD 419B—Human Development and Learning in School Settings (3)

### *Professional Block III and/or IV:*

EDPA 301—Foundations of Education (3)  
EDCI 411—Student Teaching—Preschool (4)  
EDCI 412—Student Teaching—Kindergarten (4)  
EDCI 413—Student Teaching—Primary Grades (8)

## ELEMENTARY EDUCATION

Students who complete the elementary curriculum will receive the Bachelor of Science degree and will meet the Maryland State Department of Education requirements for the Standard Professional Certificate in Elementary Education. The curriculum also meets the certification requirements in most other states and the District of Columbia.

Students admitted to Elementary Education must complete the following program which includes an area of concentration and a senior thesis.

**Required Courses:** Courses which will satisfy University Studies Program requirements and which are also required in the Elementary Education program of studies are as follows:

HIST 156 (3) USP Area A  
Biological Science/Lab or Physical Science/Lab (4) USP Area B  
Social Science: ANTH, ECON, GVPT, GEOG, HIST (3) Area A or D  
SOCY 230 (3) Area D

### **Other Pre-Professional Requirements**

MATH 210, 211 (4)  
Speech Requirement  
Biological Science/Lab or Physical Science/Lab (4) Area B  
EDCI 301  
EDCI 443  
MUSC 155 EDCI 280

Coursework to complete the Area of Concentration (18 semester hours) can be chosen from the following areas: Communications, Foreign Language, Literature, Math, Science, Social Studies. The EDCI Advising Office has detailed information regarding each area of concentration.

### **Professional Courses:**

#### *Professional Semester 1*

EDCI 397—Principles and Methods of Teaching (3)  
EDHD 300E—Human Development and Learning (6)  
EDCI 385—Computer Education for Teachers (3)  
EDMS 410—Principles of Testing and Evaluation (3)

#### *Professional Semester 2*

EDCI 322—Curriculum and Instruction in Elementary Education—Social Studies (3)  
EDCI 342—Curriculum and Instruction in Elementary Education—Language Arts (3)  
EDCI 352—Curriculum and Instruction in Elementary Education—Mathematics (3)  
EDCI 362—Curriculum and Instruction in Elementary Education—Reading (3)  
EDCI 372—Curriculum and Instruction in Elementary Education—Science (3)

#### *Professional Semester 3*

EDCI 481—Student Teaching: Elementary (12)  
EDCI 464—Clinical Practices in Reading Diagnosis and Instruction (3)

#### *Professional Semester 4*

EDCI 497—The Study of Teaching (3)  
EDCI 489—Field Experiences in Education (3)  
EDPA 301—Foundations of Education

## SECONDARY EDUCATION

The Bachelor of Arts degree is offered in the teaching fields of art, English, foreign languages, mathematics, social studies, speech/English, and theatre/English. The Bachelor of Science degree is offered in art, mathe-

tics, music, science, social studies and speech/English, and theatre/English.

In the areas of art and music, teachers are prepared to teach in both elementary and secondary schools. All other programs prepare teachers for grades five through twelve.

### **Foreign Language Requirement—Bachelor of Arts Degree.**

All students who pursue the Bachelor of Arts degree in secondary education are required to complete two years (twelve semester hours) or the equivalent of a foreign language at the college level. If students have had three years of one foreign language or two years of each of two foreign languages as recorded on their high school transcripts, they are not required to take any foreign languages in the college, although they may elect to do so.

If students are not exempt from the foreign language requirements, they must complete courses through the 104 level of a modern language or 204 level of a classical language.

In the modern languages: French, German, and Spanish—students should take the placement test in the language in which they have had work if they wish to continue the same language; their language instruction would start at the level indicated by the test. With classical languages, students would start at the level indicated in this catalog.

For students who come under the provisions above, the placement test may also serve as a proficiency test and may be taken by a student any time (once a semester) to try to fulfill the language requirement.

Students who have studied languages other than French, German, or Spanish, or who have lived for two or more years in a foreign country where a language other than English prevails, shall be placed by the chair of the respective language section, if feasible, or by the chairs of the foreign language departments. Native speakers of a foreign language shall satisfy the foreign language requirements by taking twelve semester hours of English.

### **English Education**

A major in English Education requires forty-five semester hours in English and speech. All electives in English must be approved by the student's advisor. Intermediate mastery of a modern or classical language is required.

#### *Pre-professional Subject Area Coursework*

SPCH 100, 125, or 220 (3)  
Foreign Language (4, 4)  
ENGL 101—Introduction to Writing or ENGL 101H (3)  
ENGL 201—World Literature or ENGL 202 (3)  
ENGL 281—Standard English Grammar, Usage, and Diction (3)  
ENGL 310—Medieval and Renaissance British Literature (3)  
ENGL 311—Baroque and Augustan British Literature (3)  
ENGL 312—Romantic to Modern British Literature (3)  
ENGL 301—Critical Methods in the Study of Literature or ENGL 453 (3)  
LING 200—Introductory Linguistics (3)  
SPCH 230—Argumentation and Debate or SPCH 330, 350 or 356 (3)  
ENGL 384—Concepts of Grammar or ENGL 385, 482, or 484 (3)  
ENGL 304—The Major Works of Shakespeare (3) or ENGL 403 or ENGL 404  
ENGL 313—American Literature or ENGL 430, 431, 432 or 433 (3)  
EDCI 466—Literature for Adolescents (3)  
EDCI 467—Teaching Writing (3)  
ENGL 391—Advanced Composition or ENGL 393 or 493 (3)  
ENGL Electives (Upper level) (9)

#### *Professional Courses*

EDHD 300S—Human Development and Learning (6)  
EDPA 301—Foundations of Education (3)  
EDCI 390—Principles and Methods of Secondary Education (3)  
EDCI 447—Field Experience in English, Speech, Drama Teaching (1)  
EDCI 340—Curriculum Instruction in Secondary Education: English/Speech/Drama (3)  
EDCI 463—The Teaching of Reading in the Secondary School (3)  
EDCI 441—Student Teaching Secondary Schools: English (12)  
EDCI 440—Student Teaching Seminar in Secondary Education: English, Speech, Drama (1)

### **Art Education**

Students in art education are prepared to teach at any level, K-12.

*Pre-professional Subject Area Coursework*

ARTH 100—Introduction to Art (3)  
 ARTT 110—Elements of Drawing (3)  
 ARTT 100—Elements of Design (3)  
 SPCH 100—Basic Principles of Speech Communication or 125 or 220 (3)  
 ARTH 260—History of Art I (3)  
 ARTH 261—History of Art II (3)  
 ARTT 320—Elements of Painting  
 EDIT 273—Practicum in Ceramics (3)  
 ARTT 330—Elements of Sculpture (3)  
 ARTT 428—Painting II (3)  
 EDCI 406—Practicum in Art Education: Two Dimensional (3)  
 EDCI 403—Teaching of Art Criticism in Public Schools (3)  
 EDCI 407—Practicum in Art Education: Three Dimensional (3)  
 ARTT 340—Elements of Printmaking: Intaglio

*Professional Courses*

EDHD 300S—Human Development and Learning (6)  
 EDCI 390—Principles and Methods of Secondary Education (3)  
 EDCI 480—The Child and the Curriculum/Elementary (3)  
 EDPA 301—Foundations of Education (3)  
 EDCI 300—Curriculum and Instruction in Art Education (3)  
 EDCI 401—Student Teaching in Elementary Schools—Art (4-8) (6)  
 EDCI 402—Student Teaching in Secondary Schools—Art (2-8) (6)  
 EDCI 489—Field Experiences in Education (3)

**Foreign Language Education**

The Foreign Language Education curriculum is designed for prospective foreign language teachers in middle and secondary schools. Current FLED-Area Maryland State approved programs are Spanish and French.

A minimum of thirty prescribed semester hours in a foreign language plus nine hours of electives in a related area for a total of thirty-nine hours is required. The student is strongly advised to begin or continue a second foreign language. The foreign language education advisor must approve the nine hours of "related area" credit. The following requirements must be met within the thirty required hours: one year of advanced conversation, one year of advanced grammar and composition, one year of survey of literature, one year of advanced literature (400 level), one semester of advanced civilization (300 or 400 level), and one semester of applied linguistics. Equivalents to the above must be approved by the appropriate education advisor.

*Pre-professional/Subject Area Coursework*

SPCH 100, 125, or 220—Basic Principles of Speech Communication (3)  
 Foreign Language, (Intermediate or appropriate level as determined by placement exam) (3,3)  
 Foreign Language—Grammar and Composition (3,3)  
 Foreign Language—Survey of Literature (3,3)  
 Foreign Language—Advanced Conversation (3,3)  
 Foreign Language—Literature (400 level) (3,3)  
 Foreign Language—Civilization (3)  
 Foreign Language or Applied Linguistics (3)  
 Electives in Foreign Language (6)

*Professional Courses*

EDHD 300S—Human Development and Learning (6)  
 EDCI 390—Principles and Methods of Secondary Education (3)  
 EDPA 301—Foundations of Education (3)  
 EDCI 430—Student Teaching Seminar in Secondary Education: Foreign Language (3)  
 EDCI 330—Curriculum and Instruction in Secondary Education: Foreign Language (3)  
 EDCI 431—Student Teaching in Secondary Schools: Foreign Languages (12)  
 Elective from 400-level courses in foreign language education (3)

**Mathematics Education**

Students completing an undergraduate major in astronomy, physics, physical sciences, or in math, or who may be enrolled in the College of Education, may prepare to teach astronomy, physics, physical science, or math. Early contact should be made with either Dr. John Layman (astronomy, physics, physical sciences) or Dr. James Fey (mathematics). See also the entry on the College of Education in Chapter 7.

A major in mathematics education requires the completion of MATH 241 or its equivalent, and a minimum of 15 semester hours of mathematics at the 400 level (excluding MATH 490); 400 level courses beyond those prescribed (402, 403, or 430) should be selected in consultation with a mathematics education advisor. The mathematics education major must be supported by one of the following science sequences: CHEM 103 and

113, or CHEM 103 and 104; PHYS 221 and 222 or PHYS 161 and 262, or PHYS 141 and 142; BIOL 105 and 106; ASTR 200 and three additional hours in ASTR (none of which include ASTR 100, 110 or 111). Also CMSC 110 or 120 is required.

*Pre-professional Subject Area Coursework*

SPCH 100, 125 or 220 (3)  
 MATH 140, 141—Calculus I, II (4,4)  
 Science Requirement (7-10) (See above)  
 MATH 240, 241—Linear Algebra, Calculus III (4,4)  
 CMSC 110/Introduction to Fortran Programming or CMSC 120—Introduction to Pascal Programming (4,4)  
 MATH 430—Euclidean and Non Euclidean Geometries (3)  
 MATH 402—Algebraic Structures or  
 MATH 403—Introduction to Abstract Algebra (3)  
 MATH Electives (400-level) (9)

*Professional Courses*

EDHS 300S—Human Development and Learning (6)  
 EDCI 390—Principles and Methods of Secondary Education (3)  
 EDCI 350—Curriculum and Instruction in Secondary Education: Mathematics (3)  
 EDPA 301—Foundations of Education (3)  
 EDCI 457—Teaching Secondary Students with Difficulties in Learning Mathematics (3)  
 EDCI 451—Student Teaching in Secondary Schools: Mathematics (12)  
 EDCI 450—Student Teaching Seminar in Secondary Education: Mathematics Education (3)

**Music Education**

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

The curriculum in music leads to a Bachelor of Science degree in education with a major in music education. It is planned to meet the demand for specialists, supervisors, and resource teachers in music in the schools. The program provides training in the teaching of general music/choral and instrumental music and leads to certification to teach music at both elementary and secondary school levels in Maryland and most other states. There are two options. The general music/choral option is for students whose principal instrument is voice or piano; the instrumental option is for students whose principal instrument is an orchestral or band instrument. Students are able to develop proficiency in both certifications by taking additional courses.

Auditions are required for admission to the program. All students teach and are carefully observed in clinical settings by members of the music education faculty. This is intended to ensure the maximum development and growth of each student's professional and personal competencies. Each student is assigned to an advisor who guides him or her through the various stages of advancement in the program of music and music education.

**Instrumental***Pre-professional/Subject Area Coursework*

MUSP 109, 110—Applied Music (Principal Instrument) (2,2)  
 MUSC 150, 151—Theory of Music I, II (3,3)  
 MUSC 102, 103—Beginning Class Piano I, II (2,2)  
 MUSC 116, 117—Study of Instruments (2,2)  
 SPCH 100, 125, or 220 (3)  
 MUED 197—Pre-Professional Experiences (1)  
 MUSP 207, 208—Applied Music (Principal Instrument) (2,2)  
 MUSC 250, 251—Advanced Theory of Music I, II (4,4)  
 MUSC 113, 121—Class Study of Instruments (2,2)  
 MUSC 230—History of Music I (3)  
 MUSP 305, 306—Applied Music (Principal Instrument) (2,2)  
 MUSC 490, 491—Conducting (2)  
 MUSC 120, 114—Class Study of Instruments (2,2)  
 MUED 470—General Concepts for Teaching Music (1)  
 MUED 411—Instrumental Music: Elementary (3)  
 MUED 420—Instrumental Music: Secondary (2)  
 MUED 410—Instrumental Arranging (2)  
 MUSC 330, 331—History of Music (3,3)  
 MUSP 409—Applied Music (Principal Instrument) (2)  
 MUSC 229—Ensemble (7)  
 MUED 472—Choral Methods and Literature (3)

*Professional Courses*

EDHD 300S—Human Development and Learning (6)  
 EDPA 301—Foundations of Education (3)  
 EDCI 390—Principles and Methods of Secondary Education (3)

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EDCI 484/494—Student Teaching: Music (12)

### General Music/Choral

#### Pre-professional/Subject Area Coursework

Other Academic Support Courses

MUSP 109, 110—Applied Music (Principal Instrument) (2,2)

MUSC 150, 151—Theory of Music I, II (3,3)

MUSC 100—Class Voice, MUSC 200—Advanced Class Voice (2,2) or

MUSC 102, 103—Class Piano (2,2)

MUED 197—Pre-Professional Experiences (1)

SPCH 100, 125, or 220 (3)

MUSP 207, 208—Applied Music (Principal Instrument) (2,2)

MUSC 230—Music History (3)

MUSC 202, 203—Advanced Class Piano (2,2)

MUSC 250, 251—Advanced Theory of Music (4,4)

MUSP 305, 306—Applied Music (Principal Instrument) (2,2)

MUSC 453—Guitar-Recorder Methods (2)

MUED 472—Secondary Choral Methods (2)

MUSC 490, 491—Conducting (2,2)

MUED 478—Special Topics in Music Education (1)

MUED 470—General Concepts for Teaching Music (1)

MUED 471—Elementary General Music Methods (3)

MUSC 330, 331—History of Music (3,3)

MUSC 409—Applied Music (Principal Instrument) (2)

MUSC 329—Major Ensemble (7)

MUSC 110—Class Study of String Instruments (2)

MUSC 111—Class Study of Wind and Percussion Instruments (2)

#### Professional Courses

EDHD 300S—Human Development and Learning (6)

EDCI 390—Principles and Methods of Secondary Education (3)

EDPA 301—Foundations of Education (3)

EDCI 484/494—Student Teaching: Music (12)

\*Varies according to incoming placement

### Physical Education and Health Education

This curriculum is designed to prepare students for teaching physical education and health in elementary and secondary schools. To obtain full participation on course requirements, the student should refer to the sections on the Department of Kinesiology and the Department of Health Education.

#### Science Education

A science major consists of a minimum of sixty semester hours' study in the academic sciences and mathematics.

The following courses are required for all science education majors: BOTN 101; CHEM 103; CHEM 104 (except chemistry, physics, and earth science education majors who take CHEM 113); GEOL 100-110; PHYS 121-122 or 141-142; ZOOL 101; and six semester hours of mathematics. Science education majors must achieve a minimum of grade C in all required mathematics, science, and education coursework.

An area of specialization with a minimum of thirty-three semester hours, and the approval of the student's advisor, must be completed in biology, chemistry, physics, and geology, as noted below.

#### Biology Education

##### Pre-professional/Subject Area Coursework

MATH 110—Elementary Mathematical Models (3)

BIOL 105—Principles of Biology I (4)

BIOL 106—Principles of Biology II (4)

MATH 111—Introduction to Probability (3)

CHEM 103—General Chemistry I (4)

CHEM 104—Fundamentals of Organic and Biochemistry (4)

ZOOL 201 or 202—Human Anatomy and Physiology I and II (4)

BOTN 202—The Plant Kingdom or ZOOL 210—Animal Diversity (4)

MICB 200—General Microbiology (4)

PHYS 121—Fundamentals of Physics I (4)

GEOL 100/110—Physical Geology and Laboratory (4)

SPCH 100, 125 or 220 (3)

ZOOL 213 or BOTN 414—Genetics (4)

BOTN 441—Plant Physiology (4)

BOTN 212, BOTN 417, ZOOL 480 or ENTM 205—Field Studies (4)

PHYS 122—Fundamentals of Physics II (4)

BOTN 462–464 or ZOOL 212—Plant Ecology (4)

##### Professional Courses

EDHD 300S—Human Development and Learning (6)

EDPA 301—Foundations of Education (3)

EDCI 489B—Student Teaching Seminar in Science Ed (1)

EDCI 390—Principles and Methods of Secondary Education (3)

EDCI 370—Curriculum and Instruction in Secondary Education—Science (3)

EDCI 471—Student Teaching in Secondary Schools—Science (12)

EDCI 488F—Computers in Science Education (2)

#### Chemistry Education

##### Pre-professional/Subject Area Coursework

BIOL 105—Principles of Biology I (4)

BIOL 106—Principles of Biology II (4)

CHEM 103—General Chemistry I (4)

CHEM 113—General Chemistry II (4)

MATH 140, 141—Calculus I and II (4, 4)

SPCH 100, 125 or 220 (3)

CHEM 223, 243—Organic Chemistry I and II (4, 4)

PHYS 141, 142—Principles in Physics (4, 4)

GEOL 100, 110—Physical Geology and Lab (4)

CHEM 321—Quantitative Analysis (4)

CHEM 481, 482—Physical Chemistry I and II (3,3)

CHEM 483—Physical Chemistry Laboratory I (2)

CHEM Elective (3)

##### Professional Courses

EDHD 300S—Human Development and Learning (6)

EDPA 301—Foundations of Education (3)

EDCI 390—Principles and Methods of Secondary Education (3)

EDCI 370—Curriculum and Instruction in Secondary Education—Science (3)

EDCI 471—Student Teaching in Secondary Schools—Science (12)

EDCI 488F—Computers in Science Education (1)

EDCI 489B—Student Teaching Seminar in Science Education (2)

#### Earth Science Education

##### Pre-professional/Subject Area Coursework

GEOL 100, 110—Physical Geology, Lab (4)

GEOL 102, 112—Historical Geology and Lab (4)

BIOL 105—Principles of Biology I (4)

BIOL 106—Principles of Biology II (4)

MATH 110 or 140—Elementary Mathematical Models (3) or Calculus I (3)

MATH 111 or 141—Introduction to Probability (3) or Calculus II (3)

SPCH 100, 125 or 220 (3)

GEOL 340—Geomorphology (4)

CHEM 103, 113—General Chemistry I and II (4,4)

GEOL 322—Mineralogy (4)

ASTR 100, 122—Introduction to Astronomy, Lab (4)

Earth Science Elective (6)

GEOL 341—Structural Geology (4)

PHYS 121, 122—Fundamentals of Physics I and II (4, 4)

##### Professional Courses

EDHD 300S—Human Development and Learning (6)

EDCI 390—Principles and Methods of Secondary Education (3)

EDCI 370—Curriculum and Instruction in Secondary Education—Science (3)

EDPA 301—Foundations of Education (3)

EDCI 471—Student Teaching in Secondary Schools—Science (12)

EDCI 488F—Computers in Science Education (1)

EDCI 489B—Student Teaching Seminar in Science Education (2)

#### Physics Education

##### Pre-professional/Subject Area Coursework

CHEM 103, 113—General Chemistry I and II (4,4)

MATH 140, 141—Calculus I and II (4,4)

PHYS 141, 142—Principles of General Physics I and II (4,4)

SPCH 100, 125 or 220 (3)

BIOL 105—Principles of Biology I (4)

BIOL 106—Principles of Biology II (4)

PHYS 296—Intro Lab in Electromagnetic Waves (2)

PHYS 295—Intro Lab in Electricity and Magnetism (2)

ASTR 100—Introduction to Astronomy (3)

ASTR 111—Observational Astronomy Laboratory (1)

MATH 240—Linear Algebra (4)

PHYS 301—Intermediate Theoretical Mechanics (3)

PHYS 405—Intermediate Theoretical Electricity and Magnetism (3)

PHYS 420—Principles of Modern Physics (3)

PHYS 305—Physics Shop Techniques (1)

GEOL 100—Physical Geology (3)

GEOL 110—Physical Geology Laboratory (1)

PHYS 406—Optics (3)  
 PHYS—407 Sound (3)  
 PHYS 499—Special Problems in Physics (2)

#### Professional Courses

EDHD 300S—Human Development and Learning (6)  
 EDPA 301—Foundations of Education (3)  
 EDCI 390—Principles and Methods of Secondary Education (3)  
 EDCI 370—Curriculum and Instruction in Secondary Education—Science  
 EDCI 471—Student Teaching in Secondary Schools/Science (12)  
 EDCI 489B—Student Teaching Seminar in Science Education (1)  
 EDCI 488F—Computers in Science Education (2)

#### Social Studies Education

*Option I—HISTORY:* Requires fifty-four semester hours of which at least twenty-seven must be in history, usually at least six hours in American history; six hours of non-American history; three hours in Pro-Seminar in Historical Writing; and twelve hours of electives, nine of which must be 300-400 level. One course in Ethnic and Minority Studies must be included.

#### Pre-professional Subject Area Coursework

SPCH 100, 125 or 110 (3)  
 HIST 156, 157 (U.S.) (6)  
 HIST (non U.S.) (6)  
 SOCY 100 or ANTH 101 (3)  
 GEOG 100—Introduction to Geography (3)  
 GEOG 202 or 203 (3)  
 ECON 205—Fundamentals of Economics (3)  
 ECON 310—Evolution of Modern Capitalism (3)  
 GVPT 100, 240, 260, or 280 (3)  
 GVPT 170—American Government (3)  
 Social Sciences Electives, upper level (6)  
 History Electives (12)

#### Professional Courses

EDHD 300S—Human Development and Learning (6)  
 EDCI 390—Principles and Methods of Secondary Education (3)  
 EDCI 320—Curriculum and Instruction in Secondary Education/Social Studies (3)  
 EDCI 421—Student Teaching in Secondary Schools/Social Studies (12)  
 EDCI 463—Teaching of Reading in Secondary Schools (3)  
 EDCI 420—Student Teaching Seminar in Secondary Education/Social Studies (3)  
 EDPA 301—Foundations of Education (3)

*Option II—GEOGRAPHY:* Requires fifty-four semester hours of which twenty-seven hours must be in geography. GEOG 201, 202, 203, and 305 are required. The remaining fifteen hours in geography must be upper level courses with one course in regional geography included. One course in Ethnic and Minority Studies must be included.

#### Pre-professional/Subject Area Coursework

SPCH 100, 125 or 110 (3)  
 GEOG 201—Geography of Environmental Systems (3)  
 GEOG 202—The World in Cultural Perspective (3)  
 GEOG 203—Economic Geography (3)  
 GEOG 305—Quantitative Methods in Geography (3)  
 GEOG Electives (15) HIST (U.S.) 156 or 157 (3)  
 HIST (non-U.S.) 101, 130-133, 144-145 (3)  
 SOCY 100 or ANTH 101 (3)  
 ECON 205—Fundamentals of Economics (3)  
 ECON 310—Evolution of Modern Capitalism (3)  
 GVPT 100, 240 or 280 (3)  
 GVPT 170—American Government (3)  
 History/Social Science Elective (3)

#### Professional Courses

EDHD 300S—Human Development and Learning (6)  
 EDCI 390—Principles and Methods of Secondary Education (3)  
 EDCI 320—Curriculum and Instruction in Secondary Education—Social Studies (3)  
 EDCI 421—Student Teaching in Secondary Education—Social Studies (12)  
 EDCI 420—Student Teaching Seminar in Secondary Education—Social Studies (3)  
 EDCI 463—Teaching Reading in Secondary Schools (3)  
 EDPA 301—Foundations of Education (3)

#### Speech/English Education

Students interested in teaching speech in secondary schools complete a minimum of 30 credits in speech and speech-related courses. Because most speech teachers also teach English classes, the program includes another 30 credits in English and English education. Upon selection of this major, students should meet with an advisor to carefully plan their programs.

#### Pre-professional/Subject Area Coursework

Speech Area (6): SPCH 100—Basic Principles or SPCH 107—Technical Speech Communication, SPCH 125—Interpersonal Communication, SPCH 220—Group Discussion, SPCH 230—Argumentation and Debate, SPCH 340—Oral Interpretation SPCH 470—Listening (3)  
 SPCH 200—Advanced Public Speaking (3)  
 RTVF 124—Mass Communication in 20th Century or RTVF 222 or RTVF 314 (3)  
 HESP 202—Introduction to Hearing and Speech Sciences or HESP 305 or HESP 400 (3)  
 THET 110—Introduction to Theatre (3)  
 SPCH 350—Foundations of Communication Theory or SPCH 402 (3)  
 SPCH 401—Foundations of Rhetoric (3)  
 SPCH Upper level electives (6)  
 ENGL 101—Introduction to Writing (3)  
 LING 200—Introduction to Linguistics (3)  
 ENGL 201 or 202—World Literature (3)  
 ENGL 281—Standard English Grammar, Usage, and Diction or ENGL 385 or ENGL 482 or ENGL 484 (3)  
 ENGL 301—Critical Methods in the Study of Literature or ENGL 453 (3)  
 ENGL 310, 311 or 312—English Literature (3)  
 ENGL 313—American Literature (3)  
 ENGL 391 or 393—Advanced Composition or Technical Writing (3)  
 EDCI 463—Teaching of Reading (3)  
 EDCI 466—Literature for Adolescents (3)  
 EDCI 467—Teaching Writing (3)

#### Professional Courses

EDHD 300S—Human Development and Learning (6)  
 EDCI 390—Principles & Methods of Secondary Education (3)  
 EDPA 301—Foundations of Education (3)  
 EDCI 340—Curriculum & Instruction in Secondary Education: Eng/Spch/ Drama (3)  
 EDCI 447—Field Experiences (1)  
 EDCI 442—Student Teaching in Speech (6)  
 EDCI 441—Student Teaching in English (6)  
 EDCI 440—Student Teaching Seminar (1)

#### Theatre/English Education

Students interested in teaching theatre in secondary schools complete a minimum of 30 credits in theatre and theatre-related courses. Because most theatre teachers also teach English classes, the program includes another 30 credits in English and English education. Upon selection of this major, students should meet with an advisor to carefully plan their programs.

#### Pre-professional/Subject Area Coursework

THET 120—Acting I Fundamentals (3)  
 THET 170—Stagecraft (3)  
 THET 273—Scenographic Techniques or THET 476 or THET 480 (3)  
 THET 330—Play Directing (3)  
 THET 460—Theatre Management (3)  
 THET 479—Theatre Workshop (3)  
 THET 490—History of Theatre I (3)  
 THET 491—History of Theatre II (3)  
 THET electives (3)  
 SPCH 100—Basic Principles or SPCH 107 or SPCH 200 or SPCH 230 (3)  
 ENGL 101—Introduction to Writing (3)  
 LING 200—Introduction to Linguistics (3)  
 ENGL 201 or 202—World Literature (3)  
 ENGL 281—Standard English Grammar, Usage, and Diction or ENGL 385 or ENGL 482 or ENGL 484 (3)  
 ENGL 310, 311, or 312—English Literature (3)  
 ENGL 313—American Literature (3)  
 ENGL 301—Critical Methods in the Study of Literature or ENGL 453 (3)  
 ENGL 391 or 393—Advanced Composition (3)  
 EDCI 463—Teaching of Reading (3)  
 EDCI 467—Teaching Writing (3)  
 EDCI 468—Literature for Adolescents (3)

*Professional Courses*

EDHD 300S—Human Development and Learning (6)  
 EDCI 390—Principles & Methods of Secondary Education (3)  
 EDPA 301—Foundations of Education (3)  
 EDCI 340—Curriculum & Instruction in Secondary Education: Eng/Spch/  
 Drama (3)  
 EDCI 447—Field Experience (1)  
 EDCI 448—Student Teaching in Theatre (6)  
 EDCI 441—Student Teaching in English (6)  
 EDCI 440—Student Teaching Seminar (1)

Course Code: EDCI

**DANCE (DANC)****College of Arts and Humanities**

1116 Temporary Building EE, 454-4056

Professor and Chair: Wiltz  
 Professors: Madden (Emerita), Rosen, A. Warren, L. Warren  
 Associate Professor: Dunn  
 Assistant Professor: J. Frosch-Schroder  
 Instructor: Mayes  
 Lecturers: Butler, Druker, Fleitell, Jackson, Slater  
 Accompanists: De Hart, Freivogel, Johnson

Recognizing that dance combines both athleticism and artistry, the dance program offers comprehensive technique and theory courses as a foundation for the dance professions. By developing an increasing awareness of the physical, emotional and intellectual aspects of movement in general, the student eventually is able to integrate his or her own particular mind-body consciousness into a more meaningful whole. To facilitate the acquisition of new movement skills, as well as creative and scholarly insights in dance, the curriculum provides a structured breadth experience at the lower department level. At the upper level students may either involve themselves in various general university electives, or they may concentrate their energies in a particular area of emphasis in dance. Although an area of emphasis is not mandatory, many third and fourth year students are interested in studying a singular aspect of dance in depth, such as performance, choreography, production/management, education, or general studies (encompassing dance history, literature and criticism).

The dance faculty is composed of a number of distinguished teachers, choreographers, and performers, each one a specialist in his or her own field. Visiting artists throughout the year make additional contributions to the program. There are several performance and choreographic opportunities for all dance students, ranging from informal workshops to fully mounted concerts both on and off campus. Students may have the opportunity of working with Improvisations Unlimited, a company in residence in the department.

**Requirements for Major**

Students must complete fifty-nine semester hours of dance credits. Of these, eighteen hours of modern technique and four hours of ballet technique are required. Majors may not use more than seventy-two DANC credits toward the total of 120 needed for graduation. In addition to the twenty-two technique credits required, students must distribute the remaining thirty-seven credits as follows:

DANC 208, 308, 388—Choreography I, II, III .....	9
DANC 102—Rhythmic Training .....	2
DANC 109—Improvisation .....	2
DANC 266—Dance Notation .....	3
DANC 200—Introduction to Dance .....	3
DANC 171—Movement Integration .....	2
DANC 305—Principles of Teaching .....	3
DANC 482—Dance History .....	3
DANC 370—Kinesiology for Dancers .....	4
DANC 410—Dance Production .....	3
DANC 484—Philosophy of Dance .....	3

A grade of C or higher must be attained in all dance courses.

New, re-entering and transfer students are expected to contact the department following admission to the university for instructions regarding advising and registration procedures. Although entrance auditions are not required, some previous dance experience is highly desirable. Further information may be obtained from the Dance Department Student Handbook.

Course Code: DANC

**DECISION AND INFORMATION SCIENCES**

For information consult College of Business and Management entry.

**ECONOMICS (ECON)****College of Behavioral and Social Science**

Undergraduate Studies: 3127B Tydings, 454-4151

Undergraduate Advisor: 3127A Tydings, 454-6536

Professor and Chair: Straszheim  
 Professors: Aaron, Adams, Almon, Baily, Betancourt, Brechling, Clague, Cumberland, Harris, Hulten, Kelejian, McGuire, Mueller, Murrell, Myers\* (Afro-American Studies), Oates, Olson†, Panagariya, Wonnacott  
 Associate Professors: Abraham, Bennett, Coughlin, Cropper, Haltiwanger, Knight, Meyer, Montgomery, Poetscher, Prucha, Schwab, Wallis, Weinstein  
 Assistant Professors: Anderson, Dellas, Evans, Haliassos, Hoff, Kesides, Lyon, Williams\* (Afro-American Studies)  
 Emeriti: Bergmann, Dillard, Gruchy, O'Connell, Ulmer

\*Joint appointment with unit indicated

†Distinguished Scholar-Teacher

Economics is the study of the production, pricing, and distribution of goods and services within societies. Economists study such problems as inflation, unemployment, technical change, poverty, environmental quality, and foreign trade. Economists also apply economics to such diverse areas as crime, sexual roles, health care and the elderly, discrimination, urban development, and developing nation problems.

Two characteristics of modern economics receive special attention in the Department's program. Government policies have profound effects on how our economic system performs. Government expenditures, regulations, and taxation either directly or indirectly affect both households and firms. Second, there is a growing interdependency among economies throughout the world. Extensive worldwide markets exist in which goods and services are traded, and capital and investments move across national boundaries. Economic events in one nation are often quickly transmitted to other nations.

Economists study these phenomena through the development of systematic principles and analytic models which describe how economic agents behave and interact. These models are the subject of empirical testing, often using computers and extensive data sets.

The interests of the faculty, as reflected in the course offerings, are both theoretical and applied. As a large diverse department, the Economics Department offers courses in all of the major fields of economic study. The Department's program stresses the application of economic theory and econometrics to current problems in a large number of fields. Many courses in the Department's program analyze the role of the government and public policies on the economy.

The program is designed to serve both majors and non-majors. The Department offers a wide variety of 300-level courses on particular economic issues which can be taken after one or two semesters of basic principles. These courses can be especially useful for those planning careers in law, business, or the public sector. The program for majors is designed to serve those who will seek employment immediately after college as well as those who will pursue graduate study.

Economics majors have a wide variety of career options in both the private and public sectors. These include careers in state and local government, federal and international agencies, business, finance and banking, journalism, teaching, politics and law. Many economics majors pursue graduate work in economics or another social science, law, business or public administration (public policy, health, urban and regional planning, education, and industrial relations).

**Entrance Requirements**

Economics is a selective major. Admission to the major occurs at the Junior level, except for a limited number of academically talented freshmen. In order to be admitted, an applicant must (1) have earned at least



56 credits with a cumulative GPA equal to or above the minimum GPA in effect for the semester the student applies (e.g., 2.50 GPA for Fall 1990); and (b) have completed nine hours of "economics entry" courses at a satisfactory grade level. The "economics entry" courses include MATH 220 (or MATH 140), ECON 201, and ECON 203, which must be completed with a grade of C or better in each course, and a minimum GPA of 2.5 in the nine hours. Students may apply for admission at the Office of Admission.

### Requirements for Major

In addition to University Studies requirements, the requirements for the Economics major are as follows:

- (1) **Economics (and Mathematics) Courses (36 hours)**  
Economics majors must earn 33 credit hours in Economics, and 3 credit hours in Mathematics (MATH 220 or 140), with a grade of C or better in each course.

All majors must complete 12 hours of Core Requirements with a satisfactory grade point average (GPA). The Core Requirements include ECON 201, ECON 203, ECON 305 (formerly ECON 401) or ECON 405, and ECON 306 (formerly ECON 403) or ECON 406. A satisfactory GPA must satisfy each of the following: a grade of C or better in each course; a 2.5 GPA in the four courses comprising the Core Requirements; and a 2.5 GPA in ECON 305 (or 405) and 306 (or 406).

Students must also complete twenty-one hours in upper level Economics courses:

- a) three hours in statistics; ECON 321 (formerly ECON 421) or BMGT 230 or BMGT 231 or STAT 400;
  - b) three hours in economic history or comparative systems; ECON 310, ECON 311, ECON 315 (formerly ECON 415) or ECON 380;
  - c) nine hours in courses with at least one semester of intermediate theory or economic statistics (ECON 321) as a prerequisite. The following courses presently have this prerequisite: ECON 402, ECON 416, ECON 422, ECON 423, ECON 425, ECON 431, ECON 441, ECON 454, ECON 460 and ECON 470;
  - d) six other hours in upper division Economics.
- (2) **Additional Supporting Courses (15 hours)**

Students must earn 15 hours of credit in upper division courses in addition to the 36 hours of Economics (and Mathematics) courses listed above. Upper division courses include all courses with a 300 number and above. Additional mathematics courses beyond the required mathematics course (MATH 220), and computer programming courses at the 200 level and above may be counted as fulfilling the Additional Support Course Requirement. Additional economics courses may be included among the 15 hours of supporting courses.

All courses meeting this Additional Support Course requirement must be completed with a grade of C or better and may not be taken pass-fail.

### Study Sequences and Plans of Study

Economics is an analytic discipline, building on a core of principles, analytic models, and statistical techniques. Students must begin with a foundation in mathematics and economic principles (ECON 201 and ECON 203). A more advanced, analytic treatment of economics is presented in intermediate theory (ECON 305 and ECON 306), which is a necessary background for in-depth study by economics majors.

The department urges that the student take ECON 201 and 203 and MATH 220 as soon as possible. Honors versions of ECON 201 and 203 are offered for students seeking a more rigorous analysis of principles, departmental honors candidates, and those intending to attending graduate school. Admission is granted by the Office of Undergraduate Advising or the University Honors Program.

Courses in applied areas at the 300 level may be taken at any point after principles. However, majors will benefit by completing ECON 305, ECON 306, and ECON 321 or its equivalent immediately upon completion of principles. While most students take ECON 305 and 306 in sequence, they may be taken concurrently. Courses at the 400 level are generally

more demanding, particularly those courses with intermediate theory as a prerequisite.

Empirical research and the use of computers are becoming increasingly important in economics. All students are well advised to include as many statistics, econometrics, and computer programming courses in their curriculum as possible.

Those students planning to pursue graduate study in economics must begin to prepare themselves analytically for graduate work by focusing on theory, statistics, and mathematics in their undergraduate curriculum. These students should complete the advanced version of intermediate theory (ECON 405 and ECON 406) and the econometric sequence (ECON 422 and ECON 423). Mastery of the calculus and linear algebra is essential for success in many of the top graduate schools. Students should consider MATH 140, MATH 141, MATH 240 (or MATH 400), MATH 241 and MATH 246 as very useful preparation.

### Advising

The department has a full-time academic advisor providing advising on a walk-in basis in the Office of Undergraduate Advising, 3127A Tydings.

### Honors

The Economics Honors Program provides economics majors with the opportunity for advanced study in a seminar format, with faculty supervision of seminar papers and an honors thesis. The Honors Program is designed for students intending to attend graduate school or those seeking an in-depth study of economic theory and its application to economic problems.

The Honors Program is a twelve-hour sequence, culminating in the completion of a senior thesis. Students must complete ECON 396 (Honors Workshop) and ECON 397 (Honors Thesis) in their senior year, as well as two of the following four courses: ECON 405, 406, 422 and 425. Students must complete these twelve hours with a GPA of 3.5. ECON 396 is only offered in the fall term.

To be eligible for admission, a student must have completed fifteen hours of economics with a GPA of 3.25. Interested students should meet with the Director of Undergraduate Studies at the earliest possible date to review their curriculum plans and to apply for admission to the program.

### Awards

The Dudley and Louisa Dillard Prize, currently \$500, is awarded to the outstanding Economics junior with a broad liberal arts program.

### Student Organizations

Omicron Delta Epsilon, the economics honorary society, meets regularly to discuss economics and other graduate schools, employment opportunities, and recent economic trends. Please see the Undergraduate Economics Secretary, 3127B Tydings, for membership information.

Course Code: ECON

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## EDUCATION POLICY, PLANNING, AND ADMINISTRATION (EDPA)

### College of Education

3112 Benjamin Building, 454-5766

Professor and Chair: Warren  
 Professors: Andrews, Berdahl†, Berman, Carbone, Chait, Clague, Dudley, Finkelstein, McLoone, Male, Stephens  
 Associate Professors: Agre, Goldman, Hopkins, Huden, Lindsay, Noll, Schmidlein, Selden, Splaine  
 Assistant Professors: Bensimon, Heid, Leak Affiliate  
 Assistant Professor: Edelstein  
 Adjunct Professors: Heyneman, Hickey  
 Adjunct Associate Professor: Hogan  
 Adjunct Assistant Professor: McKay  
 Emeriti: Anderson, Newell, McClure

†Distinguished Scholar-Teacher

Although primarily a graduate program, the Department of Education Policy, Planning and Administration offers several courses at the undergraduate level. These include Foundations of Education (EDPA 301) and Utilization of Educational Media (EDPA 440). In addition, University Studies Program (distributive studies) requirements may be met by taking Education in Contemporary American Society (EDPA 201) or Historical and Philosophical Perspectives on Education (EDPA 210). University Studies Program (advanced studies) requirements may be met by taking Technology, Social Change, and Education (EDPA 401), or Future of the Human Community (EDPA 400).

Graduate degree programs are offered in five areas: Administration and Supervision (administrators in education-related agencies, school superintendents, principals, supervisors); Foundations of Education (comparative education; history, philosophy, politics, and sociology of education and technology policy); Higher and Adult Education (adult and continuing education; governance, finance, and planning; law and higher education policy; curriculum and teaching; and institutional advancement); and Education Policy (policy analysis for elementary and secondary education, postsecondary education, government agencies, and not-for-profit organizations concerned with education).

Course Code: EDPA

## ELECTRICAL ENGINEERING (EENE)

### College of Engineering

3170 Engineering Building, 454-4171

Chair: Destler

Associate Chairs: Davis, Facilities and Services; Emad, Graduate Program; Pugsley, Undergraduate Program

Professors: Antonsen, Baras, Barbe, Blakenship, Chu, Davis†, Davisson, DeClans, Destler, Emad, Ephremides, Frey, Granatstein, Harger, Hochuli, Ja'Ja', Krisnaprasad, Lee, Levine, Ligonides, Lin, Mayergoyz, Newcomb, Ott, Peckerker (part-time), Rabin, Reiser, Rhee, Striffler, Taylor, Vishkin, Zaki

Associate Professors: Abed, Dagenais, Farvardin, Geraniotis, Gligor, Goldhar, Ho, Makowski, Nakajima, Narayan, Oruc, Pugsley, Shamma, Shayman, Silio, Tits, Tretter

Assistant Professors: Fuja, Dayawansa, Goldsman, Greenberg, Iliadis, Ioannou, Lawson, Menezes, Milchberg, Papamarcou, Webb, Yang

†Distinguished Scholar-Teacher

### The Major

The Electrical Engineering major is intended to prepare students to function as effective citizens and engineers in an increasingly technological world as well as in science and engineering subjects. Depth as well as breadth is required in the humanities and social sciences to understand the economic, ecologic, and human factors involved in reaching the best solutions to today's problems.

The basic foundation in mathematical, physical, and engineering sciences is established in the first two years of the curriculum. A core of required Electrical Engineering courses is followed by a flexible structure of electives which allows either breadth or specialization. Appropriate choices of electives can prepare an Electrical Engineering major for a career as a practicing engineer and/or for graduate study.

Areas stressed in the major include communication systems, computer systems, control systems, engineering electromagnetics, microelectronics, and power systems. Within these areas are courses in such topics as solid state electronics, integrated circuits, lasers, communications engineering, computer design, power engineering, digital signal processing, antenna design, and many others. Project courses allow undergraduate students to undertake independent study under the guidance of a faculty member in an area of mutual interest.

### Requirements for Major

Requirements for the Electrical Engineering major include thorough preparation in mathematics, physics, chemistry and engineering science. Elective courses must include both Electrical Engineering courses and technical courses outside the department. A sample program for the portion of the program following the common freshman year in Engineer-

ing is shown below. (See College of Engineering section for suggested Freshman Year program.)

	Semester	
	I	II
<b>Sophomore Year</b>		
University Studies .....	3	3
Math 246 Differential Equations .....	3	
Math 241 Analysis III .....		4
PHYS 262, 263 General Physics .....	4	4
EENE 240 Engineering Computation .....	3	
EENE 221 Dynamics .....	3	
EENE 204 Basic Circuit Theory .....		3
EENE 244 Digital Logic Design .....		3
Total Credits .....	16	17
<b>Junior Year</b>		
Math xxx (Elect. Advanced Math <sup>2</sup> ) .....	3	
EENE 302 Analog Electronics .....		3
EENE 305 Fundamental Laboratory .....	2	
EENE 312 Digital Electronics .....		3
EENE 322 Signal & System Theory .....	3	
EENE 324 Engineering Probability .....		3
EENE 350 Computer Organization .....	3	
EENE 380 Electromagnetic Theory .....	3	
EENE 381 Elect. Wave Propagation .....		3
EENE xxx Advanced Elective Lab .....		2
University Studies .....	3	3
Total Credits .....	17	17
<b>Senior Year</b>		
Electives .....	6	12
Advanced Elective Lab .....	2	
University Studies .....	6	3
Total Credits .....	14	15

<sup>1</sup>See details of University Studies in Chapter 6.<sup>2</sup>The twenty-five credits of electives must satisfy the following conditions: (1) 13 credits must be 400-level EENE courses, including at least four credits of advanced laboratory courses.

(2) 12 credits must be non-electrical engineering (mathematics, physics, other fields of engineering, etc.) and must be selected from the Electrical Engineering Department's approved list; at least three credits of these nine must be a 400-level MATH course from the departmental list.

### EENE ADVANCED ELECTIVE LABORATORIES

- EENE 407 Microwave-Circuits Laboratory (2)
- EENE 413 Electronics Laboratory (2)
- EENE 445 Computer Laboratory (2)
- EENE 461 Control Systems Laboratory (2)
- EENE 473 Transducers and Electrical Machinery Laboratory (1)
- EENE 483 Electromagnetic Measurements Laboratory (2)

### Admission

Admission requirements are different from those of the other engineering departments (see College of Engineering section on Entrance Requirements).

### Advising

Nearly all of the faculty in Electrical Engineering function as undergraduate advisors. Departmental approval is required for registration in all upper-division courses in the major. The department's Undergraduate Office (3188 Engineering Classroom Building, 454-4172) is the contact point for undergraduate advising questions.

### Financial Assistance

Several corporate scholarships are administered through the department. Information and scholarship applications are available from either the Electrical Engineering Undergraduate Office, 3188 Engineering Classroom Building, 454-4172, or the College of Engineering Student Affairs Office, 1131 Engineering Classroom Building, 454-2421.

### Honors and Awards

The Electrical Engineering department annually gives a variety of academic performance and service awards. Information on criteria and eligibility is available from the department's Undergraduate Office. Majors in Electrical Engineering participate in the Engineering Honors Program.

See the College of Engineering entry in this catalog for further information.

## Student Organizations

There is an active Student Chapter of the Institute of Electrical and Electronics Engineers (IEEE). Information and membership applications are available in the Electrical Engineering undergraduate lounge, 0107 Engineering Classroom Building. Equally active, if not more so, is the chapter of Eta Kappa Nu, the nationwide Electrical Engineering honorary society. Information on eligibility can be obtained from the EE Undergraduate lounge, from the departmental Undergraduate Office, or from the College Student Affairs Office.

Course Code: ENEE

## ENGINEERING, BACHELOR OF SCIENCE DEGREE IN

### College of Engineering

1131 Engineering Classroom Building, 454-2421

**General Regulations for the B.S. Engineering Degree:** All undergraduate students in engineering will select their major field sponsoring department at the beginning of their second year regardless of whether they plan to proceed to a designated or an undesignated degree. A student wishing to elect the undesignated degree program may do so at any time following the completion of the sophomore year, or a minimum of fifty earned credits towards any engineering degree, and at least one semester prior to the time the student expects to receive the baccalaureate degree. As soon as the student elects to seek an undesignated baccalaureate degree in engineering, the student's curriculum planning, guidance, and counseling will be the responsibility of the "Undesignated Degree Program Advisor" in the primary field department. **At least one semester before the expected degree is to be granted, the student must file an "Application for Admission to Candidacy for the Degree of Bachelor of Science in Engineering" with the dean's office of the College of Engineering.** The candidacy form must be approved by the chair of the primary field department, the primary engineering, and the secondary field advisors and the college faculty committee on "Undesignated Degree Programs." This committee has the responsibility for implementing all approved policies pertaining to this program and reviewing and acting on the candidacy forms filed by the student.

Specific university and college academic regulations apply to this undesignated degree program in the same manner as they apply to the conventional designated degree programs. For example, the academic regulations of the university apply as stated in Chapter 5 of this catalog and the college requirement of 2.00 G.P.A. in the major field during the junior and senior years applies. For the purpose of implementation of such academic rules, the credits in the primary engineering field and the credits in the secondary field are considered to count as the "major" for such academic purposes.

### Options of the "B.S. Engineering" Program

The "B.S. Engineering" program is designed to serve three primary functions: (1) to prepare those students who wish to use the breadth and depth of their engineering education as a preparatory vehicle for entry into post-baccalaureate study in such fields as medicine, law, or business administration; (2) to provide the basic professional training for those students who wish to continue their engineering studies on the graduate level in one of the new interdisciplinary fields of engineering such as environmental engineering, bio-medical engineering, systems engineering, and many others; and finally (3) to educate those students who do not plan a normal professional career in designated engineering field but wish to use a broad engineering education so as to be better able to serve in one or more of the many auxiliary or management positions of engineering related industries. The program is designed to give the maximum flexibility for tailoring a program to the specific future career plans of the student. To accomplish these objectives, the program has two optional paths: an engineering option and an applied science option.

**The engineering option**, which is ABET accredited, should be particularly attractive to those students contemplating graduate study or professional employment in the interdisciplinary engineering fields, such as environmental engineering, bio-engineering, bio-medical, and systems and control engineering, or for preparatory entry into a variety of newer or interdisciplinary areas of graduate study. For example, a student contemplat-

ing graduate work in environmental engineering might combine chemical and civil engineering for his or her program; a student interested in systems and control engineering graduate work might combine electrical engineering with aerospace, chemical, or mechanical engineering.

**The applied science option**, which is not ABET accredited, should be particularly attractive to those students who do not plan to pursue a professional engineering career but wish to use the rational and developmental abilities fostered by an engineering education as a means of furthering career objectives. Graduates of the applied science option may aspire to graduate work and an ultimate career in a field of science, law, medicine, business, or a variety of other attractive opportunities which build on a combination of engineering and a field of science. Entrance requirements for law and medical schools can be met readily under the format of this program. In the applied science program, any field in the university in which the student may earn a B.S. degree is an acceptable secondary science field, thus affording the student a maximum flexibility of choice for personal career planning.

### Minimum Requirements

Listed below are the minimum requirements for the B.S. Engineering degree with either an engineering option or an applied science option. The sixty-six semester credit hours required for the completion of the junior and senior years are superimposed upon the freshman and sophomore curriculum of the chosen primary field of engineering. The student, thus, does not make a decision whether to take the designated or the undesignated degree in an engineering field until the beginning of the junior year. In fact, the student can probably delay the decision until the spring term of the junior year with little or no sacrifice, thus affording the student ample time for decision. Either program may be taken on the regular four-year format or under the Maryland Plan for Cooperative Engineering Education.

### Junior-Senior Requirements for the Degree of B.S. — Engineering

	Semester Hours (Engineering Option)	Semester Hours (Applied Science Option)
<b>Requirements</b>		
Univ. Studies Prog. Requirements.....	15	15
Mathematics Physical Sci. Requirements <sup>1</sup> .....	3	3
Engineering Sciences <sup>2</sup> .....	6	6
Primary Field <sup>3,6</sup> .....	24 (Engr.)	18 (Engr.)
Secondary Field <sup>2,5</sup> .....	12 (Engr.)	12 (Sci.)
Approved Electives <sup>4</sup> .....	6 (Tech.)	9 or 10
Sr. Research/Project.....		3 or 2
Total.....	66	66

Engineering fields of concentration available under the B.S. Engineering program as primary field within either the engineering option or the applied science option are: aerospace engineering, engineering materials, agricultural engineering, fire protection engineering, chemical engineering, mechanical engineering, civil engineering, nuclear engineering, and electrical engineering. All engineering fields of concentration may be used as a secondary field within the engineering option.

<sup>1</sup>Engineering sciences, for the purpose of this degree, are those courses in the College of Engineering prefixed by ENES or in any engineering field including the primary or secondary field of engineering concentration.

<sup>2</sup>A minimum of fifty percent of the coursework in the mathematics, physical sciences, engineering science and elective areas must be at the 300 or 400 course number level.

<sup>3</sup>All of the courses used to fulfill the fields of concentration requirements (thirty-six semester hours in the engineering option and thirty in the applied science option) must be at the 300 course number level or above.

<sup>4</sup>For the applied science option each student is required — unless specifically excused, and if excused, fifteen semester hours of approved electives will be required to complete satisfactorily a senior level project or research assignment relating the engineering and science fields of concentration.

<sup>5</sup>In the engineering option, the six semester hours of electives must be technical (math, physical sciences, or engineering sciences, but may not be in the primary or secondary fields of concentration). In the applied science option, the approved electives should be selected to strengthen the student's program consistent with career objectives. Courses in the primary or secondary fields of concentration may be used to satisfy the approved electives requirement.

<sup>6</sup>For the engineering option, the program must contain the proper design component, as specified by the ABET requirements. It is the responsibility

of students and their advisors to ensure that the requirements are satisfied by the appropriate selection of courses in the primary and secondary fields of concentration. As part of the required design component, all students, except those choosing Nuclear Engineering as a primary field, must complete ENME 404

## ENGLISH LANGUAGE AND LITERATURE (ENGL)

### College of Arts and Humanities

1123 Taliaterra Hall, 454-2511

Undergraduate Advisors: 0139 Taliaterra, 454-2521  
 Freshman English Office: 2143 Taliaterra, 454-4160  
 Professional Writing Program: 2117 Taliaterra, 454-4163

Professor and Chair: David  
 Professors: Bode (Emeritus), Bryer, Coletti, Cross, David, Freedman, Holton, Hovey (Emeritus), Howard, Isaacs, Jellema, Kornblatt, Lawson, Lutwack (Emeritus), M. Miller, Mish (Emeritus), Murphy (Emeritus), Myers (Emeritus), Panichas, W. Peterson, Plumly, Russell, Salamanca, Schonenbaum, Trousdale, Vitzthum, Whitemore (Emeritus), Winton, Wyatt  
 Associate Professors: Auchard, Barry, Beauchamp, Bennett, Birdsall, Caramello, Carretta, Cate, Coleman, Coogan, Cooper, Dobin, Donawerth, Fahnestock, Flieger, Fraistat, Fry, Grossman, D. Hamilton, G. Hamilton, Hammond, Handelman†, Herman, Kaufman, Kleine, Leinwand, Levine, Loizeaux, Mack, Marcuse, Norman, Pearson, C. Peterson, Robinson, Weber (Emeritus), Wilson  
 Assistant Professors: Auerbach, Cartwright, Collier, Dunn, Grant-Davie, James, Leonardi, Levin, Moser, Rutherford, Smith, Van Egmond  
 Instructors: Buhlig, Demaree, Logan, MacBain, J. Miller, Ryan, Scheltema, Shapiro, Terchek

†Distinguished Scholar-Teacher

### The Major

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

The English major requires 39 credits in English beyond the two required University writing courses. This relatively small number reflects the department's desire that students choose wisely a variety of electives to acquire a broad and liberal education. An English major is good professional preparation for a career in the law, government, journalism, business communication, teaching, or any field that requires strong analytical, communication, and human skills. Students may also want to consider a double major or the Liberal Arts and Business program (454-6794) to prepare themselves for a profession.

### Requirements for Major

A student may pursue an English major with an emphasis in 1) English and American Literature, 2) Comparative Literature, 3) English Language and Linguistics, or 4) English Education. Basic requirements for the most commonly selected option, English and American Literature, are:

- 1) The department's core courses (restricted to English and English Education majors): English 310 (Medieval and Renaissance British Literature), 311 (Baroque and Augustan British Literature), 312 (Romantic to Modern British Literature), and 313 (American Literature).
- 2) Shakespeare: English 205 or 304 or 403 or 404.
- 3) One 300-400 level course (other than Shakespeare) in English or American literature before 1800.
- 4) A senior seminar: English 399.
- 5) 18 elective credits in English.
- 6) 12 supporting credits in the departments of modern languages, Classical Languages, Philosophy, History, or Comparative Literature.

Only two 200-level courses may be counted toward the major. No course with a grade less than C may be used to satisfy major or supporting area requirements. Full details of this option, and of the other three options, should be obtained by consulting the English Department's advisors, 0139 Taliaterra Hall, 454-2521. For information about English Education, see the entry for the Department of Curriculum and Instruction.

### Honors

The English Department offers an extensive Honors Program, primarily for majors but open to others with the approval of the departmental Honors Committee. Interested students should ask for detailed information from an English Department advisor as early as possible in their college careers.

### The Writing Center

1126 Taliaterra Hall, 454-4011, provides free tutorial assistance daily to students enrolled in English courses. English 101 students generally work with student tutors. English 391.2, 3, 4, 5 students work with tutors who are retired professionals. In addition to helping students with writing assignments, the center prepares ENGL 101 students for the English Proficiency Examination. Appointments are recommended, but walk-ins are welcome based on availability of tutors.

Course Code: ENGL

## ENTOMOLOGY (ENTM)

### College of Life Sciences

1302 Symons Hall, 454-3843

Professor and Chair: Steinhauer  
 Professors: Barbosa, Bickley (Emeritus), Bottrell, Davidson, Denno, Harrison (Emeritus), Jones (Emeritus), Menzer (Emeritus), Messersmith (Emeritus), Wood (Emeritus)  
 Associate Professors: Armstrong, Bissell (Emeritus), Dively, Hellman, Linduska, Ma, Mitter, Nelson, Raupp, Regier, Reicheiderfer, Scott  
 Associate Research Scientist: Mickewich  
 Assistant Professor: Lamp

### The Major

This curriculum prepares students for careers or graduate work in any of the specialized areas of entomology. Professional entomologists are engaged in fundamental and applied research in university, government, and private laboratories; regulatory and control activities with Federal and State agencies; commercial pest control and pest management services; sales and development programs with chemical companies, and other commercial organizations; consulting, extension work; and teaching.

Advising is mandatory. Students should work closely with their advisors in choosing electives. The curriculum is designed to allow majors intending to go to graduate school to broaden their preparation. Those intending to begin a career after the baccalaureate would be advised to concentrate on a more defined curriculum.

### Requirements for Major

College of Life Science Core Requirements .....	38-40
University Studies Program Requirements .....	40
<b>Departmental Requirements</b>	
ENTM 205 Principles of Entomology .....	4
ENTM 398 General Colloquium in Entomology .....	1
ENTM 399 Special Problems .....	1-2
ENTM 423 Insect Comparative Morphology .....	4
ENTM 424 Insect Diversity and Classification .....	4
ENTM 432 Insect Physiology .....	4
ENTM 451** Insect Pests of Agri. Crops .....	4
Total departmental requirements .....	22-23
<b>Supporting Courses</b>	
MICB 200* General Microbiology .....	4
ZOOL 212 .....	3
ZOOL 213 or BOTN 414 Plant Genetics .....	3
BIOM 401 Agricultural Biometrics .....	3
or STAT 464 Introduction to Biostatistics .....	3
Total supporting courses .....	10-11
Two (2) of the following six (6) courses:	
BCHM 461 Biochemistry I .....	3
BOTN 212 Plant Taxonomy .....	3
BOTN 221 Diseases of Plants .....	4

BOTN 441 Plant Physiology .....	4
ZOOL 411 Cell Biology .....	4
ZOOL 422 Vertebrate Physiology .....	4
Total .....	6-8

Electives ..... 7-8  
123-130

\*May satisfy departmental requirements and/or a University Studies requirement.

\*\*In addition to ENTM 451, students pursuing an applied program are encouraged to take ENTM 351 as an elective.

\*\*\*Students who intend to pursue a career in applied entomology should elect the following courses: BOTN 212, BOTN 221, AGRI 401, ZOOL 422, BOTN 441, AGRO 453 (Weed Control), AGRO 423 (Soil and Water Pollution). These seven courses are prerequisite to the M.S. program in pest management.

A "C" average is necessary for all ENTM and supporting courses.

Course Code: ENTM

## FAMILY AND COMMUNITY DEVELOPMENT (FMCD)

### College of Human Ecology

1204 Marie Mount Hall, 454-2142

Professor and Chair: Billingsley

Professors: Gaylin, Hanna, Koblinsky

Associate Professors: Anderson, Epstein, Myricks, Leslie, Rubin

Assistant Professors: Churaman, Randolph

Lecturer: Werlinich

Instructors: Millstein, Zeiger

The Department of Family and Community Development is devoted to describing, explaining, and improving the quality of life by means of research, education, community outreach, and public service. The approach is holistic, emphasizing human ecology. The curriculum places special emphasis upon the family and the community as mediating structures in determining life quality. The jobs for which the curriculum is designed include counseling, program management, research, advocacy, and service delivery.

Graduates of the department obtain positions in human service agencies, consulting firms, voluntary organizations, and Federal, State, and local governments. Their specific jobs may be in area agencies or organizations such as the Federal Drug Administration, Planned Parenthood, youth services, family services, or senior citizens programs.

### The Majors

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

The department offers three interrelated majors:

#### Family Studies

This course of study stresses a working knowledge of the growth of individuals throughout the life span with particular emphasis on intergenerational aspects of family living. It examines the pluralistic family forms and life styles within our post-technological complex society and the development of the individual within the family and the community.

#### Management and Consumer Studies

Within this major are two specializations: (a) program management and (b) consumer affairs. The focus is upon the efficient and effective utilization of organizational and other community resources.

#### Community Studies

This major stresses community development, community organization, and advocacy and their relevance to families. In general there is an emphasis upon the processes and methods for social change, as well as the individuals, organizations or groups which act as agents of change.

Each of these courses of study includes a set of major subject courses offered primarily within the department plus a sequence of supporting area courses which may be taken outside the department or in an interdepartmental combination. Examples of supporting areas include the aging, the disabled, human service, children's issues, management, health, public administration, rehabilitation, and urban affairs. Students are strongly encouraged to consult with an appropriate advisor in developing their course of study

There are parallel requirements for each of the department's majors (family studies, management and consumer studies and community studies). Each major requires a fifteen-credit thematic set of supportive area courses. To graduate, students must also meet the requirements of the campus (e.g., those specified in the University Studies Program) and of the College of Human Ecology

### Grades

All students are required to earn a grade of C or better in all courses applied toward satisfaction of the major. This includes all required courses with the FMCD prefix as well as the courses used for the supporting area.

**College Core** — required of all majors

SOCY 100 Introduction to Sociology (3)

PSYC 100 Introduction to Psychology (3)

ECON 201 Principles of Economics I (3) and

ECON 203 Principles of Economics II (3) or

ECON 205 Fundamentals of Economics (3)

SPCH 100 Basic Principles of Speech Communications (3) or

107 Technical Speech Communication (3) or

125 Introduction to Interpersonal Communication (3)

and two courses in Human Ecology, one each in the Departments of Human Nutrition and Food Systems and Textiles and Consumer Economics (6).

### Family Studies Major

**(a) Major subject area: A grade of C or better is required in these courses.**

FMCD 200 Pre-Professional Seminar (1)

FMCD 202 Methods for Family, Community and Management Studies (3)

FMCD 250 Decision Making in Families and Communities (3)

FMCD 330 Family Patterns (3)

FMCD 348 Practicum in Family and Community Development (6-12)

FMCD 349 Analysis of Practicum (1-2)

**(b) and a minimum of fifteen credits selected from the following courses and completed with a grade of C or better.**

FMCD 105 The Individual in the Family (3)

FMCD 260 Interpersonal Life Styles (3)

FMCD 332 The Child in the Family (3)

FMCD 370 Interpersonal Communication Processes (3)

FMCD 381 Poverty and Affluence Among Families and Communities (3)

FMCD 430 Gender Role Development in the Family (3)

FMCD 431 Family Crisis and Intervention (3)

FMCD 432 Intergenerational Aspects of Family Living (3)

FMCD 441 Personal and Family Finance (3)

FMCD 447 The Disabled Person in the Family and Community (3)

FMCD 460 Violence in the Family (3)

FMCD 485 Introduction to Family Counseling (3)

FMCD 487 Legal Aspects of Family Problems (3)

FMCD 497 The Child and the Law (3)

AND SPECIAL TOPICS COURSES APPROVED FOR THIS MAJOR

**(c) Eighteen credits in supportive area consisting of a common focus or theme, e.g., aging and the aged, mental health, sociology, psychology. A grade of C or better is required for all courses used as the supportive area.**

**(d) College Core Courses (see above).**

### Management and Consumer Studies

**(a) Major subject courses: A grade of C or better is required in these courses.**

FMCD 200 Pre-Professional Seminar (1)

FMCD 202 Methods for Family, Community and Management Studies (3)

FMCD 250 Decision Making in Families and Communities (3)

FMCD 348 Practicum in Family and Community Development (6-12)

FMCD 349 Analysis of Practicum (1-2)

FMCD 444 Human and Community Program Management (3)

- (b) **And a minimum of fifteen credits selected from the following courses and completed with a grade of C or better.**  
 FMCD 280 Families and Communities in the Ecosystem (3)  
 FMCD 381 Poverty and Affluence Among Families and Communities (3)  
 FMCD 443 Consumer Problems (3)  
 FMCD 445 Family and Household Management (3)  
 FMCD 447 The Disabled Person in the Family and Community (3)  
 FMCD 453 Family and Community Advocacy (3)

- (c) **Eighteen credits in a supportive area constituting common focus or theme, e.g., personnel and labor relations, or public administration. A grade of C or better is required for all courses used as the supportive area.**

(d) College Core Courses (see above).

**Community Studies Major**

- (a) **Major subject courses: A grade of C or better is required in these courses.**

- FMCD 200 Pre-Professional Seminar (1)  
 FMCD 201 Concepts in Community Development (3)  
 FMCD 202 Methods for Family, Community and Management Studies (3)  
 FMCD 250 Decision Making in Families and Communities (3)  
 FMCD 348 Practicum in Family and Community Development (6-12)  
 FMCD 349 Analysis of Practicum (1-2)

- (b) **And a minimum of fifteen credits selected from the following courses and completed with a grade of C or better.**

- FMCD 280 Families and Communities in the Ecosystem (3)  
 FMCD 381 Poverty and Affluence Among Families and Communities (3)  
 FMCD 444 Human and Community Program Management (3)  
 FMCD 447 The Disabled Person in the Family and Community (3)  
 FMCD 453 Family and Community Advocacy (3)  
 FMCD 483 Family and Community Service Systems (3)

- (c) **Eighteen credits in a supportive area constituting common focus or theme, e.g., community psychology, international development, or urban studies. A grade of C or better is required for all courses used as the supportive area.**

(d) College Core Courses (see above).

Course Code: FMCD

**FINANCE**

For information, consult College of Business and Management entry.

**FIRE PROTECTION ENGINEERING (ENFP)**

**College of Engineering**

0147 Engineering Classroom Building, 454-2424

Professor and Chair: Bryan  
 Assistant Professor: Mowrer  
 Lecturer: Milke  
 Lecturers (part-time) DiNunno, Quintiere

**The Major**

The fire protection engineering major is concerned with the scientific and technical problems of preventing loss of life and property from fire, explosion, and related hazards, and of evaluating and eliminating hazardous conditions.

The fundamental principles of fire protection engineering are relatively well-defined and the application of these principles to a modern industrialized society has become a specialized activity. Control of the hazards in manufacturing processes calls for an understanding not only of measures for the protection but of the processes themselves. Often the most effective solution to the problem of safeguarding a hazardous operation lies in the modification of special extinguishing equipment. The fire protection engineer must be prepared to decide in any given case what is the best and most economical solution of the fire prevention problem. His or her recommendations are often based not only on sound principles of fire protection but on a thorough understanding of the special problems of the individual property.

Modern fire protection utilizes a wide variety of mechanical and electrical equipment which the student must understand in principle before he or she can apply them to special problems. The fire protection curriculum emphasizes the scientific, technical, and humanitarian aspects of fire protection engineering and the development of the individual student.

The problems and challenges which confront the fire protection engineer include the reduction and control of fire hazards due to processes subject to fire or explosion in respect to design, installation and handling, involving both physical and human factors; the use of buildings and transportation facilities to restrict the spread of fire and to facilitate the escape of occupants in case of fire; the design, installation and maintenance of fire detection and extinguishing devices and systems; and the organization and education of persons for fire prevention and fire protection.

**Requirements for Major**

	Semester	
	I	II
<b>Sophomore Year</b>		
University Studies Program Requirements	3	3
Math 240—Linear Algebra or		
Math 241—Calculus	4	
Math 246—Differential Equations for Scientists and Engineers		3
PHYS 262, 263—General Physics	4	4
ENES 221—Dynamics		3
ENES 220—Mechanics of Materials	3	
ENFP 251—Introduction to Fire Protection Engineering	3	
ENFP 290—Fire Protection Fluids		3
Total	17	16

**Junior Year**

University Studies Program Requirements	3	3
CMSC 110—Intro to Fortran Programming (4) or		
ENES 240—Engineering Computation (3)	3-4	
ENME 320—Thermodynamics or		
ENCH 300—Chemical Process Thermodynamics		3
ENCE 300—Fundamentals of Engineering Materials or		
ENME 310—Mechanics of Deformable Solids		3
ENCE 330—Fluid Mechanics	3	
ENFP 310—Fire Protection Systems Design I	3	
ENFP 315—Fire Protection Systems Design II		3
ENFP 320—Pyrometrics of Materials	3	
ENFP 312—Heat Transfer Applications in Fire Protection		3
Approved Electives	2	2
Total	17-18	17

**Senior Year**

University Studies Program Requirements	3	6
ENNU 310—Environmental Aspects of Nuclear Engineering or		
ENEE 300—Principles of Electrical Engineering	3	
ENFP 421—Functional and Life Safety Analysis	3	
ENFP 415—Fire Dynamics	3	
ENFP 411—Fire Protection Hazard Analysis		3
ENFP 416—Problem Synthesis and Design		3
Technical Electives*	3	3
Total	15	15

Minimum Degree Credits: 120 credits and fulfillment of all department, college, and University requirements.  
 \*Three credits of technical electives must be in ENFP.

**Admission**

Admission requirements are identical to those set by the College of Engineering (see College of Engineering section on Entrance Requirements).

**Advising**

Mandatory advising by department faculty is required of all students every semester. Students schedule their advising appointments in the Department Office, 0147 Engineering Classroom Building, 454-2424.

**Fieldwork and Internship Opportunities**

Part-time and summer professional experience opportunities and paid internship information is available in the Department Office, 0147 Engineering Classroom Building. Coordinator: J. L. Bryan, 454-2424

## Financial Assistance

Scholarships and grants are available to students in the Department from organizational and corporate sponsors. Information is available on eligibility, financial terms and retention criteria in the Department Office, 0147 Engineering Classroom Building.

## Honors and Awards

Academic achievement awards are sponsored by the Department, and the student professional-honor societies. These awards are presented at the annual College of Engineering Honors Convocation. Eligibility criteria for these awards are available in the Department Office, 0147 Engineering Classroom Building. Qualified students in the department are eligible for participation in the College of Engineering honors program.

## Student Organizations

The department honor society, Salamander, is provided for academically eligible junior and senior students. The University of Maryland student chapter of the Society of Fire Protection Engineers is the professional society for all interested students in the department. Information on both organizations may be obtained from current members in the student lounge, 1123 Engineering Laboratory Building, 454-2686.

Course code: ENFP

## FOOD SCIENCE PROGRAM (FDSC)

### College of Agriculture

2112 Animal Science Center, 454-0431

Professor and Coordinator: Westhoff

Professors: Bean, Cook, Johnson, Heath, Quebedeaux, Solomos, Vijay, Wheaton, Wiley, Soares

Professors Emeritus: Keeney, King, Mattick, Twigg

Associate Professors: Chai, Doerr, Schlimme, Stewart, Wabeck, Shehata  
Assistant Professors: Choi, Kantor, Marshall, Karahadian

### The Major

Food Science is concerned with the application of the fundamental principles of the physical, biological and behavioral sciences and engineering to better understand the complex and heterogeneous materials recognized as food. The contemporary food industry is highly dependent on this accumulating multidisciplinary body of knowledge and especially on the people who are educated to apply it, i.e., the food scientists or food technologists, terms that are used interchangeably.

Courses include the general areas of manufacture, distribution, preparation and utilization of foods to provide a better and more plentiful food supply for humankind.

Specialization is offered in the areas of flavor and food chemistry, food microbiology, food processing technology including freezing, thermal and aseptic processing, quality assurance, and the food commodity areas of fruits and vegetables, milk and dairy products, poultry and poultry products, red meats and seafood products.

Opportunities for careers in food science are available in industry, trade associations, government and universities. Specific positions for food scientists include food product development, production management, quality assurance, technical sales and service, ingredient management, food processing, research and teaching.

### Requirements for Major

	<b>Credit Hours</b>
University Studies Program Requirements* .....	44
College Requirements	
ENGL 101—Introduction to Writing .....	3
CHEM 103—General Chemistry I .....	4
MICB 200—General Microbiology .....	4
MATH 115	
BIOL 105—Principles of Biology I .....	3

Curriculum Requirements:	
ENGL 393—Technical Writing .....	3
ENAG 414—Mechanics of Food Processing .....	4
CHEM 104 or CHEM 233 .....	4
CHEM 113—General Chemistry II .....	4
FDSC 111—Contemporary Food Industry and Consumerism .....	3
FDSC 398—Seminar .....	1
FDSC 412, 413—Principles of Food Processing I, II .....	3,3
FDSC 421—Food Chemistry .....	3
FDSC 422—Food Product Research and Development .....	3
FDSC 423—Food Chemistry Laboratory .....	2
FDSC 430—Food Microbiology .....	2
FDSC 431—Food Quality Control .....	4
FDSC 434—Food Microbiology Laboratory .....	4
FDSC 442, 451, 461, 471, 482—Horticulture, Dairy, Poultry, Meat and Seafood Products Processing (2 required) .....	3,3
NUTR 100—Elements of Nutrition .....	3
BCHM 261—Elements of Biochemistry .....	3
PHYS 121—Fundamentals of Physics .....	4
Electives .....	18

\*Includes 21 required credits listed below.

## Advising

Advisement of undergraduate students is required. The Food Science Undergraduate advisor is Dr. D.V. Schlimme, 1122B Holzapfel Hall, 454-6526.

## Fieldwork and Internships

Fieldwork and internship opportunities are available with such organizations as McCormick and Co., National Food Processors Association, Fairfield Farm Kitchens, the Food and Drug Administration, Highs Ice Cream Corp., and Strasburger and Siegel, Inc. For information, contact Dr. D.V. Schlimme, 1122B Holzapfel Hall, 454-6526.

## Honors and Awards

The Food Science Department offers opportunities for scholarships and achievement awards such as the Institute of Food Technologists and Washington, D.C. Section IFT, Maryland and D.C. Dairy Technology, and C.W. England scholarships, and the Forbes Chocolate Leadership Award.

## Student Organizations

Student Association of Food Engineering, Science and Technology; Dairy Products Judging Team.

Course Code: FDSC

## FRENCH AND ITALIAN LANGUAGES AND LITERATURES (FREN)

### College of Arts and Humanities

3106C Jimenez Hall, 454-4303/4

Professor and Chair: Tarica

Professors: MacBain, Therrien

Associate Professors: Black, Demaitre, Fink, Hage, Joseph, Mossman, C. Russell, Verdaguer

Assistant Professors: Aondekewicz, Bрами, Falvo

Lecturers: Barrabini, Bondurant, C. P. Russell

Instructors: Amodeo Affiliate Lecturer: Jacoby

Emeritus: Bingham

French is one of the world's great languages of culture, providing access to an outstanding body of literature and criticism, studies in the arts, the humanities, the social and natural sciences, and career opportunities in commerce, foreign affairs, and the academic world. The department seeks to provide an atmosphere conducive to cultural awareness and intellectual growth. It hosts active student clubs and a chapter of a national honor society. It sponsors a study-abroad program (Maryland-in-Nice) and works actively with the language clusters of the Language House.

## The French Major

The undergraduate major in French consists of thirty-six hours of French courses above FREN 203. Two options, both having the same core, lead to the Bachelor of Arts degree: (1) French language and literature and (2) French language and culture. No grade lower than C may be used toward the major. Students intending to apply for teacher certification should consult the Director of Undergraduate Advising as early as possible for proper planning.

### French Language and Literature Option

Required core courses: FREN 204, 250, 301, 351, 352, and one of 211, 311, 312, 404. Specialization: either 401 or 405, either 302 or 402, four additional 400-level courses (excluding 404, 475, 478, 479), of which three must be in literature. Additional requirements outside French: twelve credits in supporting courses chosen from a list approved by the department, or at least twelve credits (six credits at 200 level and six credits at 300-400 level) in one specific area, representing a coordinated plan of study.

### French Language and Culture Option

Required core courses: FREN 204, 250, 301, 351, 352, and one of 211, 311, 312, 404. Specialization: one of 302, 401, 402; either 471 or 472; 473; three additional 400-level courses (excluding 404, 475, 478, 479). Additional requirements outside French: twelve credits in supporting courses chosen from a list approved by the department; or at least twelve credits (six credits at 200-level and six credits at 300-400 level) in one specific area, representing a coordinated plan of study.

## Honors

The department offers an honors program in French for students of superior ability. Honors students must take a total of thirty-six credits in French, including 494H (preparation for the final comprehensive examination) and 495H (Honors Thesis). For further information see the Director of the French Honors Program.

## The Italian Language and Literature Major

It is anticipated that the new Italian major will go into effect in Fall 1991, but students may begin satisfying the proposed requirements of the major as of Fall 1990. To enter the proposed Italian Major program, students must demonstrate language proficiency at the level of ITAL 203 or have taken one of two introductory sequences: either ITAL 101, 102, 203 or ITAL 121 and 122. The undergraduate major in Italian consists of 36 hours of Italian courses beyond the level of ITAL 203. To satisfy the major requirements, students must take the following courses: the language sequence - ITAL 204, 211, 301, 311; the literature sequence - 251, 351, 352; five courses at the 400 level. No grade lower than C may be used to satisfy the major requirements. Additional requirements outside Italian: 12 credits in supporting courses chosen from a list approved by the Department; or at least 12 credits (six credits at the 200 level and six credits at the 300-400 level) in one specific area, representing a coordinated plan of study.

## Romance Languages

Either French or Italian, or both, may serve as components of this major (see the entry on the Romance Language Program below).

Course Code: FREN, ITAL

## GEOGRAPHY (GEOG)

### College of Behavioral and Social Sciences

1113 LeFrak Hall, 454-2241

Chair: Townshend

Professors: Fonaroff, Townshend, Wiedel

Associate Professors: Brodsky, Christian\* (Urban Studies), Cirrincione\* (Curriculum and Instruction), Goward, Groves, Kearney, Leatherman, Mitchell, Prince, Thompson, Assistant Professors: Lai, Marcus

Part-time Lecturers: Broome, Chaves, Deshier, Eney, Ernst, Frieswyk  
Professor Emeritus: Harper

\*Joint Appointment with unit indicated.

## The Major

The Department of Geography offers programs of study leading to the Bachelor of Science degree. Many students find that the multiple perspectives of geography form an excellent base for a liberal arts education. The abilities to write clearly and to synthesize information and concepts are valued highly in geographical education and practice. Students of geography must master substantive knowledge either in the physical/natural sciences or in the behavioral/social sciences in addition to methodological knowledge. International interests are best pursued with complementary study in foreign languages and area studies.

The central question in geographical study is "where?" Geographers research locational questions of the natural environment, of social and economic systems, and of past human activity on the land. Students of geography must master a variety of techniques that are useful in locational analysis, including computer applications and mapping, map making or cartography, air-photo interpretation and remote sensing, field observation, statistical analysis, and mathematical modelling.

Increasingly, geographers apply their combined methodological and substantive knowledge towards the solution of society's problems. Some graduates find geography to be an excellent background for careers in defense and intelligence, journalism, law, travel and tourism, the nonprofit sector, and business and management. Most professional career positions in geography require graduate training. Many geographers take positions in scientific research, planning, management and policy analysis for both government and private agencies.

### Major Requirements Including Program Options

Within any of the specializations available in the geography major program it is possible for students to adjust their programs to fit their individual interests. The geography major totals thirty-seven semester hours. In addition to the thirty-seven semester hours, the geography major is required to take an additional fifteen semester hours of supporting coursework outside of the department. The hours can be either in one department of in an area of concentration. An area of concentration requires that a written program of courses be reviewed and placed on file by the department advisor. See Professor Cirrincione, 1125 LeFrak Hall, 454-2244. Supporting courses generally are related to the area of specialty in geography. The pass-fail option is not applicable to major or supporting courses. A minimum grade of C in each course is required for major and supporting courses.

The required courses for geography majors are as follows:

	Semester Credit Hours
Geography Core (GEOG 201, 202, 203, 211, 305, 310) .....	16
An additional techniques course (selected from 370, 372, 373, 380) .....	3
A regional course .....	3
Elective systematic courses .....	15
Total .....	37

### The Geography Core

The following six courses form the minimum essential base on which advanced work in geography can be built:

GEOG 201—Geography of Environmental Systems .....	3
GEOG 202—The World in Cultural Perspective .....	3
GEOG 203—Economic Geography .....	3
GEOG 211—Geography of Environmental Systems Laboratory .....	1
GEOG 305—Quantitative Methods in Geography .....	3
GEOG 310—Research and Writing in Geography .....	3

The four lower division courses are to be completed prior to GEOG 310 and all other upper division courses. GEOG 201, 202, and 203 may be taken in any order and a student may register for more than one in any semester. GEOG 211 may be taken concurrent with, or after taking GEOG 201. GEOG 305 is prerequisite to GEOG 310. GEOG 310 is designed specifically as a preparation to upper level work and should be taken by the end of the junior year. Upon consultation with a department advisor, a reasonable load of other upper level work in geography may be taken concurrently with GEOG 310. Completion of GEOG 310 satisfies for geography majors only the upper level English composition requirement.



The techniques requirement may be fulfilled by taking one of the following: GEOG 370—Cartographic Principles, GEOG 372—Remote Sensing, GEOG 373—Computer Mapping, and GEOG 380—Local Field Course.

**Suggested Program of Study for Geography**

	Semester Credit Hours
<b>Freshman and Sophomore Years</b>	
GEOG 100, 110, 120, 130, 140, 150, 160, 170, 171 (1)— Introductions to Geography (Does not count toward geography majors) .....	3+1
GEOG 201—Geography of Environmental Systems .....	3
GEOG 202—The World in Cultural Perspective .....	3
GEOG 203—Economic Geography .....	3
GEOG 211—Geography of Environmental Systems Laboratory .....	1
General University, or University Studies Program Requirements and/or electives .....	60
<b>Junior Year</b>	
GEOG 305—Quantitative Methods in Geography .....	3
GEOG 310—Research and Writing in Geography .....	3
GEOG—A regional geography course .....	3
GEOG—Techniques (choice) .....	3
GEOG—Elective .....	3
General University, or University Studies Program Requirements and/or electives .....	30
<b>Senior Year</b>	
GEOG—Courses to complete major .....	12
Electives .....	18
	30
Total .....	120

**Introduction to Geography**

The 100-level geography courses are general education courses for persons who have had no previous contact with the discipline in high school or for persons planning to take only one course in geography. They provide general overviews of the field or in one of its major topics. Credit for these courses is not applied to the major.

**Areas of Specialization**

Although the major program is flexible and can be designed to fit any individual student's own interest, several specializations attract numbers of students. They are:

**Urban Geography and Regional Development**

Provides preparation for careers in planning, development, research and teaching. Majors electing this specialty take departmental courses in urban geography, location theory and spatial analysis, transportation, and economic geography among others, and supporting courses outside the department in urban sociology, urban economics, urban transportation, housing and design, family and community development, architecture, and in urban studies and planning.

**Environmental Analysis, Resources Management and Physical Geography**

For students with special interests in the natural environment and its interaction with humans. This specialization consists of departmental courses in geomorphology, climatology, biogeography, and energy, pollution, and water resources, and of supporting courses in geology, soils, meteorology, civil engineering, hydrology, and botany.

**Computer Mapping, Cartography and Spatial Analysis**

Prepares students for careers in map design, compilation, and reproduction. The department offers various courses in thematic mapping, cartographic history and theory, map evaluation, map, photo, and image interpretation, computer-assisted cartography, spatial statistics, and geographic information systems. Students concentrating in cartography are not required to take GEOG 305 and are limited to nine hours of upper level systematic geography courses. Students must complete fifteen hours in cartography/geographic techniques. Supporting area courses must be taken from a list provided by the department. All math programs should be approved by a departmental advisor.

The required courses of the Cartography concentration are as follows:

**Semester Credit Hours**

Geography Core (GEOG 201, 202, 203, 211, 310) .....	13
Elective systematic geography courses .....	9
Cartography/Geographic technique courses .....	15
Total .....	37

**Human and Historical Cultural Geography**

Of interest to students particularly concerned with the geographic aspects of population, politics, and other social and cultural phenomena, and with historical and locational processes in cities and in colonial settlement. In addition to departmental course offerings, this specialization necessitates study in sociology, anthropology, government and politics, history, and economics. For further information on any of these areas of specialization, students should contact a departmental advisor.

**Geography Minor and Secondary Education Geography Specialization**

Secondary Education majors with a concentration in geography are required to take twenty-seven hours in the content field, GEOG 201, 202, 203, 311, 305, and 490, or another upper-level course reflecting this interest. The remaining twelve hours of the program consist of three hours of regional geography and nine hours of upper-division systematic courses. For majors in elementary education and others needing a geography course for teaching certification, GEOG 100 is the required course.

Geography minors should take at least GEOG 201, 202, and 203 in the geography core and 310 is recommended. As with the major, these courses should be taken before any other geography courses.

**Internship Opportunities**

The department offers a one-semester internship program for undergraduates (GEOG 384 and 385). The goal of the program is to enhance the intellectual growth and the career opportunities of undergraduates. The internship provides students an opportunity to expand their understanding of the field by linking the theoretical aspects of geography acquired in the classroom to the applied aspects operating in a practice situation. The internship program is open only to geography juniors and seniors. All interns must have completed the following prerequisites: GEOG 201, 202, 203, 211, 305, and 310. An application form from the undergraduate geography advisor must be submitted one semester before the internship is desired. See Professor Cirrionce, 1125 LeFrak Hall, 454-2244.

**Honors**

For information on the geography honors program, contact the undergraduate advisor.

**Student Organizations**

Gamma Theta Upsilon, the geography undergraduate organization, operates a program of student-sponsored talks and field trips. Information may be obtained from Professor Marcus, 1171 LeFrak Hall, 454-4862.

Course Code: GEOG

**GEOLOGY (GEOL)**

**College of Computer, Mathematical and Physical Sciences**

1115 Geology Building, 454-3548

Professor and Chair: Brown

Professor: Chang

Associate Professors: Candela, McLellan, Ridky, Segovia, Siegrist, Stifel, Wylie

**The Major**

Geology is the basic science of the earth. In its broadest sense, geology concerns itself with planetary formation and modification with emphasis on the study of the planet earth. Geology concerns itself with the principles of physics, chemistry, biology and mathematics and their application to

the understanding of the composition, behavior and history of our planet. Geologic studies involve the earth's internal and external structure and materials, chemical and physical processes and its physical and biological history.

Geology thus encompasses such subjects as the development of life as evidenced by the fossil record, the mechanics of crustal movement and the associated production of earthquakes and volcanic eruptions, the evolution of the oceans and their interaction with the continents, the origin and occurrence of mineral and fuel resources and the evaluation of the human impact on the natural environment.

Geological scientists find employment in governmental, industrial, and academic establishments. In general, graduate training is expected for advancement to the most rewarding positions. Although some sectors of the geological science, such as the petroleum industry, are subject to cyclical employment conditions, most areas are enjoying a strong employment outlook. Employment potential is strong in such specialties as hydrology and groundwater, mineral resource consumption, land and coastal management, remote sensing, geophysics, and virtually all areas of environmental studies. At this time, students with the Bachelor of Science, particularly those with supportive training in statistics and computer science, can find challenging employment.

The Geology program includes a broad range of undergraduate courses to accommodate both geology majors and students interested in selected aspects of the science of the earth. Each undergraduate completes an individual research project under advisement from a faculty member.

### Requirements for Major Including Program

The geology curriculum is designed to meet the requirements of graduate school or government or industrial employment. However, students may select elective courses that are designed for their particular interest, rather than for the broad needs of the professional career. Five areas of concentration include: Advanced Study for Graduate School, Energy and Mineral resources, Mineral and Materials, Environment and Engineering Geology, and Earth Science Education. These concentrations are used by the undergraduate advisor to help students plan career directions which fit their interests, abilities, and the present and predicted job market.

All required geology courses must be completed with a grade of C or better. An average of C is required in the supporting courses. Courses required for the B.S. in geology are listed below.

	Semester Credit Hours
	I      II
University Studies Program Requirements* .....	30
<b>DEPARTMENTAL REQUIREMENTS</b>	
GEOL 101 Physical Geology (or GEOL 100 + GEOL 110)* .....	4
GEOL 102 Historical Geology .....	4
GEOL 322 Mineralogy .....	4
GEOL 331 Invertebrate Paleontology .....	4
GEOL 340 Geomorphology .....	4
GEOL 341 Structural Geology .....	4
GEOL 342 Sedimentation and Stratigraphy .....	4
GEOL 390 Field Methods .....	3
GEOL 393 Research Problems in Geology .....	3
First Senior Semester	
GEOL 394 Research Problems in Geology3	
Second Senior Semester	
GEOL 423 Optical Mineralogy .....	3
GEOL 443 Petrology .....	3
GEOL 490 Field Camp .....	3
<b>SUPPORTING REQUIREMENTS</b> .....	24
CHEM 103, 113 .....	4 4
MATH 140, 141 .....	4 4
PHYS 141, 142 .....	4 4
Electives .....	16-20

\*Of the normal USP requirements (forty credit hours), at least ten credits are met by the major requirements in mathematics, chemistry, or geology (basic mathematical skill and Distributive Studies Area B).

### Advising

The director of the Undergraduate Program serves as the advisor for geology majors, 3115 Geology Building, 454-3548.

### Honors and Awards

Geology Alumni Award for graduating senior with the highest overall scholastic average; Fernow Memorial Faculty Field Camp Awards for geology majors to attend geology summer camp; Sigma Gamma Epsilon Award for a senior in geology for Outstanding Scholastic Achievement and service to the society; and Best Senior Research Award.

### Student Organizations

Sigma Gamma Epsilon, National Honor Society for Earth Sciences and the Geology Club.

Course Code: GEOL

## GERMANIC AND SLAVIC LANGUAGES AND LITERATURES (GERM)

### College of Arts and Humanities

3215 Jimenez Hall, 454-4301

Professor and Chair: Pfister (Acting)  
Professors: Beicken, Best, Brecht, Oster  
Associate Professors: Berry, Bilik, Fleck, Frederiksen†, Glad, Hitchcock  
Assistant Professors: Fagan, Lelic, Schallert, Strauch  
Emeriti: Herin, Jones

†Distinguished Scholar-Teacher

### Germanic Language and Literature

#### The Major

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

The undergraduate major in Germanic Language and Literature consists of thirty-six hours beyond the basic language acquisition sequence (GERM 101-104). No course completed with a grade lower than C may be used to satisfy the major requirements. Three program options lead to the Bachelor of Arts degree: 1) German language, 2) German literature, and 3) Germanic area studies. Secondary concentration and supportive electives are encouraged in the other foreign languages, comparative literature, English, history, and philosophy. Majors intending to go on to graduate study in the discipline are urged to develop a strong secondary concentration in a further area of Germanic studies; such "internal minors" are available in German language, German literature, Scandinavian studies, and Indo-European and Germanic philology. All majors must meet with a departmental advisor at least once each semester to update their departmental files and obtain written approval of their program of study.

#### Requirements for Major

##### German Language Option

Core: 220, 301, 302, 321, and 322. Specialization: three German language courses (401, 403, 405); two 400-level German literatures courses; two upper-level courses in any of the three areas of specialization.

##### German Literature Option

Core: 220, 301, 302, 321, and 322. Specialization: five 400-level German literature courses; two upper-level courses in any of the three areas of specialization.

##### Germanic Area Studies Option

Core: 220, 301, 302, 321, and 322. Modern Scandinavian Specialization: 369, 461; five upper-level courses in the Germanic area studies group. Medieval Scandinavian Specialization: 383, 475; five upper-level courses in the Germanic area studies group.

## Russian Language and Literature (RUSS, SLAV)

### The Major

The undergraduate major in Russian Language and Literature consists of 39 hours beyond the basic language acquisition sequence (RUSS 101, 102, 201, 202). No course grade lower than C may be used to satisfy the major requirements. Two program options lead to the B.A. degree: 1) Russian Language and Literature or 2) Russian Language and Linguistics.

A common set of core courses is required of all majors, and each option must be supported by 9 hours of related course work in such disciplines as comparative literature, English, history, linguistics or philosophy.

During the transitional phase, new courses whose content is identical or substantially overlaps with that of old courses may not be taken for additional credit by students who have already taken the corresponding old courses.

### Requirements for Major

- 1) Core (18 hours): 210 or 211, 301, 302, 303, 321, 322;
- 2) Supporting Courses (9 hours) — LING 200 or ENGL 301 are required, depending on specialization (LING 200 for the Russian language and linguistics option, ENGL 301 for the Russian language and literature option); 6 additional hours chosen in consultation with a departmental advisor. At least 6 of the 9 total hours must be at the 300-400 level.
- 3) Specialization (12 hours): all requirements of at least one option must be fulfilled.
  - a) Russian Language and Literature Option  
401, 403, 431 or 432, 433 or 434, 409, 439, or 479 may be substituted for one of 431-434 upon consent of the Undergraduate advisor.
  - b) Russian Language and Linguistics Option  
479 and three additional courses chosen from among 410, 411, 412, 472, 473, 475.

Course Codes: GERM, RUSS, SLAV

## GOVERNMENT AND POLITICS (GVPT)

### College of Behavioral and Social Sciences

2181 LeFrak, 454-2248

Professor and Chair: Quester

Professors: Azar, Butterworth, Claude†, Davidson, Dawisha, Elkin, Glass, Gurr, Harrison (Emeritus), Hathorn (Emeritus), Hsueh, Marando, McNelly, Oppenheimer, Phillips, Piper, Pirages, Pischke (Emeritus), Reeves, Stone\* (Urban Studies), Uslaner, Wilkenfeld

Associate Professors: Alford, Glendening, Heisler, McCarrick, McIntosh, Randal, Soltan, Terchek

Assistant Professors: Haufler, Herrnson, Kaminski, Lalman, Lanning, Swistak, Tismaneanu

Lecturer: Vietri

†Distinguished Scholar-Teacher

\*Joint Appointment with unit indicated

The Department of Government and Politics offers programs designed to prepare students for government service, politics, foreign assignments, teaching, and a variety of graduate programs, law schools, and for intelligent and purposeful citizenship. Satisfactory completion of requirements leads to a Bachelor of Arts degree in government and politics.

The study of politics is both an ancient discipline and a modern social science. The origin of the discipline can be traced back to the earliest times when philosophers, statesmen, and citizens studied the nature of government justice, responsibility, and the consequences of government's action. More recently, the study of politics has also emphasized scientific observations about politics. Today, the discipline reflects a broad effort to collect data about politics and governments utilizing relatively new techniques developed by all of the social sciences.

The Department of Government and Politics combines both philosophical and scientific concerns in its overall program as well as in specific courses

and emphasizes such broad areas as political development, policy analysis, social justice, political economy, conflict, and human rights. These broad conceptual areas are integral components of the formal fields in the department. The formal fields are (1) American government and politics; (2) comparative government; (3) political theory; (4) international affairs; (5) public administration; (6) public law; and (7) public policy and political behavior.

### Areas of Specialization

The program in government and politics is highly flexible, and a variety of advising programs have been developed that meet the academic and career interests of departmental majors. The programs listed below are among the more popular ones in the department, and students can construct their own program with an advisor.

**Pre-Law.** Provides the student with a strong liberal arts background emphasized by law schools; includes at least one course in law, additional courses in the political and social context of law, as well as appropriate courses outside of the department

**Public Sector Employment.** Within this broad category are advising programs in general public administration leading to careers at entry-level positions in federal, state, and local governments, public finance and budgeting, public policy analysis, and public personnel management. Quantitative skills are highly recommended in this area, and majors are advised to select a strong substantive minor to complement their work in public administration, American politics, and public law.

**International Relations.** Combines courses in the department in international relations and comparative politics with a strong substantive minor, such as economics, business, or resource management. In addition, a strong background in a foreign language is highly recommended.

**Public Interest.** A broadly defined area emphasizing the American political system, organizing, campaigning, lobbying, policy analysis, and public sector management.

In addition, the department also offers strong programs in political theory, comparative human rights, environmental politics, women and politics, and urban politics.

### Requirements for Major

Government and Politics majors must complete thirty-six semester hours of GVPT courses with a minimum grade of C in each course and may not count more than forty-two semester hours of GVPT courses in the total credits required for graduation. At least eighteen of the thirty-six credits must be in upper-level courses and all majors are required to complete GVPT 100, GVPT 170, and either GVPT 441 or GVPT 442.

In addition, all majors must complete ECON 201 or ECON 205, an approved skill option, and a secondary area of concentration in another department or approved interdisciplinary area. All courses used to satisfy these requirements must be completed with a minimum grade of C.

### Honors

All students majoring in government may apply for admission to the GVPT Honors Program. Additional information concerning the Honors Program may be obtained at the department offices.

### Internships

The department offers students the opportunity to observe government agencies and political groups in action through a variety of internship experiences. Only nine hours of GVPT internship credit will apply to the thirty-six hours needed in the major. In no case may more than fifteen GVPT internship credits be counted toward the 120 credits needed to graduate.

### Advising

Academic advising is available daily on a walk-in basis in the Undergraduate Advising Office, 2181J LeFrak Hall.

Course Code: GVPT

## HEALTH EDUCATION (HLTH)

## College of Health and Human Performance

2387 PERH Building, 454-6077

Professor and Chair: Gilbert

Associate Chair: Clearwater

Professors: Burt, Gold, Greenberg, Leviton and Wilson

Associate Professors: Allen, Beck, Clearwater, Feldman, Miller

Assistant Professors: Alexander, Desmond, Klos, Thomas

Lecturers: Schiraldi

Instructors: Hyde

Faculty Research Assistants: Baker, Scaffa, Swartzlander

## The Major

Students majoring in health education have two tracks to choose from at the undergraduate level. One option is community health education, which prepares students for entry level health education positions in community settings such as voluntary health associations, worksite health promotion programs, or other health agencies. The second option is school health education which prepares students for teaching health education in schools. Students are referred to the section on the College of Education for information on teacher education application procedures. Two certificate options are also available in driver education.

## Requirements for Major Including Program Options

The Freshman curriculum for both the School Health Option and the Community Health Option is the same:

## Freshman Curriculum

	Semester Credit Hours
University Studies Program Requirements (See schedule of classes for more specific information) .....	43
ENGL 101—Introduction to Writing .....	3
MATH 110 or 102-3-4 or 115—Mathematics .....	3
HLTH 140—Personal and Community Health .....	3
CHEM 111—Chemistry in Modern Life .....	3
BIOL 105—Principles of Biology I .....	4
JOUR 100—Introduction to Mass Communications .....	3
PSYC 100—Introduction to Psychology .....	3
SOCY 100—Introduction to Sociology .....	3
HLTH 150—First Aid and Emergency Medical Services .....	2

## Health Education Curriculum — School Health Option

## Sophomore Year

HLTH 230—Introduction to Health Behavior .....	6
PHIL 140—Contemporary Moral Issues .....	3
ZOOL 201, 202—Human Anatomy and Physiology I and II ...	4
Required Health Electives .....	6
PSYC 221—Social Psychology .....	3
HLTH 105—Science and Theory of Health .....	2

## Junior Year

ENGL 391 or 393—Advanced Composition or Technical Writing .....	3
HLTH 420—Methods and Materials in Health Education .....	3
EDHD 300S—Human Development and Learning .....	6
EDCI 390—Principles and Methods of Secondary Education .....	3
Required Health Elective .....	3
EDHD 340—Human Development Aspects of the Helping Relationship .....	3
HLTH 390—Organization and Administration of Health Programs .....	3
EDMS 410—Principles of Testing and Evaluation .....	3
EDCP 417—Group Dynamics and Leadership .....	3

## Senior Year

HLTH 340—Curriculum, Instruction and Observation .....	3
Required Health Electives .....	6
EDPA 301—Foundations of Education .....	3
EDCI 491—Student Teaching in Secondary Schools—Health .....	12

## Community Health Option

## Sophomore Year

HLTH 230—Introduction to Health Behavior .....	3
PHIL 140—Contemporary Moral Issues .....	3
ZOOL 201, 202—Human Anatomy and Physiology I and II .....	4
Required Health Electives .....	6
PSYC 221—Social Psychology .....	3
HLTH 105—Science and Theory of Health .....	2

## Junior Year

U.S.P. Junior English Requirement .....	3
MICB 100Basic Microbiology .....	4
EDHD 340—Human Development Aspects of the Helping Relationships .....	3
EDMS 451—Introduction to Educational Statistics .....	3
HLTH 390—Organization and Administration of School Health Programs .....	3
HLTH 420—Methods and Materials in Health Education .....	3
HLTH 498R—Introduction to Community Health .....	3
SOCY 498A—Medical Sociology .....	3
HLTH 430—Health Education in the Workplace .....	3
EDCP 417—Group Dynamics and Leadership .....	3

## Senior Year

Required Health Electives .....	9
HLTH 498C—Principles of Community Health .....	3
FMCD 483—Family and Community Service Systems .....	3
HLTH 489—Field Laboratory Projects and Workshops .....	6
HLTH 386—Field Work .....	3
HLTH 387—Field Work Analysis .....	3

## Driver Education Instructors Certification Programs

- A. Classroom Instructor: 18 semester hours. Twelve semester hours as follows: HLTH 280, 305, 345 and 375; plus six semester hours selected from the following courses: HLTH 270, 498F, or ENES 373.
- B. Laboratory Instructor: 12 to 15 semester hours: HLTH 280, 305, 345, plus an internship in driver education (usually six semester credits).

## Admission

Admission requirements to the Department of Health Education are the same as those of the College of Education.

## Advising

Advising is mandatory. Undergraduate Health Education Advisor: David H. Hyde, 2374 PERH Building, 454-3369 or 454-2629

## Student Honors Organization

Eta Sigma Gamma. The Epsilon chapter was established at the University of Maryland in May 1969. This professional honorary organization for health educators was established to promote scholarship and community service for health majors at both the graduate and undergraduate levels. Students may apply after two consecutive semesters with a 2.75 cumulative average.

Course Code: HLTH

## HEARING AND SPEECH SCIENCES (HESP)

## College of Behavioral and Social Sciences

0100 LeFrak Hall, 454-5831

Professor and Chair: McCall (Acting)

Professors: Newby (Emeritus), Yeni-Koshman

Associate Professors: Baker, Dingwall, Gordon-Salant, Ratner, Roth

Instructors: Cuyjet, Daniel, McCabe, Perloth, Rosenberg, Smallets

Hearing and speech sciences is an inherently interdisciplinary field, integrating knowledge from the physical and biological sciences, medicine, psychology, linguistics, and education in order to understand human communication and its disorders. The department curriculum leads to the

Bachelor of Arts degree. An undergraduate major in this field is an appropriate background for graduate training in speech-language pathology or audiology, as well as for graduate work in other disciplines requiring a knowledge of normal or disordered speech, language, or hearing. The student who wishes to work professionally as a speech-language pathologist or audiologist must complete additional graduate coursework in order to meet state licensure and national certification requirements.

The hearing and speech sciences curriculum is designed in part to provide supporting coursework for majors in related fields, so most course offerings are available to both departmental majors and non-majors. Permission of instructor may be obtained for waiver of course prerequisites for non-majors wishing to take hearing and speech courses of interest

**Requirements for Major**

A student majoring in hearing and speech sciences must complete thirty semester hours of specified courses and six semester hours of electives in the department to satisfy major course requirements. No course with a grade less than C may count toward major course requirements. In addition to the thirty-six semester hours needed for a major, twelve semester hours of supporting courses in statistics and other related fields are required. For these twelve hours, a C average is required.

**Major Courses**

Specified courses for a major in hearing and speech sciences (thirty credits) are:

	<b>Credit Hours</b>
HESP 202—Introduction to Hearing and Speech Sciences .....	3
(Introduction to Communication and Its Disorders)	
HESP 300—Introduction to Psycholinguistics .....	3
HESP 305—Anatomy and Physiology of the Speech Mechanism .....	3
HESP 311—Anatomy, Pathology and Physiology of the Auditory System .....	3
HESP 400—Speech and Language Development in Children .....	3
HESP 402Speech Pathology I (Childhood Language and Articulation Disorders) .....	3
HESP 403—Introduction to Phonetic Science .....	3
HESP 404—Speech Pathology II (Voice Disorders, Stuttering and Cleft Palate Speech) .....	3
OR HESP—406—Speech Pathology III (Aphasia and Neuromotor Disorders) .....	3
HESP 407—Bases of Hearing Science .....	3
HESP 411—Introduction to Audiology .....	3
Electives in the department (6 credits) may be taken from among the following:	
HESP 417—Principles and Methods in Speech-Language Pathology and Audiology .....	3
HESP 418—Clinical Practice in Speech-Language Pathology and Audiology .....	3
HESP 498—Seminar (various topics/check current listings) .....	3
HESP 499—Independent study (may-be repeated for maximum of 6 credits) .....	1-3

The sequence of courses may vary; however, no upper level courses may be attempted without special permission until a student has earned a minimum of fifty-six credits. The student is encouraged to consult with a faculty advisor in the preparation of an individualized plan of study.

**Supporting Courses**

The undergraduate student with a major in hearing and speech sciences will take twelve semester hours in supporting areas of study, including one of the following courses in statistics: EDMS 451, PSYC 200, or SOCY 201. The remainder of supporting courses are from allied fields such as psychology, linguistics, sociology, education, health, family and community development, and anthropology (three to six credits), and other related fields such as physics, zoology, engineering, philosophy, computer science, and physical education (three to six credits). The student should see a faculty advisor in the Hearing and Speech Sciences Department for advice and approval of a supporting course sequence.

**Advising**

Information on advising for hearing and speech sciences may be obtained by calling the department office, 454-5831.

**Special Opportunities**

The department operates a Hearing and Speech Clinic, 454-2546, that serves the campus and surrounding area, and provides an in-house opportunity for the clinical training of students. Department facilities also include an integrated audio-visual listening and viewing laboratory, and several well-equipped research laboratories.

**Student Organizations**

Hearing and speech majors are invited to join the departmental branch of the National Student Speech-Language and Hearing Association (NSSLHA).

Course Code: HESP

**HEBREW AND EAST ASIAN LANGUAGES AND LITERATURES (HEBR, CHIN, JAPN)**

**College of Arts and Humanities**

2106 Jimenez Hall, 454-4307/5152

Professor and Chair: Rimer  
 Professors: Berlin, Mintz, Ramsey  
 Associate Professors: Chin, Kerkham, Sargent, Walton  
 Assistant Professor: Manekin  
 Instructors: Levy, Liberman, Miura, Yaginuma

**Hebrew Language and Literature**

The Hebrew Program provides, both to beginners and to those with previous background, an opportunity to acquire knowledge and skills in Hebrew language, literature, culture, and thought. Elementary and Intermediate level language courses develop effective communications skills in modern Hebrew. Upper level language courses emphasize reading comprehension, vocabulary enrichment, and writing skills. More advanced students focus on the analytical study of major classical and modern Hebrew texts. In addition, courses are offered in English (no knowledge of Hebrew required) in the areas of Bible, Ancient Near East, Rabbinic thought, Jewish Philosophy, and Hebrew literature in translation.

While there is no Hebrew major, students wishing to focus on Hebrew language as a primary subject may do so through a concentration on Hebrew within the Jewish Studies major (see Jewish Studies program). A certificate is also available to students qualifying for a minor. Consult the Hebrew office for requirements.

Hebrew may be used to meet University and College language requirements.

**Honors and Awards**

Several forms of recognition for those excelling in Hebrew are available: Membership in Eta Beta Rho, the Hebrew Honor Society, the Bnai Zion Award.

Students are encouraged to apply for residence in the Hebrew suite of the Language House, and are encouraged to spend some time studying at an Israeli University. The University of Maryland sponsors a semester program at Tel Aviv University. Scholarships for study in Israel are available through the Meyerhoff Center for Jewish Studies.

**East Asian Languages and Literatures**

**The Major**

A student may major in East Asian languages and literatures with a concentration in Chinese or Japanese. Either concentration provides the training and cultural background needed for entering East Asia-related careers in such fields as higher education, the arts, business, government, international relations, agriculture, or media. Students may also want to consider a double major in East Asian languages and literatures and another discipline, such as business, international relations, economics or journalism.

After completing the prerequisite of one year of language (twelve credits): CHIN 101 (Elementary Chinese; six hours per week, fall), CHIN 102 (Elementary Spoken Chinese; three hours per week, spring), and CHIN 103 (Elementary Written Chinese; three hours per week, spring) or JAPN 101 (Elementary Japanese I; six hours per week, fall) and JAPN 102 (Elementary Japanese II; six hours per week, spring), students must complete thirty-six credits for the major course requirements (eighteen language, six civilization/history, twelve elective). No grade lower than C (2.0) may be used toward the major.

### Chinese Course Requirements

Language: CHIN 201, 202, 203, 204, 301, 302; Civilization/History: Option 1: HIST 284 and 481 (or 485); Option 2: HIST 285 and 480; four electives at the 300 level or above in Chinese language, literature, linguistics, or other East Asian subjects, subject to the approval of student's advisor. Among the four, one must be in the area of Chinese linguistics, and one in the area of Chinese literature, subject to the approval of the student's advisor.

### Japanese Course Requirements

Language: JAPN 201, 202, 203, 204, 301, 302; Civilization/History: Option 1: HIST 284 and 483; Option 2: HIST 285 and 482; four electives at the 300 level or above. Among the four, one must be in the area of Japanese linguistics and one in Japanese literature, subject to the approval of the student's advisor.

### Supporting Courses for Chinese or Japanese

Students are strongly urged to take additional courses in a discipline relating to their particular field of interest, such as art, history, linguistics, literary criticism, or comparative literature. The range of supporting courses can be decided upon in consultation with the student's advisor.

### Special Language Courses

In addition to the more traditional courses in literature in translation, linguistics, and advanced language acquisition, courses in both Chinese and Japanese business language at the third-year level are offered. Students are also encouraged to spend at least one summer or semester in China (Taiwan or the People's Republic of China) or Japan in intensive language study under one or another of the university's exchange programs with foreign universities or at other approved centers of higher education.

### Internship Program

This program allows students to gain practical experience by working in Washington/Baltimore area firms, corporations, and social service organizations that are East Asia-related, as well as in various branches of the Federal government. Students are also invited to apply for the East Asian Studies Certificate. Please check the appropriate entry for details.

Course Codes: CHIN, HEBR, JAPN

## HISTORY (HIST)

### College of Arts and Humanities

2115 Francis Scott Key Hall, 454-2843

Professor and Chair: Price

Professors: Belz, Berlin, Brush†, Callcott, Cockburn, Cole†, Duffy (Emeritus), Evans, Foust, Gilbert†, Gordon (Emeritus), Griffith, Haber (Emeritus), Harlan, Henretta, Jashemski (Emerita)†, Kent, Lampe, McCusker, Merrill (Emeritus), A. Olson†, K. Olson, E. B. Smith, Sparks, Sutherland, Warren, Yaney

Associate Professors: Bedos-Frezak, Boyd, Breslow, Cooperman, Darden, Eckstein, Farrell, Flack, Friedel, Giffin, Grimsed, Gullickson, Harns, Hoffman, Holum, Kaufman, Majeska, Matossian, Mayo, Moss, Perinbam, Ridgway, Rozenblit, Spiegel, Stowasser, Sumida, Wright, Zili

Assistant Professors: Bradbury, Flynn, Nicklason, Thompson, Williams

Adjunct: Carr, Papenfuse

†Distinguished Scholar-Teacher

The Department of History seeks to broaden the student's cultural background through the study of history and to provide preparation for those interested in law, publishing, teaching, journalism, government

service, and graduate study.

A faculty advisor assists each major in planning a curriculum to meet his or her personal interests. A "program plan," approved by the advisor, should be filed with the department as soon as possible. Students are required to meet with an assigned advisor once every semester or sign a waiver during preregistration.

The department sponsors a History Undergraduate Association which majors and other interested students are encouraged to join.

### Requirements for Major

Minimum requirements for undergraduate history majors consist of thirty-nine hours of coursework distributed as follows: twelve hours in 100-200 level survey sources selected from at least two general geographical fields of history (United States, European, and Non-Western); fifteen hours, including HIST 309 in one major area of concentration (see below); twelve hours of history in at least two major areas other than the area of concentration. Without regard to area, fifteen hours of the thirty-nine total hours must be at the junior-senior (300-400) level. NOTE: All majors must take HIST 309.

#### I. Survey Courses

- The requirement is twelve hours at the 100-200 level taken in at least two geographical fields.
- Fields are defined as United States, European, and Non-Western history. All survey courses have been assigned to one of these fields. See department advisor.
- In considering courses that will fulfill this requirement, students are encouraged to:
  - select at least two courses in a sequence
  - select at least one course before A.D. 1500 and one course after A.D. 1500.
  - sample both regional and topical course offerings. Students will normally take one or more survey courses within their major area of concentration.

#### II. Major Area of Concentration

- The requirement is fifteen hours, including HIST 309, in a major area of concentration.
- An area consists of a selection of related topical, chronological, or regional courses. The areas are:

Topical	Chronological	Regional
History and Philosophy of Science	Early Modern Europe	Latin American
Intellectual	Medieval Europe	Middle Eastern
Economic	Ancient World	European
Religion		United States
Diplomatic		East Asia
Women's History		African
Afro-American		East European
Jewish		Russian
Legal		British
Military		Continental Europe

- The major area may be chronological, regional, or topical.
- Students may select both lower and upper level courses.
- A combination of chronological-topical courses or regional-topical courses is desirable.
- The proseminar, HIST 309, should normally be taken in the major area of concentration.

#### III. Twelve Hours of History in at Least Two Areas Outside the Area of Concentration

- Students may select either lower or upper level courses.
- Students are encouraged to consider regional diversity.
- Students are encouraged to take at least two courses in chronological periods other than that of their major area of concentration.

**IV. Supporting Courses Outside History** Nine credits at the 300-400 level in appropriate supporting courses; the courses do not all have to be in the same department. The choice of courses must be approved in writing (before attempted, if possible) by the Director of Undergraduate Studies.

Grade of C or higher is required in all required history and supporting courses.

For students matriculating after December 1979, credit may not be earned from the CLEP general history exam; for students matriculating

after September 1, 1981, history credit may not be earned from any CLEP exam. Advanced placement credit may be used for elective credit only.

History courses that meet university requirements (USP advanced studies, etc.) are listed in the Schedule of Classes each semester.

**Honors**

Students who major or minor in history may apply for admission to the History Honors Program during the second semester of their sophomore year. Those who are admitted to the program substitute discussion courses and a thesis for some lecture courses and take an oral comprehensive examination prior to graduation. Successful candidates are awarded either honors or high honors in history.

The History Department offers pre-honors work in American history and in European history courses. Consult the Schedule of Classes for specific offerings each semester. Students in these sections meet in a discussion group instead of attending lectures. They read widely and do extensive written work on their own. Pre-honors sections are open to any student and are recommended for students in the University Honors Program, subject only to the instructor's approval.

Course Code: HIST

**HORTICULTURE (HORT)**

**College of Agriculture**

Undergraduate Program: 2109B Holzapfel Hall, 454-3143

Professor and Chair: Gouin (Acting)

Professors: Kennedy, Oliver, Quebedeaux, Solomos, Wiley  
Professors Emeritus: Link, Scott, Shanks, Stark, Thompson, Twigg

Adjunct Professor: Anderson

Associate Professors: Beste, Bouwkamp, Deitzer, Gould, Kundt, McClurg, Ng, Schales, Schlimme, Swartz, Walsh

Adjunct Associate Professor: Gross

Assistant Professors: Graves, Hamed, Healy, Hershey, Scarfo, Stutte  
Lecturer: Mityga

Horticulture students select from a broad spectrum of courses including humanities and art, as well as the sciences. Knowledge of basic sciences and factors affecting plant growth are applied to resolve world food and environmental needs. The humanities and plant and agricultural management courses are pursued by students wishing to design functional, aesthetically pleasing living spaces.

The Department of Horticulture offers undergraduate curricula in Horticultural Production, Horticultural Science, Horticultural Education, and Landscape Design and Contracting. Each prepares students for graduate study or entry into the horticultural industries. Advanced studies in the department, leading to the M.S. and Ph.D. degrees, are available to qualified students with strong motivation for horticultural research, university teaching, and/or extension education.

Individuals interested in pursuing a continued education in forestry, conservation-related subjects, or other disciplines related to the biological/natural life sciences are advised in the Department of Horticulture. Foundation courses in the sciences transfer readily into related curricula at any of the approximately fifty universities which offer accredited undergraduate degrees in forestry. Virginia Polytechnic Institute and State University (VPI/SU) and West Virginia University (WVU) offer Maryland residents accepted into their forestry programs eligibility for in-state tuition.

Horticulture graduates are employed in commercial production and sale of horticultural crops through orchards and farms, nurseries, greenhouses, garden centers, and florist shops; production management and sales in industries such as food processing, seed production, and agricultural chemicals; interior plantscaping; technical work in laboratories conducting scientific research; and management of landscapes at public and private parks, gardens, arboreta, and large-scale commercial, industrial, or residential developments. Graduates of the landscape design and contracting option are employed by landscape contracting, nursery, and engineering firms engaged in the planning design and installation services for landscape development. Other students from this option pursue the Master of Landscape Architecture degree. The department's horticulture education option certifies students to teach horticulture at the high school level.

All students should meet with an advisor before enrolling in option courses. All horticulture students, regardless of option, must complete all courses listed as Departmental Requirements. Students must also complete all courses listed as Option Requirements in one of the department's four curriculum options.

**Curriculum in Horticulture**

**Semester  
Credit Hours**

Departmental Requirements—All Options:

AGRO 302—General Soils .....	4
AGRO 453—Weed Control .....	3
BIOL 105—Principles of Biology I .....	4
BOTN 212—Plant Taxonomy .....	4
BOTN 221—Diseases of Plants .....	4
BOTN 441—Plant Physiology .....	4
CHEM 103—General Chemistry I .....	4
CHEM 104—Fundamentals of Organic and Biochemistry or CHEM 233—Organic Chemistry I* .....	4
ENTM 252—Agricultural Insect Pests or ENTM 453—Insect Pests of Ornamental Plants** .....	3
HORT 39—8Seminar .....	1
MATH 115—Pre-calculus .....	3

\*Students interested in completing the Horticultural Science Option shall enroll in CHEM 233 rather than Chem 104. (Note: CHEM 113 is a prerequisite for CHEM 233).  
\*\*Students interested in completing the Landscape Design and Contracting Option shall enroll in ENTM 453 rather than ENTM 252.

**Horticultural Production Option**

**Semester  
Credit Hours**

AREC 250—Elements of Agricultural and Resources Economics or ECON 203—Principles of Economics II .....	3
AREC 306—Farm Management or AREC 414—Agricultural Business Management .....	3
HORT 201—Environmental Factors and Horticultural Crop Production .....	4
HORT 202—Management of Horticultural Crop Production .....	4
HORT 271—Plant Propagation .....	3
HORT 274—Genetics of Cultivated Plants .....	3
HORT 474—Physiology of Maturation and Storage of Horticultural Crops .....	3
Select two of the following:	
AGRO 310—Introduction to Turf .....	3
HORT 411—Fruit Crop Production .....	3
HORT 422—Vegetable Crop Production .....	3
HORT 432—Greenhouse Crop Production .....	3
HORT 452—Landscape Establishment and Maintenance .....	3
HORT 456—Nursery Crop Production .....	3
HORT 472—Advanced Plant Propagation .....	2
University Studies Program requirements (over and above what is included in Departmental and Option requirements) .....	27-30
Electives .....	23-27

**Horticultural Science Option**

CHEM 113—General Chemistry II .....	4
HORT 201—Environmental Factors and Horticultural Crop Production .....	4
HORT 202—Management of Horticultural Crop Production .....	4
HORT 271—Plant Propagation .....	3
HORT 274—Genetics of Cultivated Plants .....	3
HORT 474—Physiology of Maturation and Storage of Horticultural Crops .....	3
MATH 220—Elementary Calculus I .....	3
PHYS 121—Fundamentals of Physics I .....	4
Select two of the following:	
AGRO 403—Crop Breeding .....	3
AGRO 411—Soil Fertility .....	3
AGRO 417—Soil Physics .....	3
AGRO 421—Soil Chemistry .....	3
BCHM 261—Elements of Biochemistry .....	3
BOTN 416—Plant Structure .....	4
BOTN 484—Plant Biochemistry .....	3
University Studies Program Requirements (over and above what is included in Departmental and Option requirements) .....	30
Electives .....	16-17

**Horticultural Education Option**

AEEED 302—Introduction to Agricultural Education .....	2
EDIT 450—Training Aids Development .....	3

## 126 Housing and Design

AEED 305—Teaching Young and Adult Farmer Groups .....	1
AEED 311—Teaching Secondary Vocational Agriculture .....	3
AEED 313—Student Teaching .....	5
AEED 315—Student Teaching .....	1-4
AGRO 310—Introduction to Turf .....	3
EDHD 300—Human Development and Learning .....	6
EDPA 301—Foundations of Education .....	3
HORT 160—Introduction to the Art of Landscaping .....	3
HORT 201—Environmental Factors and Horticultural Crop Production .....	4
HORT 202—Management of Horticultural Crop Production .....	4
HORT 271—Plant Propagation .....	3
HORT 453—Woody Plant Materials or HORT 454—Woody Plant Materials .....	3
SPCH 107—Technical Speech Communication .....	3
University Studies Program requirements (over and above what is included in Departmental and Option requirements) .....	27
Electives .....	6-9
<b>Landscape Design and Contracting Option</b>	
AREC 250—Elements of Agricultural and Resource Economics or ECON 203—Principles of Economics II .....	3
AREC 306—Farm Management or AREC 414—Agricultural Business Management .....	3
APDS 101—Fundamentals of Design .....	3
EDIT 160—Design Illustrating I .....	3
HORT 160—Introduction to the Art of Landscaping .....	3
HORT 260—Principles of Graphic Communication in Landscape Design .....	2
HORT 361—Principles of Landscape Design .....	3
HORT 452—Principles of Landscape Establishment and Maintenance .....	3
HORT 453—Woody Plant Materials .....	3
HORT 454—Woody Plant Materials .....	3
HORT 462—Planting Design .....	3
HORT 464Z—Principles of Landscape Development HORT 465—Design of Landscape Structures and Materials .....	3
HORT 466—Advanced Landscape Design .....	3
HORT 467—Principles of Landscape Contracting .....	3
Electives .....	8-12

The Department of Housing and Design offers programs of concentration in three areas: housing, interior design, and advertising design. The department seeks to provide professionally focused instruction in the theoretical foundation, methods and skills pertinent to each concentration area. In addition, students are encouraged to acquire a broad base of general education by enrolling in elective, recommended, and required courses outside of the department.

### Housing

The housing curriculum is designed to reflect the multidisciplinary nature of the field as well as the varied interests of housing majors. Consequently, students under the close supervision and advisement of the faculty are given the opportunity to develop a program suitable to their interests and career goals. Aside from the required housing courses provided by the department, students are recommended to take courses that will emphasize the development of methodological skills (e.g., statistics, computer programming), as well as an understanding of the political, social, and economic environment in which housing is produced and consumed. Graduates will be qualified for employment in the housing industry, governmental housing agencies, housing authorities, and consumer organizations. They will also be qualified to pursue a program of graduate studies in housing or urban affairs.

### Interior Design

This program provides the student with fundamental concepts and basic professional skills required to plan and design interior environments. These include not only aesthetic considerations, but also the integration of structural and mechanical building systems, the satisfaction of functional requirements, an understanding of the needs and motivations of the users and sponsors, considerations of cost, and compliance with codes and regulations. Functional and imaginative applications of design skills to space planning and furnishing of commercial, institutional, and residential interiors are stressed. Special courses include gaming simulation in design and seminars in theoretical concerns. A student chapter of the professional organization American Society of Interior Design (ASID) and internship opportunities provide contact with practicing professionals. Graduates will be qualified for entry level employment with interior design firms and architectural firms. Students with above average performance will be qualified to pursue graduate study. After considerable experience has been trained in professional practice, some graduates will open their own firm or partnership.

### Advertising Design

This program provides a foundation in the fields of graphic and visual communication. Although some of the media used in visual communication are the same as those of the painter and the sculptor, the purposes and methods of the designer differ from those of the artist in that utility is the focus of this endeavor. Visual elements such as lines, planes, volume, texture, and color are used to generate information and to communicate messages. This process requires the acquisition of specific professional skills such as page composition, type selection, illustration, photography, design of orientation systems, and the use of complex technology in contemporary printing and electronic media. Students graduating from this program will be qualified to begin a career as graphic designers and seek employment in publishing firms, advertising agencies, the film and television industry, the print media, the packaging industry, and in the graphic section of institutions and government agencies. Students with above average performance will be qualified to pursue graduate study. A student chapter of the professional organization I. G. I. and internship opportunities provide contacts with practicing professionals.

### Admission to the Pre-Design Major

Any student who has been admitted to the University may declare a pre-design major. However, admission to the University or to the pre-design major does not guarantee admission to the interior design or advertising design major. Admission to these two majors is governed by the "Selective Admission" procedure outlined below.

### Admission to the Interior Design and Advertising Design Majors:

1. Admission to the majors of Interior Design and Advertising Design is selective. Ordinarily, students are admitted to these majors after a Design Work Portfolio has been reviewed. The Faculty Admission Committee composed of the three Area Coordinators and the Department Chairperson reviews portfolios and ranks them by

## Fieldwork and Internship Opportunities

Many varied internship experiences are available to meet the needs and interests of individual students. Contact the Internship Coordinator, Dr. D. Hershey, 454-2356, for further information.

## Honors and Awards

The department sponsors several scholarship and award programs. Contact Dr. F. Gouin, 454-3614, for details.

## Student Organizations

The Horticulture Club provides students the opportunity to gain horticultural experience, meet new colleagues, and participate in departmental activities. Contact the club advisor, Dr. W. Graves, 454-4311, for more information. Pi Alpha Xi is an honorary organization for qualified students in horticulture. Dr. D. Hershey, 454-2356, can provide additional information.

Course Code: HORT

## HOUSING AND DESIGN (HSAD)

### College of Arts and Humanities

1401 Marie Mount Hall, 454-2135

Associate Professor and Chair: Chen (Acting)  
Professors: Bonta, Fabiano, Francescato  
Associate Professors: Lozner, McWhinnie  
Assistant Professors: Ansell, Eckersley, Gips, Hoover, Thorpe  
Lecturers: Cohen (pt), Davis (pt), Dean, Jacobs, Sham, Tasi (pt), Yang (pt)



overall quality. Students whose portfolios receive the highest ranking are admitted. The portfolio must be submitted by the appropriate deadline.

In order to be eligible for a portfolio review, students must have earned a minimum of 29 credits and a grade of "C" or higher in each of APDS 101, 102, 103, and EDIT 160

In addition, students will be required to submit their portfolios within 12 months of attaining portfolio review eligibility (as defined above). A student may submit a portfolio for review no more than twice within those 12 months. If a student has not been accepted into a design major after receiving two portfolio reviews or after one year from attaining portfolio review eligibility (whichever comes first), the student will not be considered for acceptance into either design major at UMCP and must change his or her major.

2. The following students are exempted from the portfolio review requirements: Freshmen who have a 3.0 high school GPA and combined SAT score of 1200 or above; or who are National Merit and National Achievement Scholarship finalists or semi-finalists; or recipients of the Chancellor's Scholarship; or of Maryland Distinguished Scholar Award, or Benjamin Banneker Scholarship.
3. Transfer students must submit their Design Work Portfolio at the time of their application for admission to the University of Maryland or later, but in any case by the appropriate deadline.

Transfer students from Maryland Public Community Colleges (including NOVA) with an articulated design program may use transferred courses equivalent to UMCP design courses in fulfillment of "portfolio review eligibility" (as defined in point 1). Once portfolio eligibility has been achieved, transfer students (like all other pre-design students) will have 12 months, with a maximum of two attempts, to be admitted into a design major.

Students transferring from accredited institutions with which there is no articulation agreement must have design courses they have completed from that institution evaluated, for equivalency to UMCP design major requirements, on a case-by-case basis by a department advisor. Courses determined to be equivalent may be used towards fulfillment of portfolio review eligibility and towards fulfillment of design major requirements. Once portfolio review eligibility is achieved, transfer students from non-articulated programs will proceed on the same basis as all other pre-design students (as explained in point 1).

Transfer students who have not completed 29 credits, or who have not completed the four required courses, or whose Design Work Portfolios have been found unsatisfactory may be admitted as "Pre-Design" students.

4. Potentially talented students who are unable to meet the above criteria may be admitted provided they have applied as a "case-by-case" student and have been accepted by the Faculty Admission Committee composed of the three Area Coordinators and the Department Chairperson. Examples of non-academic criteria on the basis of which the Committee may grant admission are: samples of the applicant's design work done in high school or community college, leadership in extracurricular or community activities, hobby skills related to Interior Design and/or Advertising Design, job related experience in the design field, Armed Forces experience in design areas, etc.
5. Students not yet admitted to the majors of Interior Design and Advertising Design are classified as "Pre-Design" students. Pre-design students will be granted preferential treatment when registering for departmental courses in which there is an enrollment limitation.
6. Admission to the Interior Design or Advertising Design majors is not automatic, even when all relevant requirements have been fulfilled. It is the student's responsibility to file a "Change of Major" form with the department by the appropriate deadline prior to the beginning of the semester in which the student plans to take 200-level-and-above courses restricted to majors only. If any of the required four courses was not taken at College Park, a transcript and approved substitution sheet (or permission to take the course at another institution) must be attached to the "Change of Major" form. This applies to courses taken at any other college or campus, including University College. No exceptions will be made to this procedure. Students will be informed by mail of action taken.

7. Deadlines for admission application (filing "Change of Major" form) and portfolio submission (must be received by 4:00 p.m.):
  - a. Fall Semester: May 23
  - b. Spring Semester: January 6
  - c. Summer Session: August 15 (for students enrolled in Summer School)
 If deadline falls on weekend, the due date is the previous Friday.)

## Advising

Pre-design students are advised in the College of Arts and Humanities, 1111 Francis Scott Key Hall, 454-2737. Design majors are advised by department faculty. Advisor assignments may be obtained in 1401 Marie Mount Hall, 454-2135.

## Degree Requirements

The degree of Bachelor Art is conferred for the satisfactory completion, with an average of C or better, of a prescribed curriculum of 120 academic semester hour credits. Students must earn a grade of C or higher in all courses applied towards satisfaction of the requirements for the major in Interior or Advertising Design. Moreover, a course in which a grade lower than a C was earned cannot be used as a prerequisite for a course required for the major.

**Please Note: The Interior and Advertising Design curricula are currently under review; students matriculating after June 1, 1990 should consult a department advisor for major requirements.**

### Advertising Design Curriculum (Advertising design courses must be taken in sequence.)

	Semester Credit Hours*
University Studies Program Requirements .....	39-40
B.A. Requirements** .....	21
ARTH 110—Elements of Drawing .....	3
EDIT 160—Design Illustrating I .....	3
APDS 101—Fundamentals of Design .....	3
APDS 102—Design II .....	3
APDS 103—Design III: Three-dimensional Design .....	3
APDS 210—Presentation Techniques .....	3
APDS 211—Action Drawing: Fashion Sketching .....	3
EDIT 234—Graphic Communications .....	3
APDS 237—Photography .....	3
APDS 320—Fashion Illustration .....	3
APDS 330—Typography and Lettering .....	3
APDS 331—Advertising Layout .....	3
APDS 332—Display Design .....	3
APDS 337—Advanced Photography .....	3
APDS 380—Professional Seminar .....	3
APDS 430—Advanced Problems in Advertising Design .....	3
APDS 431—Advanced Problems in Advertising Design .....	3
HSAD 340 or 341 or 362(courses dealing with interiors) .....	3
ARTH 450—20th Century Art (or Other Upper Level ARTH) .....	3
Electives .....	10-14
Total .....	120

### Interior Design Curriculum (Interior Design courses must be taken in sequence.)

	Semester Credit Hours
University Studies Program Requirements .....	39-40
B.A. Requirements .....	21
EDIT 160—Design Illustrating I .....	3
APDS 101—Fundamentals of Design .....	3
APDS 102—Design II .....	3
APDS 103—Design III: Three Dimensional Design .....	3
EDIT 241—Architectural Drawing .....	2
HSAD 210—Presentation Techniques .....	2
PHYS 106—Light, Perception, Photography, and Visual Phenomena .....	3
PHYS 107—Laboratory .....	1
HSAD 246—Materials of Interior Design .....	3
HSAD 340—Period Homes and Their Furnishings .....	3
HSAD 341—Contemporary Developments in Architecture, Interiors, Furnishings .....	3

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HSAD 342—Space Development .....	3
HSAD 343—Interior Design I .....	3
HSAD 344—Interior Design II .....	3
HSAD 345—Professional Aspects of Interior Design .....	3
HSAD 362—Ideas in Design or ARTH (300-400 Level) .....	3
TEXT 363—History of Textiles .....	3
HSAD 440—Interior Design III .....	4
HSAD 441—Interior Design IV .....	4
Electives .....	10-24
Total .....	120

\*No upper level credits may be attempted without special permission until a student has earned a minimum of 56 credits.

\*\*These credits may simultaneously satisfy University Studies requirements. Note: More detailed information about curriculum as well as semester-by-semester sample programs are available from the department.

Course Codes: APDS, HSAD

## HUMAN DEVELOPMENT (Institute for Child Study) (EDHD)

### College of Education

3304 Benjamin Building, 454-2034

Professor and Director: Hardy  
 Professors: Eliot, Fox, Porges, Pressley, Seeteldt, Torney-Purta  
 Associate Professors: Bennett, Flatter, Gardner, Holloway, Huebner, Marcus, Robertson-Tchabo, Tyler  
 Assistant Professors: Byrnes, Green, Hunt, Wigfield  
 Emeriti: Bowie, Dittman, Goering, Hatfield, Morgan  
 †Distinguished Scholar-Teacher

The Department of Human Development offers: (1) a variety of undergraduate courses in human development at the 300 and 400 levels, including the areas of development, learning and adjustment; (2) graduate programs leading to the M.A., M.Ed. and Ph.D. degrees and the A.G.S. certificate; and (3) field experiences and internships to develop competence in applying theory to education practice in schools and other settings. Areas of concentration in human development include infancy, early childhood, adolescence, adulthood, and aging. Research in educational psychology, social, physiological, personality and cognitive areas with emphasis on the social aspects of development enhance the instructional program.

Undergraduate courses and workshops are designed for pre-service and in-service teachers as well as for students preparing to enter human services vocations. The department does not offer an undergraduate major. However, undergraduate students may elect human development courses in areas of concentration such as (1) infancy and early childhood, (2) adolescence, (3) aging, and (4) human services (social service, recreation, corrections, etc.). Major purposes of undergraduate offerings in human development are (1) providing experiences which facilitate the personal growth of the individual, and (2) preparing people for vocations and programs which seek to improve the quality of human life. These offerings are designed to help professionals and paraprofessionals acquire a positive orientation toward people and basic knowledge and skills for helping others.

Through the Institute for Child Study, the faculty provides consultant services and staff development programs for school systems, parent groups, court systems, mental health agencies, and other organizations involved with helping relationships.

Course Code: EDHD

## HUMAN NUTRITION AND FOOD SYSTEMS (HNFS)

### College of Human Ecology

3304 Marie Mount Hall, 454-2139

Professor and Chair: Read  
 Professors: Ahrens, Moser-Veillon, Prather, Sims  
 Associate Professors: Castonguay, Jackson, Williams

Assistant Professors: Choi, Karahadian, Noble, Taylor  
 Lecturers: Curtis, Norton  
 Adjunct Professors: Failla, Hamosh, Reiser, Reynolds, Trout  
 Adjunct Associate Professors: Bhatena, Goldberg, Pao, Szepesi  
 Adjunct Assistant Professors: Behall, Conway, Deuster, Guenther, Hall-frisch, Michaelis, Miles, Monagan, Nolan, Patterson, Raiten, Rinke, Sempos  
 Affiliate Professors: Hansen, Heald  
 Affiliate Assistant Professor: McKenna  
 Visiting Professor: Winick

The area of human nutrition and food systems offers many diverse professional opportunities. Courses introduce the student to the principles of selection, preparation, and utilization of food for human health and the welfare of society. Emphasis is placed on the scientific, cultural, and professional aspects of this broad area of food and nutrition. The department offers four areas of emphasis: dietetics, experimental foods, food-service administration, and human nutrition and foods. Each program provides for competencies in several areas of work; however, each option is designed specifically for certain professional careers.

### Requirements for Major

The **Dietetics** major develops an understanding and competency in food, nutrition, and management as related to problems of dietary departments and delivery of nutritional care. Nutrition education and community nutrition are included in this program. The Dietetics program is approved by the American Dietetic Association. The Experimental Foods major develops competency in food science and food-related behavior, physical, chemical and biological sciences in relation to food are emphasized. The program is designed for students interested in product development, quality control, consumer concerns and technical research in foods.

**Foodservice Administration** emphasizes the administration of quantity food services in elementary and secondary schools, colleges, restaurants, health care facilities and corporate cafeterias. The Human Nutrition and Foods major emphasizes the physical and biological sciences in relation to nutrition and the development of laboratory skills in these areas. Students in this major frequently elect to go on to graduate or medical school.

Each of these courses of study includes a set of major subject courses offered primarily within the department, plus supporting courses taken outside the department. To graduate, students must also meet the requirements of the campus (e.g., those specified in the University Studies Program) and the College of Human Ecology.

### Grades

All students are required to earn a C grade or better in all courses applied toward satisfaction of the major. This includes all required courses with a prefix of FOOD, NUTR, and FSAD as well as certain required courses in supporting fields. A list of these courses for each program may be obtained from the department office.

### Program Requirements

#### I. Dietetics

##### a. Major Subject Courses

NUTR 200—Nutrition for Health Services .....	3
NUTR 330—Nutritional Biochemistry .....	3
NUTR 440—Advanced Human Nutrition I .....	4
NUTR 450—Advanced Human Nutrition II .....	4
NUTR 460—Therapeutic Human Nutrition .....	4
NUTR 470—Community Nutrition .....	3
NUTR 475—Dynamics of Community Nutrition .....	3
FOOD 240—Science of Food I .....	3
FOOD 250—Science of Food II .....	3
FSAD 300—Foodservice Organization and Management .....	3
FSAD 350—Foodservice Operations I .....	5
FSAD 390—Introduction to Foodservice Budgeting .....	1
FSAD 440—Foodservice Personnel Administration .....	2
Subtotal .....	41

##### b. Supporting Courses

MATH 110—Elementary Mathematical Models .....	3
or MATH 115: Pre-Calculus	
CHEM 103—General Chemistry I .....	4
CHEM 113—General Chemistry II .....	4
CHEM 233—Organic Chemistry I .....	4
BIOL 105—Principles of Biology I .....	4

ZOOL 202—Human Anatomy & Physiology II .....	4
MICB 200—General Microbiology .....	4
SPCH 100—Basic Principles of Speech .....	3
Communication or SPCH 107—Technical Speech Communication .....	
SOCY 100—Introduction to Sociology .....	3
PSYC 100—Introduction to Psychology .....	3
ECON 205—Fundamentals of Economics .....	3
EDMS 451—Introduction to Educational Statistics .....	3
or BIOM 301—Introduction to Biometrics .....	
ENGL 101—Introduction to Writing .....	3
ENGL 391—Advanced Composition .....	3
or ENGL 393—Technical Writing .....	
University Studies Program Courses .....	18
Human Ecology Courses6 .....	
Electives .....	7
Subtotal .....	79
Total Credits .....	120

**II. Experimental Foods**

a. Major Subject Courses .....	
FOOD 240—Science of Food I .....	3
FOOD 250—Science of Food II .....	3
FOOD 440—Advanced Food Science I .....	3
FOOD 445—Advanced Food Science Laboratory .....	1
FOOD 450—Advanced Food Science II .....	3
NUTR 100—Elements of Nutrition .....	3
FDSC 412—Principles of Food Processing I .....	3
or FDSC 413—Principles of Food Processing II .....	
FDSC 422—Food Product Research & Development ...	3
FDSC 430—Food Microbiology .....	2
FDSC 434—Food Microbiology Laboratory .....	2
ENAG 414—Mechanics of Food Processing .....	4
Subtotal .....	30
b. Supporting Courses .....	
MATH 115—Pre-Calculus .....	3
MATH 220—Elementary Calculus I .....	3
CHEM 103—General Chemistry I .....	4
CHEM 113—General Chemistry II .....	4
CHEM 233—Organic Chemistry I .....	4
CHEM 243—Organic Chemistry II .....	4
PHYS 121—Fundamentals of Physics I .....	4
BIOL 105—Principles of Biology I .....	4
BCHM 261—Elements of Biochemistry .....	3
MICB 200—General Microbiology .....	4
ENGL 101—Introduction to Writing .....	3
ENGL 393—Technical Writing .....	3
PSYC 100—Introduction to Psychology .....	3
SOCY 100—Introduction to Sociology .....	3
ECON 205—Fundamentals of Economics .....	3
BIOM 301—Introduction Biometrics3 or BIOM 401—Biostatistics I (4) .....	3
SPCH 100—Basic Principles of Speech Communication or SPCH 107—Technical Speech Communication .....	3
University Studies Program Courses .....	18
Human Ecology Courses .....	6
Electives .....	8
Subtotal .....	90
Total Credits .....	120

**III. Foodservice Administration**

a. Major Subject Courses .....	
FSAD 300—Foodservice Organization and Management .....	3
FSAD 350—Foodservice Operations I .....	5
FSAD 355—Foodservice Operations II .....	4
FSAD 415—Foodservice Cost Accounting .....	4
FSAD 440—Foodservice Personnel Administration .....	3
FSAD 450—Foodservice Equipment Planning .....	3
FSAD 455—Manpower Planning for Foodservice .....	3
FSAD 480—Practicum in Foodservice Administration ... or FSAD 490—Special Problems in Foodservice .....	3
FOOD 240—Science of Food I .....	3
FOOD 250—Science of Food II .....	3
FOOD 300—Economics of Food Consumption .....	3
NUTR 200—Nutrition for Health Services .....	3
NUTR 470—Community Nutrition .....	3
Subtotal .....	41
b. Supporting Courses .....	
MATH 110—Elementary Mathematical Models .....	3
or MATH 115—Pre-Calculus .....	
CHEM 103—General Chemistry I .....	4

CHEM 104—Fundamentals of Organic & Biochemistry .....	4
BIOL 105—Principles of Biology I .....	4
MICB 200—General Microbiology .....	4
ZOOL 202—Human Anatomy & Physiology II .....	4
ECON 205—Fundamentals of Economics .....	3
BMGT 220—Principles of Accounting I .....	3
BMGT 362—Labor Relations .....	3
or ECON 370—Labor Markets, Human Resources, and Trade Unions Data Processing or Statistics .....	3
SPCH 100—Basic Principles of Speech Communication or SPCH 107—Technical Speech Communication .....	3
SOCY 100—Introduction to Sociology .....	3
PSYC 100—Introduction to Psychology .....	3
ENGL 101—Introduction to Writing .....	3
ENGL 391—Advanced Composition .....	3
or ENGL 393—Technical Writing .....	
University Studies Program Courses .....	18
Human Ecology Courses .....	6
Electives .....	5
Subtotal .....	79
Total Credits .....	120

**IV. Human Nutrition and Foods**

a. Major Subject Courses .....	
NUTR 200—Nutrition for Health Services .....	3
NUTR 440—Advanced Human Nutrition I .....	4
NUTR 450—Advanced Human Nutrition II .....	4
FOOD 240—Science of Food I .....	3
FOOD 250—Science of Food II .....	3
FOOD 440—Advanced Food Science I .....	3
FOOD 445—Advanced Food Science Laboratory .....	1
Subtotal .....	21
b. Supporting Courses .....	
MATH 115—Pre-Calculus .....	3
MATH 220—Elementary Calculus I .....	3
CHEM 103—General Chemistry I .....	4
CHEM 113—General Chemistry II .....	4
CHEM 233—Organic Chemistry I .....	4
CHEM 243—Organic Chemistry II .....	4
ZOOL 211—Cell Biology and Physiology .....	4
ZOOL 422—Vertebrate Physiology .....	4
PHYS 121—Fundamentals of Physics I .....	4
BCHM 461—Biochemistry I .....	3
BCHM 463—Biochemistry Laboratory I .....	2
BCHM 462—Biochemistry II .....	3
MICB 200—General Microbiology .....	4
BIOM 301—Introduction to Biometrics .....	3
ENGL 101—Introduction to Writing .....	3
ENGL 393—Technical Writing .....	3
PSYC 100—Introduction to Psychology .....	3
SOCY 100—Introduction to Sociology .....	3
SPCH 100—Basic Principles of Speech Communication or SPCH 107—Technical Speech Communication .....	3
ECON 205—Fundamentals of Economics .....	3
University Studies Program Courses .....	18
Human Ecology Courses .....	6
Electives .....	8
Subtotal .....	99
Total .....	120

**Advising**

Department advising is mandatory. Students should consult the current Undergraduate Catalog and also see an appropriate departmental advisor when planning their course of study. Information on advising may be obtained by calling the department office, 454-2139.

**Financial Assistance**

The department has collaborative arrangements for hourly employment with nearby government agencies and can provide suggestions for a wide variety of opportunities in hospitals, industry, and other locations. Call 454-2139 for more information.

**Honors and Awards**

The HNFS Department offers yearly awards for Outstanding Sophomore, Outstanding Junior, Outstanding Senior, Outstanding Graduate Student,

## 130 Industrial, Technological and Occupational Education

Outstanding Returning Student, Outstanding Self-Supporting Student, and a Special Departmental Award. Call 454-2139 for more information.

### Student Organizations

The HNFS Department has an active undergraduate club which does a number of outreach activities, sponsors speakers on career-related topics, and participates in a variety of social activities. Call 454-2139 for more information.

Course Codes: FOOD, FSAD, NUTR

## INDUSTRIAL, TECHNOLOGICAL AND OCCUPATIONAL EDUCATION (EDIT)

### College of Education

3216 J.M. Patterson Building, 454-4264

Professor and Chair: Ereksom  
Professors: Ereksom, Luetkemeyer  
Associate Professors: Beatty, Herschbach, Hultgren, Mietus, Peters, Stough, Sullivan  
Assistant Professors: Boyce, Elkins,  
Instructors: Ashley, Levy, McLaughlin, Petrina, Pozonsky, Spear, Volk, Wolfe  
Emeriti: Anderson, Hornbake, Maloy

The Department of Industrial, Technological and Occupational Education offers programs leading to teacher certification and degrees in five different fields of teacher preparation. A sixth field of study, industrial technology, is designed to prepare individuals for supervisory, management, and training positions in industry, business, and government. In addition, a technical education program is available for persons with advanced technical preparation who wish to teach in technical institutes or community colleges.

The five curricula administered by the department include: (1) business education; (2) home economics education; (3) industrial arts/technology education; (4) industrial technology; (5) vocational-technical education. Undergraduate and graduate programs leading to the degrees of Bachelor of Science, Master of Education, Advanced Graduate Specialist, Master of Arts, Doctor of Education, and Doctor of Philosophy are available.

### Advising

Advising is mandatory. Advisors are located in the J.M. Patterson Building. Call the department for additional information.

#### Business Education

Two curricula are offered for preparation of teachers of business subjects: General Business and Secretarial Education. The general business education curriculum qualifies students for teaching all business subjects except shorthand. Providing thorough training in general business, including economics, this curriculum leads to teaching positions at both junior and senior high school levels.

#### General Business Education

A program of 124 hours of university credit hours is required for a general business education major. Six hours of electives must be selected from the business field.

#### University Studies Requirements Other Academic Support Courses

MATH 111 (3)  
SPCH 100, 125 or 220 (3)

#### Content Courses

BMGT 110—Introduction to Business and Management (3)  
EDIT 114—Principles of Typewriting (2)  
EDIT 115—Intermediate Typewriting (2)  
BMGT 220, 221—Principles of Accounting I & II (3)  
ECON 201, 203—Principles of Economics I & II (USP Distributive) (3)  
EDIT 214—Office Typewriting Problems (2)  
EDIT 215—Survey of Office Machines (3)

BMGT 380—Business Law (3)  
BMGT 301—Introduction to Data Processing (3)  
BMGT 302—Information Systems Implementation Techniques (3)  
BMGT 350—Marketing Principles and Organization (3)  
EDIT 406—Word Processing (3)  
EDIT 415—Financial and Economic Education I (3)  
EDIT 416—Financial and Economic Education II (3)

#### Professional Courses

EDIT 270—Field Experiences (3)  
\*EDHD 300S—Human Development and Learning (6)  
EDIT 485—Field Experiences in Business Education (3)  
\*EDPA 301—Foundations in Education (3)  
\*EDIT 340—Methods of Teaching Office Skills (3)  
\*EDIT 341—Curriculum, Instruction and Observation—Business Education (3)  
\*EDCI 390—Principles and Methods of Secondary Education (3)  
\*EDIT 432—Student Teaching (12)  
\*Requires Admission to Teacher Education

#### Secretarial Education

The secretarial education curriculum is adapted to the needs of those who wish to become teachers of shorthand as well as other business subjects. A program of 127 hours of university credit is required for a secretarial education major. Nine hours of electives must be selected from the field of business.

#### University Studies Requirements Other Academic Support Courses

SPCH 220/Group Discussion (3)

#### Content Courses

EDIT 114—Principles of Typewriting (it exempt, BMGT 110) (2)  
EDIT 115—Intermediate Typewriting (2)  
EDIT 116, 117—Principles of Shorthand I, II (3)  
BMGT 220, 221—Principles of Accounting I & II (3)  
ECON 201, 203—Principles of Economics I & II (USP Distributive) (3)  
EDIT 214—Office Typewriting Problems (2)  
EDIT 215—Survey of Office Machines (3)  
EDIT 216—Advanced Shorthand and Transcription (3)  
EDIT 304—Administrative Secretarial Procedures (3)  
BMGT 380—Business Law (3)  
EDIT 406—Word Processing (3)  
EDIT 405—Business Communications (3)  
BMGT 301—Introduction to Data Processing (3)

#### Professional Courses

EDIT 270—Field Experiences in Education for Business and Industry (3)  
\*EDHD 300S—Human Development and Learning (6)  
\*EDPA 301—Foundations of Education (3)  
EDIT 485—Field Experiences in Business Education (3)  
\*EDIT 340—Methods of Teaching Office Skills (3)  
\*EDIT 341—Curriculum, Instruction and Observation—Business Education (3)  
\*EDCI 390—Principles and Methods of Secondary Education (3)  
\*EDIT 432—Student Teaching (12)  
\*Requires Admission to Teacher Education.

#### Home Economics Education

The home economics curriculum is designed for students who are preparing to teach home economics and includes study in each area of home economics and of the supporting disciplines.

A major in Home Economics Education requires 128 university credit hours. The major is an intensive program which includes required courses in academic support, content, and professional areas. A nine-hour area of concentration designed to give the student expertise in some special facet of home economics must be completed with the approval of an advisor. No upper level credits can be attempted until a student has earned a minimum of fifty-six credits.

#### University Studies Program Requirements Other Academic Support Courses

CHEM 103 (4)  
SPCH 100, 107 or 125 (3)  
PSYC 100—Introduction to Psychology (3)  
SOCY 100—Introduction to Sociology (3)  
BIOL 101—Concepts of Biology (3)  
ECON 205—Fundamentals of Economics (3)

**Content Courses**

TEXT 205—Intro. to Textile Materials or TEXT 105—Textiles in Contemporary Living (3)  
 NUTR 100—Elements of Nutrition (3)  
 APDS 101—Fundamentals of Design or ARTE 101—Introduction to Art Education (3)  
 FMCD 250—Decision-Making in Family Living (3)  
 HSAD 240—Design and Furnishings in the Home (3) or HSAD 251—Family Housing (3)  
 EDHD 411—Child Growth and Development (3)  
 FOOD 210—Scientific Principles of Food Preparation and Management (4)  
 TEXT 211—Apparel or TEXT 222—Apparel II (3)  
 FMCD 330—Family Patterns or FMCD 105 (3)  
 SOCY 443—The Family and Society or FMCD 441 (3)  
 FMCD 445—Family and Household Management (3)

**Professional Courses**

EDIT 207—Bases for Curriculum Decisions in Home Economics (3)  
 \*EDHD 300—Human Development and Learning (6)  
 EDIT 435—Curriculum Development in Home Economics (3)  
 EDIT 436—Field Experience in Analysis of Child Development Lab (3)  
 \*EDPA 301—Foundations of Education (3)  
 EDIT 493—Home Economics for Special Need Learners or EDSP 470—Introduction to Special Education (3)  
 \*EDCI 390—Principles and Methods of Secondary Education (3)  
 EDIT 342—Curriculum, Instruction, and Observation/Home Economics (3)  
 EDIT 442—Student Teaching in Secondary Schools/Home Economics (12)  
 \*Requires Admission to Teacher Education

**Industrial Arts/Technology Education**

This industrial arts/technology education curriculum prepares persons to teach industrial arts/technology education at the middle and secondary school level. It is a four-year program leading to a Bachelor of Science degree. While trade or industrial experience contributes significantly to the background of the industrial arts/technology education teacher, previous work experience is not a condition of entrance into this curriculum. Students who are enrolled in the curriculum are encouraged to obtain work in industry during the summer months. Industrial arts/technology education as a middle and secondary school subject area is a part of the general education program characterized by extensive laboratory experiences.

To obtain a bachelor's degree in Industrial Arts Education, a student must complete 128 hours of University credit. The major is intensive and involves required courses in academic support, content, and professional areas. Eight hours of elective credit should be taken with the advice of the advisor. No upper level credits can be attempted until a student has earned a minimum of fifty-six credits.

**University Studies Program Requirements****Other Academic Support Courses**

CHEM 102 or 103 (4)  
 SPCH 100 (3)  
 PHYS 111 or 112 (3)  
 ECON 205

**Content Courses**

EDIT 101—Mechanical Drawing I (2)  
 EDIT 102—Fundamentals of Woodworking (3)  
 EDIT 112—Technical Calculations (3)  
 EDIT 262—Basic Metal Machining (3)  
 EDIT 121—Mechanical Drawing II (2)  
 EDIT 202—Machine Woodworking (3)  
 EDIT 127—Fundamentals of Electricity—Electronics (3)  
 EDIT 233—Fundamentals of Power Technology (3)  
 EDIT 241—Architectural Drawing (2)  
 EDIT 227—Applications of Electronics (3)  
 EDIT 223—Arc and Gas Welding (1)  
 EDIT 210—Foundry (1)  
 EDIT 226—Fundamental Metal-Working Processes (3)  
 EDIT 234—Graphic Communications (3)

**Professional Courses**

EDIT 270—Field Experience (3)  
 \*EDHD 300—Human Development and Learning (6)  
 \*EDPA 301—Foundations of Education (3)  
 EDIT 311—Lab Practicum in Industrial Arts (3)  
 \*EDCI 390—Principles and Methods of Secondary Education (3)  
 EDIT 344—Curriculum, Instruction and Observation (3)

\*EDIT 422—Student Teaching (12)  
 EDHD 451—Research and Experimentation in Ind. Arts (3)  
 EDIT 450—Training Aids Development (3)  
 EDIT 464—Laboratory Organization and Management (3)  
 EDIT 466—Educational Foundations of Industrial Arts (3)  
 \*Requires Admission to Teacher Education

**Industrial Technology**

The industrial technology curriculum is a four-year program leading to a Bachelor of Science degree. The purpose of the program is to prepare persons for jobs within industry. It embraces four major areas of competence: (a) technical competence; (b) human relations and leadership competence; (c) communications competence; and (d) social and civic competence.

To obtain a bachelor's degree in Industrial Technology, a student must complete 128 hours of university credit. The program involves required courses in academic support and content areas. Twenty-four hours of electives should be selected to create a concentration in one of the following areas:

Production and Manufacturing  
 Industrial Safety  
 Industrial Training and Human Resource Development  
 Fire Science and Industrial Safety  
 Specific Technical Specialty

No upper level credits can be attempted until a student has earned a minimum of fifty-six credits.

**University Studies Program Requirements****Other Academic Support Courses**

PSYC 100 (3)  
 SPCH 107 (3)  
 MATH 111 or MATH 220 (3)  
 PHYS 111 (3)  
 CHEM 102 or CHEM 103 (4)  
 ECON 205 (3)  
 PHYS 112 (3)

**Content Courses**

EDIT 262—Basic Metal Machining (3)  
 EDIT 101—Mechanical Drawing I (2)  
 EDIT 112—Technical Calculations or EDIT Elective (3)  
 EDIT 121—Mechanical Drawing II (2)  
 EDIT 210—Foundry (1)  
 EDIT 223—Arc and Gas Welding (1)  
 CMSC 103—Intro. to Computing for Non-Majors or  
 CMSC 110—Introductory Computer Programming (3/4)  
 EDIT 127—Fundamentals of Electricity Electronics (3)  
 EDIT 291—Introduction to Plastics Technology (3)  
 EDIT 224—Organized and Supervised Work Experience (3)  
 PSYC 361—Industrial Psychology (3)  
 EDIT 443—Industrial Safety Education I (3)  
 EDIT 465—Modern Industry (3)  
 EDIT 226—Fundamental Metalworking Processes or  
 EDIT 233—Fundamentals of Power Technology or  
 EDIT 234—Graphic Communications (3)  
 BMGT 360—Personnel Management (3)  
 EDIT 444—Industrial Safety Education II (3)  
 EDIT 425—Analysis of Industrial Training Programs I (3)  
 EDIT 324—Organized & Supervised Work Experience (3)  
 BMGT 362—Labor Relations (3)  
 BMGT 385—Production Management or approved BMGT Elect. (3)  
 EDIT 360—Industrial Production Technology or approved BMGT Elective (3)

**Distributive Education\*\***

A major in Distributive Education prepares the student for a career in teaching at the high school level in a cooperative vocational education program. The degree requires completion of courses in three components beyond the USP program: academic support, content and professional courses. The nine credit hours of electives must be selected from BMGT or EDIT offerings. Students must apply for admission to the Teacher Education Program during the semester in which they are completing 45 credit hours.

**University Studies Program Requirement****Other Academic Support Courses**

SPCH 100 (3)

**Content Courses**

BMGT 110—Business Enterprise (3)  
 ECON 201—Principles of Economics I (3)  
 ECON 203—Principles of Economics II (3)  
 BMGT 220—Principles of Accounting I (3)  
 BMGT 221—Principles of Accounting II (3)  
 BMGT 350—Marketing Principles and Organization (3)  
 BMGT 353—Retail Management (3)  
 BMGT 354—Promotion Management (3)  
 BMGT 360—Personnel Management (3)  
 BMGT 380—Business Law I (3)  
 BMGT 455—Sales Management (3)  
 EDIT 486—Field Experience (3)  
 EDIT or BMGT Electives (9)

**Professional Courses**

EDIT 270—Field Experiences (in Education) (3)  
 \*EDHD 300S—Human Development and Learning (6)  
 EDPA 301—Foundations of Education (3)  
 EDIT 350—Methods of Teaching: Trades and Industry (3)  
 \*EDCI 390—Principles and Methods of Secondary Education (3)  
 EDIT 414—Organization and Coordination of Cooperative Education Programs (3)  
 EDSP 210—Introduction to Special Education or  
 EDSP 475—Education of the Slow Learner (3)  
 \*EDIT 482—Student Teaching: Trade and Industry (12)  
 EDIT 457—Tests and Measurements (3)  
 \*Requires Admission to Teacher Education  
 \*\*A name change to Marketing Education has been proposed but has not yet been finally approved.

**Vocational-Technical Education**

The vocational-technical programs may lead either to certification as a vocational-industrial teacher with no degree involved or to a Bachelor of Science degree, including certification. The University of Maryland is designated as the institution which shall offer the "Trades and Industries" certification courses. The courses offered are those required for certification in Maryland. The vocational-technical curriculum requires trade competence as specified by the Maryland State Plan for Vocational-Industrial Education. A person who aspires to be certified should review the state plan and contact the Maryland State Department of Education. If the person has in mind teaching in a designated school system, he or she may discuss his or her plans with the vocational-industrial education representative of that school system inasmuch as there are variations in employment and certification requirements.

**Vocational-Technical Degree Program**

The vocational-technical curriculum is a four-year program of studies leading to a Bachelor of Science degree in education. It is intended to develop the necessary competencies for the effective performance of the tasks of a vocational or occupational teacher.

To obtain a bachelor's degree in Vocational-Technical Education, a student must complete 128 hours of university credit. The major is intensive and involves required courses in academic support, content, and professional areas. Five hours of elective credit should be taken with the advice of an advisor. An additional twelve credits of electives are included if student has been exempted from study teaching on the basis of prior experiences.

Persons pursuing this curriculum must present documentary evidence of having an apprenticeship or comparable learning period and journeyman experience. This evidence of background and training is necessary in order that the trade examination phase of the curriculum may be accomplished. If sufficient trade experience is unavailable, such experience must be completed while pursuing the degree. Twenty semester hours of credit toward the degree are granted upon satisfactory completion of the trade competency examination.

Persons having completed the necessary certification courses prior to working on the degree program may use such courses toward meeting graduation requirements. However, after certification course requirements have been met, persons continuing studies toward a degree must take courses in line with the curriculum plan and University regulations. For example, junior level courses may not be taken until the student has reached full junior standing.

**University Studies Program Requirements****Other Academic Support Courses**

SPCH 100 (3)  
 ECON 205 (3)

MATH 115 (3)  
 PSYC 100 (3)  
 CHEM 103 (4)

**Content Courses**

EDIT 112—Technical Calculations (3)  
 EDIT 465—Modern Industry (3)

**Professional Courses**

EDIT 270—Field Experience (3)  
 \*EDHD 300—Human Development and Learning (6)  
 EDIT 462—Occupational Analysis and Course Construction (3)  
 EDIT 450—Training Aids Development (3)  
 EDIT 471—Principles and History of Vocational Education (3)  
 EDIT 457—Tests and Measurements (3)  
 EDIT 350—Methods of Teaching (3)  
 \*EDCI 390—Principles and Methods of Secondary Education (3)  
 EDIT 482—Student Teaching\* (12)  
 EDIT 461—Principles of Vocational Guidance (3)  
 EDIT 499—Coordination of Co-op Work Experience (3)  
 \*EDPA 301—Social Foundations of Education (3)  
 EDIT 464—Laboratory Organization and Management (3)  
 \*Requires Admission to Teacher Education

Elective courses in the technical area (shop and drawing) will be limited to courses and subjects not covered in the trade training experience. Courses dealing with advanced technology and recent improvements in field practices will be acceptable.

**Vocational-Industrial Certification**

To become certified as a trade industrial and service occupations teacher in the State of Maryland a person must successfully complete eighteen credit hours of instruction plus a three credit course in special education or mainstreaming.

The following courses must be included in the eighteen credit hours of instruction:

**Option 1**

EDIT 350—Methods of Teaching (3)  
 EDIT 464—Laboratory Organization and Management (3)  
 EDIT 457—Tests and Measurements (3)  
 EDIT 462—Occupational Analysis and Course Construction (3)  
 The remainder of the credit hours shall be met through the election of any two of the seven courses or completing one of the options:  
 EDCP 411—Mental Hygiene (3)  
 EDIT 450—Training Aids Development (3)  
 EDIT 461—Principles of Vocational Guidance (3)  
 EDIT 465—Modern Industry (3)  
 EDIT 467—Problems in Occupational Education (3)  
 EDIT 471—History and Principles of Vocational Education (3)  
 EDIT 499D—Workshop in Vocational Education (3)

**Option 2**

EDHD 300—Human Growth and Development (6)

**Option 3**

General Psychology (3)  
 Educational Psychology (3)

A person in vocational-technical education may use his or her certification courses toward a Bachelor of Science degree. A maximum of twenty semester hours of credit may be earned through examination in the trade in which the student has competence. Prior to taking the examination, the student shall provide documentary evidence of his or her apprenticeship or learning period and journeyman experience. For further information about credit examination refer to the academic regulations or consult with the department staff.

Course Code: EDIT

**JEWISH STUDIES PROGRAM****College of Arts and Humanities**

2106 Jimenez Hall, 454-7251

Professor and Director: Berlin  
 Professors: Beck, Berlin, Mintz  
 Associate Professors: Blik, Cooperman, Diner, Handelman, Rozenblit

Assistant Professors: Manekin  
Instructors: Levy, Liberman

## The Major

The Jewish Studies major provides undergraduate students with a framework for organized and interdisciplinary study of the history, philosophy, and literature of the Jews from antiquity to the present. Jewish Studies draws on a vast literature in a number of languages, especially Hebrew and Aramaic, and includes the Bible, the Talmud, medieval and modern Hebrew literature. Yiddish language and literature comprise an important sub-field.

## Requirements for Major

The undergraduate major requires forty-eight semester hours (twenty-seven hours minimum at 300-400 level) consisting of courses in the Department of Hebrew and East Asian Languages and Literatures and the History Department as well as courses in other departments.

A minimum grade of C is required in all courses offered toward major requirements. A major in Jewish Studies will normally conform to the following curriculum:

1. Prerequisite: HEBR 111, 112, 211, 212 (or placement exam)
2. Required courses: HEBR 313, 314; HIST 282, 283, and either HIST 309 or research-oriented course in Hebrew approved by advisor (at 300 level or above); one course in classical Jewish literature (200-level); one upper-level course in Hebrew literature in which the text and/or language of instruction are in Hebrew. (twenty-one credit hours).
3. Electives: fifteen credits in Jewish Studies courses. At least nine credits must be at the 300-400 level.
4. Twelve credits of supporting courses in areas outside Jewish Studies such as history, sociology, philosophy, psychology, or literature, including at least six credits at the 300-400 level, to be selected with the approval of a faculty advisor.

## Financial Assistance

The Meyerhoff Center for Jewish Studies (454-7251) offers scholarships for study in Israel. Applications for scholarships are accepted in early March.

See Hebrew entry and East Asian Studies.

## JOURNALISM (JOUR)

### College of Journalism

For information, see College of Journalism entry.

## KINESIOLOGY (KNES)

(Formerly Physical Education)

### College of Health and Human Performance

2351 PERH Building, 454-2928

Chair: Clarke  
Associate Chair: Wrenn  
Professors: Clarke, Dotson, Kelley, Sloan, Steel, Vaccaro  
Associate Professors: Clark, Hagberg, Hatfield, Hult, Hurley, Phillips, Santa Maria, Struna, Wrenn  
Assistant Professors: Arrighi, Caldwell, Chalip, Ennis, Ryder, Scott, Tyler, Vander Velden  
Instructors: Drum, Owens, Piercy, Wenhold  
Lecturer: Brown  
Emeriti: Eyler, Humphrey, Husman

The Department of Kinesiology offers two undergraduate degree programs to satisfy different needs of students. Students may choose to major in Physical Education or in Kinesiological Sciences. Descriptions of each program follow.

## Requirements for Major

This curriculum, including three certification options, prepares students

(1) for teaching physical education in the secondary schools, (2) for coaching, and (3) for leadership in youth and adult groups which offer a program of physical activity. Students are referred to the section on the College of Education for information on teacher education application procedures. The first two years of this curriculum are considered to be an orientation period in which the student has an opportunity to gain an adequate background in general education as well as in those scientific areas closely related to this field of specialization. In addition, emphasis is placed upon the development of skills in a wide range of motor activities. Further, students are encouraged to select related areas, especially in the field of biology, social sciences, psychology, health education, and recreation as fields of secondary interest. These materially increase the vocational opportunities which are available to graduates in physical education.

## Requirements for Major Including Program Options

Physical Education majors have a choice of three separate options for teacher certification: (1) kindergarten through sixth grade, (2) seventh through twelfth grade or (3) kindergarten through twelfth grade. Due to increased marketability it is recommended that students pursue the K-12 option. The specific course requirements for each option are as follows:

## Departmental Requirements/All Certification Options

	Credit Hours
University Studies Program Requirements (see the schedule of classes for more specific information) .....	43
HLTH 150—First Aid and Safety .....	2
PHYS 101 or 11 or CHEM 102 or 103 or 105 3 .....	4
KNES 180—Foundations of Physical Education .....	3
BIOL 105—Principles of Biology I .....	4
ZOOL 201, 202—Human Anatomy and Physiology I, II .....	8
EDHD 300—Human Development and Learning .....	6
KNES 300—Kinesiology .....	4
EDPA 301—Foundations of Education .....	4
KNES 314—Methods in Physical Education .....	3
KNES 333—Physical Activity for the Handicapped .....	3
KNES 385—Motor Learning and Skilled Performance .....	3
KNES 390—Practicum in Teaching Physical Education .....	3
KNES 480—Measurement in Physical Education .....	3
KNES 491—Curriculum in Physical Education .....	3
KNES Skills Laboratories* .....	17
*Students should discuss this requirement with department advisors.	

### K- 6 Certification Option

KNES 370—Motor Development .....	3
EDHD 320—Human Development through the Lifespan .....	3
EDCI 485—Student Teaching in Elementary School—Physical Education .....	8
KNES 421—Physical Education for Elementary School: A Movement Approach .....	3
KNES Electives (6 hours total), KNES 350, KNES 360, or KNES 493 .....	6
Electives .....	6-7

### 7-12 Certification Option

EDCI 390—Principles and Methods of Secondary Education .....	3
KNES 381—Prevention and Care of Athletic Injuries .....	3
EDCI 495—Student Teaching in Secondary Schools .....	8
KNES 360—Physiology of Exercise .....	3
KNES 490—Administration of Physical Education and Sport .....	3
KNES 493—History and Philosophy of Sport and Physical Education .....	3
Electives .....	4-5

### K-12 Certification Option

EDCI 390—Principles and Methods of Secondary Education .....	3
EDCI 485—Student Teaching in Elementary Schools .....	6
EDCI 495—Student Teaching in Secondary Schools .....	6
KNES 381—Prevention and Care of Athletic Injuries .....	3
KNES 421—Physical Education for Elementary School: A Movement Approach .....	3
KNES 360—Physiology of Exercise .....	3
KNES 370—Motor Development .....	3
KNES 490—Administration of Physical Education and Sport .....	3
KNES 493—History and Philosophy of Sport and Physical Education .....	3

### Admission

Admission to the Physical Education major occurs upon completion of 45 applicable credits. At that time, students apply through the College of Education by taking the California Achievement Test. Additionally, all physical education majors must have and maintain a 2.5 average to gain admittance and continue in the program.

### Student Teaching

Opportunity is provided for student teaching experience in an appropriate physical education setting. The student devotes one semester in the senior year to observation, participation, and teaching under a qualified supervising teacher in an approved Teacher Education Center or School. A University supervisor from the College of Health and Human Performance visits the student periodically and confers with the student teacher, the cooperating teacher, and the center coordinator, giving assistance when needed.

To be eligible for student teaching, students must: (1) have the recommendation of the university supervising teacher, and (2) have fulfilled all required courses for the B.S. degree except those approved by the department. The student must obtain a grade of "C" or better in all required courses.

### Uniforms

Suitable uniforms, as prescribed by the department, are required for the activity classes, teaching practicum(s) and for student teaching. These uniforms should be worn only during professional activities.

### Kinesiological Sciences Major

This curriculum offers students the opportunity to study the body of knowledge of human movement and sport, and to choose specific programs of study which allow them to pursue a particular goal related to the discipline. There is no intent to orient all students toward a particular specialized interest or occupation. This program provides a hierarchical approach to the study of human movement. First, a core of knowledge is recognized as being necessary for all students in the curriculum. These core courses are considered foundational to advanced and more specific courses. Secondly, at the "options" level, students may select from two sets of courses which they believe will provide the knowledge to pursue whatever goal they set for themselves in the future. To further strengthen specific areas of interest, students should carefully select related studies courses and electives.

### Kinesiological Sciences Degree Requirements

	Credits
<b>Freshman Year</b>	
KNES 287—Sport and American society .....	3
KNES 293 —History of Sport in America .....	3
Activity Courses* .....	6
Electives .....	3
<b>Sophomore Year</b>	
ZOOL 201, 202—Human Anatomy and Physiology .....	8
KNES 370—Motor Development .....	3
Activity Courses* .....	2
Electives .....	3
Related Studies* .....	6
<b>Junior Year</b>	
KNES 300—Kinesiology .....	4
KNES 350—Psychology of Sports .....	3
KNES 360—Physiology of Exercise .....	3
KNES 362—Philosophy of Sport .....	3
KNES 385—Motor Learning and Skilled Performance .....	3
Option* .....	3
Related Studies* .....	6
<b>Senior Year</b>	
KNES 496—Quantitative Methods .....	3
KNES 497—Independent Studies Seminar .....	3
Electives .....	7
Option* .....	9
Related Studies* .....	3

\*Students should discuss these requirements with a department advisor.

In addition to the above required courses, students must fulfill the University Studies Program. Minimum number of semester hours for degree is 120.

### Advising

Advising is strongly recommended for all students majoring in Physical Education and Kinesiological Sciences although it is not mandatory. Students are assigned a permanent faculty member to assist them with registration procedures, program updates and other information. Students are advised to follow closely the program sheets which outline the order in which courses should be taken to allow proper progression through the degree programs. Departmental contacts are: Physical Education-Lynn Owens, 454-3072; Kinesiological Sciences-Dr. Robert Tyler, 454-6252.

### Honors and Awards

The aim of the Honors Program is to encourage superior students by providing an enriched program of studies which will fulfill their advanced interests and needs. Qualified students are given the opportunity to undertake intensive and often independent studies wherein initiative, responsibility, and intellectual discipline are fostered. To qualify for admission to the program:

1. A freshman must have a "B" average in academic (college prep) curriculum of an accredited high school.
2. A sophomore must have a cumulative GPA of 3.00 in all college courses of official registration.
3. All applicants must have three formal recommendations concerning their potential, character, and other related matters.
4. All applicants must be accepted by the Faculty Honors Committee. In completing the program, all honor students must:
  - a. Participate in an honors seminar where thesis and other relevant research topics are studied.
  - b. Pass a comprehensive oral examination covering subject matter background.
  - c. Successfully prepare and defend the honors thesis.

On the basis of the student's performance in the above program, the college may vote to recommend graduation without honors, with honors, or with high honors.

### Student Organizations

All students enrolled in physical education as either teacher preparation or kinesiological sciences majors are eligible for membership in the Physical Education Student Association (PESA). The goals of PESA are: (1) to encourage participation in local, state, or regional, and national professional organization, (2) to provide opportunities for leadership through involvement in campus, community, and professional activities, (3) to promote the student and discussion of current issues, problems, and trends, (4) to assist in the acquisition of career skill competencies by application in relevant field experiences, (5) to foster a spirit of service to others through volunteer projects, and (6) to sponsor social activities and to develop effective professional relationships.

Course Code: KNES

## LINGUISTICS (LING)

### College of Arts and Humanities

1109 Mill Building, 454-7002

Professor and Chair: Lightfoot  
 Associate Professor: Hornstein  
 Assistant Professors: Gorrell, Inkelas, Lebeaux, Unagereka, Weinberg  
 Affiliate: Anderson, Burzio, Caramazza, Gasarch

The Linguistics Department offers courses on many aspects of language study and an interdisciplinary major leading to a Bachelor of Arts. Language is basic to many human activities and linguistics relates to many other disciplines which include work on language

Work on language has provided one of the main research probes in philosophy and psychology for most of the 20th century. It has taken on a new momentum in the last thirty years and language research has



proven to be a fruitful means to cast light on the nature of the human mind and on general cognitive capacity. Several courses focus on a research program which takes as a central question: How do children master their native language? Children hear many styles of speech, variable pronunciations and incomplete expressions, but, despite this flux of experience, they come to speak and understand speech effortlessly, instantaneously and subconsciously. Research aims to discover how this happens, how a person's linguistic capacity is represented in the mind, and what the genetic basis for it is. Students learn how various kinds of data can be brought to bear on their central question, how that question influences the shape of technical analyses.

## The Major

The major program in Linguistics is designed for students who are primarily interested in human language per se, or in describing particular languages in a systematic and psychologically plausible way, or in using language as a tool to reveal some aspect of human mental capacities. Such a major provides useful preparation for professional programs in foreign languages, language teaching, communication, psychology, speech pathology, artificial intelligence (and thus computer work).

## Requirements for Major

Students obtain a Bachelor of Arts in Linguistics by following one of two tracks: "Grammars and Cognition" or "Grammatical Theory and Language". In each case, students take a common core of LING courses: LING 200, 240, 311-312, 321-322. Beyond this core, students must specialize by completing an additional nine hours in LING plus one of the following: either eighteen hours from selected courses in HESP, PHIL and PSYC, or eighteen hours in a particular language. The specializations in detail are:

### Grammars and Cognition

LING 440—Grammars and Cognition  
Two 300/400 LING electives  
PHIL 466—Philosophy of Mind  
HESP 400—Speech and Language Development in Children  
OR HESP 498—Seminar in Psycholinguistics  
PSYC 442—Psychology of Language  
Three 300/400 electives in HESP, PHIL, PSYC or CMSC

### Grammatical Theory and a Language

LING 410—Grammars and Meaning and LING 411—Comparative Syntax OR  
LING 420—Word Formation and LING 412—Advanced Phonology  
LING 300/400 elective  
Five required courses in the language of specialization.  
A course in the history or structure of the language of specialization.

When possible, the language of specialization should be the same as the one used to satisfy the college Foreign Language Requirement. The specialization normally includes those courses that make up the designated requirement for a major in the chosen language. Special provision may be made for students who are native speakers of a language other than English and wish to conduct analytical work on the grammar of that language. A student may also study grammatical theory and English; the eighteen hour concentration in English consists of courses in the history and structure of English to be selected in consultation with the student's Linguistics advisor.

For a double major, students need twenty-seven credits in Linguistics, which normally include the LING courses for one of the two specializations.

Course Code: LING

## MANAGEMENT AND ORGANIZATION

For information, see College of Business and Management entry.

## MANAGEMENT SCIENCE AND STATISTICS

For information, see College of Business and Management entry.

## MARKETING

For information, see College of Business and Management entry

## MATHEMATICS (MATH)

### College of Computer, Mathematical and Physical Sciences

3207 Mathematics Building, 454-2834  
Undergraduate Office, 454-2746

Professor and Chair: Markley

Professors: W. Adams, Alexander, Antman, Arnold, Auslander, Babuska\*\*\*, Benedetto, Berenstein, Brin, Chu, J.Cohen, Cook, Cooper, Correl, Edmundson\*, Ehrlich, Evans, Fey\*\*, Fitzpatrick, Freidlin, Goldberg, Goldhaber, Gray, Greenberg, Grove, Gulick, Herb, Horvath, Hubbard\*\*\*, Hummel, Johnson, Kagan, Kellogg\*\*\*, King, Kirwan, Kleppner, Kudla, Kueker, Lay, Lehner, Lipsman, Liu, Lopez-Escobar, Mikulski, Millson, Neri, Oliver\*\*\*, Osborn, Owings, Rosenberg, Rudolph†, Schafer, Slud, Sweet, Syski, Vogelius, Washington, Wei, Wolfe, Wolpert, Yacobson, Yang, Yorke\*\*\*, Zagier, Zedek

Associate Professors: Berg, Boyle, Coombes, Dancis, Ellis, Glaz, Goldman, Green, Hamilton, Helzer, Jones, Kedem, Maddocks, Sather, Schneider, Smith, Warner, Winkelkemper

Assistant Professors: J. Adams, Chang, Currier, Fakhre-Zakeri, Grillakis, Laskowski, Lee, Li, Nochetto, Wang, Wu

Professors Emeriti: Brace, L. Cohen, Douglis, Good, Heins, Jackson, Pearl, Stellmacher

Affiliate Professors: Stewart, Young, O'Leary

Instructors: Alter, Cleary

†Distinguished Scholar-Teacher

\*\*Joint Appointment: Department of Computer Science

\*\*\*Joint Appointment: Department of Curriculum and Instruction

†††Joint Appointment: IPST

The program in mathematics leads to a degree of Bachelor of Science in mathematics and offers students training in the mathematical sciences in preparation for graduate work, teaching and positions in government or industry.

## Requirements for Major

Each mathematics major must complete, with a grade of C or better in each course, the following:

- The introductory sequence MATH 140, 141, 240, 241 or the corresponding honors sequence MATH 250, 251.
- Eight MATH/MAPL/STAT courses at the 400 level or higher, at least four of which are taken on the College Park campus. The eight courses must include:
  - At least one course from MATH 401, 403, 405.
  - At least one course from MATH 246, 414, 415, 436, 462. If MATH 246 is chosen, it will not count as one of the eight upper level courses.
  - One course from MAPL 460, 466. (This assumes knowledge of CMSC 110 or equivalent.)
  - MATH 410 (completion of MATH 250-251 exempts the student from this requirement and (e) below; students receive credit for two 400 level courses).
  - A one-year sequence which develops a particular area of mathematics in depth, chosen from the following list:
    - MATH 410-411
    - MATH 403-404
    - MATH 446-447
    - STAT 410-420.
  - The remaining 400 level MATH/MAPL/STAT courses are electives, but cannot include any of: MATH 400, 461, 478-488, or STAT 464. EDCI 451 may be used to replace one of the upper level elective courses. Also, students with a strong interest in applied mathematics may, with the approval of the Undergraduate Office, substitute two courses (with strong mathematics content) from outside the Mathematics Department for one upper level elective course.
- One of the following supporting three course sequences. These are intended to broaden the student's mathematical experience. Other sequences might be approved by the Undergraduate Office but they would have to make use of mathematical ideas, comparable to the sequences on this list.

- (a) i) PHYS 161, 262, 263
- ii) PHYS 171, 272, 273
- iii) PHYS 141, 142, and an upper level physics course approved by the Mathematics Department
- (b) ENES 110, PHYS 161, ENES 220
- (c) i) CMSC 112, 113, and one of CMSC 211, 220
- ii) CMSC 112, 150, 251
- (d) CHEM 103, 113, 233
- (e) ECON 201, 203, and one of ECON 405 or 406
- (f) BMGT 220, 221, 340.

Within the Department of Mathematics there are a number of identifiable areas which students can pursue to suit their own goals and interests. They are briefly described below. Note that they do overlap and that students need not confine themselves to one of them.

1. Pure mathematics: the courses which clearly belong in this area are: MATH 402, 403, 404, 405, 406, 410, 411, 414, 415, 417, 430, 432, 433, 436, 444, 446, 447, STAT 410, 411, 420. Students preparing for graduate school in mathematics should include MATH 403, 405, 410 and 411 in their programs. MATH 463 (or 660) and MATH 432 (or 730) are also desirable. Other courses from the above list and graduate courses are also appropriate.
2. Secondary teaching: the following courses are required to teach mathematics at the secondary level: MATH 402 or 403, 430 and EDCI 451. (EDCI 451 is acceptable as one of the eight upper level math courses required for a mathematics major.) These additional courses are particularly suited for students preparing to teach: MATH 406, 444, 463, STAT 400 and 401, EDHD 300, EDPA 301, EDCI 350 or 455, and EDCI 390 are necessary to teach; before registering for these courses, the student must apply for and be admitted to teacher education.
3. Statistics: For a student with a Bachelor of Arts seeking work requiring some statistical background, the minimal program is STAT 400-401. To work primarily as a statistician, one should combine STAT 400-401 with at least two more statistics courses, most suitably, STAT 440 and STAT 450. A stronger sequence is STAT 410, 420, 450. This offers a better understanding and wider knowledge of statistics and is a general purpose program (i.e., does not specify one area of application). For economics applications STAT 400, 401, 440, 450, and MAPL 477 should be considered. For operations research MAPL 477 and/or STAT 411 should be added or perhaps substituted for STAT 450. To prepare for graduate work, STAT 410 and 420 give the best background, with STAT 411, 440, 450 added at some later stage.
4. Computational mathematics: there are a number of math courses which emphasize the computational aspects of mathematics including the use of the computer. They are MAPL 460, 466, 467, 477, and MATH 475. Students interested in this area should take CMSC 112, 113 as early as possible, and CMSC 420, 211 are also suggested.
5. Applied mathematics: the courses which lead most rapidly to applications are the courses listed above in 3 and 4 and MATH 401, 414, 415, 436, 462, 463, 464, and MATH MAPL 472 and 473. A student interested in applied mathematics should obtain, in addition to a solid training in mathematics, a good knowledge of at least one area in which mathematics is currently being applied. Concentration in this area is good preparation for employment in government and industry or for graduate study in applied mathematics.

## Advising

Advising for math majors is mandatory. Students are required to sign up for an advising appointment at the math undergraduate office window (1117 Mathematics Building), beginning the week before preregistration.

## Language

Since most of the non-English mathematical literature is written in French, German or Russian, students intending to continue studying mathematics in graduate school should obtain a reading knowledge of at least one of these languages.

## Honors

The Mathematics Honors Program is designed for students showing exceptional ability and interest in mathematics. Its aim is to give a student the best possible mathematics education. Participants are selected by the Departmental Honors Committee during the first semester of their junior year. To graduate with honors in mathematics they must pass a final

written and oral comprehensive examination. Six credits of graduate work or three credits in a graduate course and three credits of independent study in mathematics approved by the Honors Committee are also required. The rest of the program is flexible. Independent work is encouraged and can be done in place of formal coursework.

The department also offers a special mathematics department honors calculus sequence (MATH 250.251) for promising freshmen with a strong mathematical background (including calculus). Enrollment in the sequence is normally by invitation but any interested student may apply to the Mathematics Departmental Honors Committee for admission.

Participants in the University Honors Program may also enroll in special honors sections of the regular calculus sequence (MATH 140H, 141H, 240H, 241H). They may also enroll in the honors calculus sequence if invited by the Mathematics Departmental Honors Committee. However, the mathematics departmental honors calculus sequence and the General Honors Program are distinct, and enrollment in one does not imply acceptance in the other.

Neither honors calculus sequence is a prerequisite for participating in the Mathematics Honors Program, and students in these sequences need not be mathematics majors.

## Awards

Aaron Strauss Scholarships. Up to two are awarded each year to outstanding junior Math Majors. The recipient receives full remission of (in-state) tuition and fees. Applications may be obtained early in the spring semester from the Mathematics Undergraduate Office, 1117 Mathematics Building, Higginbotham Prize. An award (up to \$500) is made to an outstanding senior math major in the spring.

## Placement in Mathematics Courses

The Department of Mathematics has a large offering to accommodate a great variety of backgrounds, interests, and abilities. The department permits students to take any course for which they have the appropriate background, regardless of formal coursework. For example, students with a high school calculus course may be permitted to begin in the middle of the calculus sequence even if they do not have advanced standing. Students may obtain undergraduate credit for mathematics courses in any of the following ways: passing the appropriate CEEB Advanced Placement Examination, passing standardized CLEP examinations, and through the department's Credit-by-Examination. Students are urged to consult with advisors from the Department of Mathematics to assist with proper placements.

## Statistics and Probability, and Applied Mathematics

Courses in statistics and probability and applied mathematics are offered by the Department of Mathematics. These courses are open to non-majors as well as majors, and carry credit in mathematics. Students wishing to concentrate in the above may do so by choosing an appropriate program under the Department of Mathematics.

Course Codes: MATH, STAT, MAPL

## MATHEMATICS EDUCATION

Students completing an undergraduate major in astronomy, physics, physical sciences, or in math, or who may be enrolled in the College of Education, may prepare to teach astronomy, physics, physical science, or math. Early contact should be made with either Dr. John Layman (astronomy, physics, physical sciences) or Dr. James Fey (mathematics). See also the entry on the College of Education in this catalog.

## MEASUREMENT, STATISTICS AND EVALUATION (EDMS)

### College of Education

4107 Benjamin Building, 454-3747

Professor and Chair: Lissitz  
Professors: Dayton, Macready, Stunkard

Associate Professors: Benson, Johnson, Schaler  
 Assistant Professor: DeAyala

## For Advanced Undergraduates and Graduates

The Department of Measurement, Statistics and Evaluation offers courses in measurement, applied statistics, and algorithmic methods for undergraduates. The department is primarily graduate oriented and offers programs at the master's and doctoral level for persons with quantitative interests from a variety of social science and professional backgrounds. In addition, a doctoral minor is offered for students majoring in other areas. The doctoral major is intended primarily to produce individuals qualified to teach courses at the college level in applied measurement, statistics and evaluation, generate original research and serve as specialists in measurement, applied statistics or evaluation in school systems, industry or government. The masters level program is designed to provide individuals with a broad range of data management, analysis and computer skills necessary to serve as research associates in academia, government, and business. At the doctoral level, a student may choose a specialty within one of three areas: applied or theoretical measurement, applied statistics, and program evaluation.

Course Code: EDMS

## MECHANICAL ENGINEERING (ENME)

### College of Engineering

2181 Engineering Classroom Building, 454-2410

Chair: Fourney

Associate Chair: Walston

Professors: Allen (PT), Anand, Armstrong, Berger, Buckley, Cunniff, Dally, Dieter, Durelli (PT), Fourney, Gupta, Holloway, Irwin (PT), Kirk, Koh, Magrab, Marcinkowski, Marks (PT), Sallet, Sanford, Sayre (PT), Shreeve (PT), Talaat, Wallace, Yang

Associate Professors: Barker, Bernard, Dick (PT), diMarzo, Duncan, Harhalakis, Krayerman (PT), McCaffrey, Pecht, Radermacher, Shih, Tsai, von Kerczek, Walston

Assistant Professors: Abdelhamid, Anjanappa, Azarm, Bigio, Chen, Dasgupta, Gore, Haslach, Herold, Humphrey, Khan, Marasli, Minis, Ohadi, Piomelli, Rao, Sirkis, Ssemakula, Tsasch, Tsui, Wilner, Zhang

Visiting Professors: Srinath, Yanushevsky

Visiting Associate Professor: Pourbabai

Senior Lecturer: Russell

Emeriti: Jackson, Shreeve, Weske

Lecturers: Bedewi, Case, Cook, Etheridge, Peltzman, Richter, Wang,

Research Associates: O'Hara, Pavlin, Yudaya, Zhang

Assistant Research Scientist: Pandelidis

Instructor: Manion

### The Major

The primary function of the mechanical engineer is to create devices, machines, structures, or processes which are used to advance the welfare of people. Design, analysis, synthesis, testing, and control are the essential steps in performing this function. Certain aspects of the science and art of engineering are of particular importance to achieve a successful product or service. Some of these aspects are those relating to the generation and transmission of mechanical power, the establishment of both experimental and theoretical models of mechanical systems, computer interfacing, the static and dynamic behavior of fluids, system optimization, and engineering and production management.

Because of the wide variety of professional opportunities available to the mechanical engineer, the curriculum is designed to provide students with a thorough training in fundamentals. These include: physics, chemistry, mathematics, computers, mechanics of solids and fluids, thermodynamics, materials, heat transfer, controls, and design. The curriculum includes basic laboratory courses in fluid mechanics, materials engineering, electronic instrumentation and measurements, and a senior laboratory which provides an introduction to professional research and evaluation procedures. Students are introduced to the concept of design via machine design and energy conversion design courses, and seniors participate in a comprehensive design course during their final semester which is frequently linked with an advisor and a problem from industry. This experience helps students anticipate the type of activities likely to be encountered after graduation and also helps to establish valuable contacts with professional engineers.

In order to provide flexibility for students to follow their own interests in Mechanical Engineering, students may choose to concentrate in either mechanical design or energy design in their senior year. In addition, seniors may choose from a wide variety of elective courses such as courses in robotics, computer-aided design, computer-aided manufacturing, electronic packaging, microprocessor theory, ocean engineering, finite element analysis, heating ventilation and air conditioning, solar energy, combustion, advanced fluid flow, and advanced mechanics, to list only a few. A small number of academically superior undergraduate students are able to participate in Special Topic Problems courses in which a student and faculty member can interact on a one-to-one basis.

### Requirements for Major

The Freshman curriculum is the same for all Engineering departments and programs. Please consult The College of Engineering entry.

	Semester	
	Credit	Hours
<b>Sophomore Year</b>	I	II
University Studies Requirements .....	3	3
Math 241—Calculus III .....	4	
Math 246—Differential Equations .....		3
PHYS 262—Physics .....	4	
PHYS 263—Physics .....		4
ENES 220—Mechanics of Materials .....	3	
ENES 221—Dynamics .....		3
ENME 201—M E Project .....		1
ENME 205—Engineering Analysis and Computer Programming .....	3	
ENME 217—Thermodynamics .....		3
<b>Total .....</b>	<b>17</b>	<b>17</b>

### Junior Year

University Studies Requirements .....	3	6
ENEE 300—Elect. Engr .....	3	
ENEE 301—E. E. Lab .....	1	
ENME 310—Mech. Def. Solids .....		3
ENME 311—Def. Solids Lab .....		1
ENME 315—Inter. Thermo .....	3	
ENME 321—Trans. Proc .....		3
ENME 342—Fluid Mech .....	3	
ENME 343—Fluids Lab .....	1	
ENME 360—Dyn. of Mach .....	3	
ENME 381—Meas. Lab .....		3
<b>Total .....</b>	<b>17</b>	<b>16</b>

### Senior Year

University Studies Requirements .....	3	3
ENME 401—Mett. Sci. .....	3	
ENME 403—Auto. Controls .....	3	
ENME 404—M.E. Sys. Des .....		4
ENME 480—Engr. Exp .....	3	
Tech. Elect .....		3
Design Tech. Elect .....		3
<b>Core Option</b>		
ENME 400 .....	3	
ENME 405 .....	3	
or		
<b>Thermal Fluids</b>		
ENME 405 .....	3	
Design Tech. Elect .....	3	
or		
<b>Solids-systems</b>		
ENME 400 .....	3	
Design Tech. Elect .....	3	
<b>Total .....</b>	<b>15</b>	<b>16</b>

### Technical Elective Restrictions

Core Option Two electives; at least one design

Solids Systems Three electives; at least two design, and at least two from 408, 410, 411, 412, 461, 462, 464, 465, 470, 473, 475, 489K, others as approved.

Thermal Fluids: Three electives; at least two design, and at least two from 415, 422, 423, 424, 425, 442, 450, 451, 452, 453, others as approved.

### Sample Topics

- Biomedical Engineering
- Kinematic Systems of Mechanisms
- Engineering Communications
- Packaging of Electronic Systems

Ethics and Professionalism  
Patent Law  
Finite Element Analysis  
Reliability and Maintainability  
Internal Combustion Engines  
Robotics

## Admission

Admission requirements are identical to those set by the College of Engineering (see College of Engineering section on Entrance Requirements).

## Advising

All mechanical engineering students are required to meet with an advisor during registration. Contact the Undergraduate Advising Office, 2188 Engineering Classroom Building, 454-2409.

## Financial Assistance

A very limited amount of financial aid is available. Information may be obtained in the Undergraduate Advising Office.

## Honors and Awards

The Honors Program is administered through the College of Engineering. Individual honors and awards are presented based on academic excellence and extracurricular activities.

## Student Organizations

Student chapters of professional societies include the American Society of Mechanical Engineers, the Society of Automotive Engineers and the American Production Inventory and Control Society. The mechanical engineering honor society is Pi Tau Sigma. Information regarding these societies may be obtained at 2188 Engineering Classroom Building.

Course Code: ENME

## METEOROLOGY (METO)

### College of Computer, Mathematical, and Physical Sciences

2207 Computer and Space Sciences Building, 454-2708

Professor and Chair: Vernekar (Acting)  
Professors: Baer, Shukla, Thompson  
Associate Professors: Dickerson, Ellingson, Pinker, Robock, Rodenhuis  
Assistant Professors: Carton, Huffman  
Emeritus: Faller<sup>1</sup>  
<sup>1</sup>Institute for Physical Science and Technology

The Department of Meteorology offers a limited number of courses of interest to undergraduate students. Undergraduate students interested in pursuing a bachelor's degree program preparatory to further study or work in meteorology are urged to consider the Physical Sciences Program. It is important that students who anticipate careers in Meteorology consult the Physical Sciences Program advisor representing the Department of Meteorology as early as possible in their studies.

Because of its interdisciplinary nature, the study of the atmosphere requires a firm background in the basic sciences and mathematics. To be suitably prepared for 400-level courses in meteorology, the student should have the following background: either the physics major series PHYS 171375 or the series PHYS 161, 262, 263; the mathematics series MATH 140, 141, 240, 241 and either the series CHEM 103, 113 or CHEM 105, 115. See the section on course descriptions for electives in meteorology.

Students who may be preparing for graduate education in meteorology are strongly advised to pursue further coursework from among the areas of physics, applied mathematics, chemistry, computer science, and statistics to supplement coursework in meteorology. With proper counseling from the Department of Meteorology advisor, the student wishing to

graduate with an M.S. degree in meteorology may achieve that goal in five years from the inception of university studies.

Course Code: METO

## MICROBIOLOGY (MICB)

### College of Life Sciences

Microbiology Building, 454-2848

Professor and Chair: F. M. Hetrick† (Acting)  
Professors: Colwell, Cook, Joseph, Roberson, Weiner\*, Yuan  
Associate Professors: MacQuillan, Robb\*, Stein, Voll  
Assistant Professors: Benson, Capage, Instructor: Smith  
Emeritus Professors: Doetsch, Faber, Pelczar  
†Distinguished Scholar-Teacher  
\*Joint appointment with Center of Marine Biotechnology

## The Major

Microbiology is the branch of biology dealing with microscopic life-forms such as bacteria, yeast, molds, and viruses. As one of the important basic sciences, microbiology is the cornerstone of modern molecular biology and is particularly concerned with the principles of host-parasite interactions. From this perspective, microbiologists are helping to solve current world-wide problems in disease control and prevention, food production, and the environment.

The aim of the B.S. program in Microbiology is to provide students with a thorough and rigorous education that will prepare them for careers in scientific research, business and industry, or in health-related professions such as medicine and dentistry. There are many employment opportunities for microbiologists at all levels of education and professional development. Our graduates gain employment in governmental, academic, or industrial laboratories or they pursue advanced degree programs in graduate or medical schools.

Requirements for the Microbiology Major	Semester Credit Hours
University Studies Program Requirements .....	30
College of Life Sciences Core Requirements .....	38-40
MICB 200*—General Microbiology .....	4
MICB 440—Pathogenic Microbiology .....	4
Additional MICB courses** .....	16
BCHM 461, 462—Biochemistry I, II .....	6
Electives .....	20-22
*A major course that may also be taken to satisfy the University Studies requirement.	
**Either of the research problems courses MICB 399 (3 credits) or MICB 388R (1-4 credits), but not both, may be included in these sixteen credits, with a maximum of four credits permitted.	

## Suggested emphasis areas

Students wishing to pursue a Basic Microbiology major that meets American Society for Microbiology guidelines should complete the following courses: MICB 380, MICB 450, MICB 460, and MICB 470. Electives should be chosen from the following courses: CMSC 103; BIOM 301; ZOOL 211; ZOOL 213.

Students wishing to emphasize Molecular Microbiology should complete the following courses: MICB 380; MICB 388Z; MICB 450; MICB 453; and MICB 470. Electives should be chosen from the following courses: ZOOL 211; ZOOL 213; ZOOL 446; CMSC 103; BIOM 301.

No microbiology course with a grade less than C may be used to satisfy the major requirements. In addition, for graduation the student must achieve an overall C average in the College of Life Sciences core curriculum plus BCHM 461 and 462.

## Advising

Students are assigned to a faculty member for mandatory advising and career counselling. Information can be obtained from the departmental office (1117 Microbiology Building, 454-2848) or from the advising coordinator (3115 Microbiology Building, 454-5381).

## Research Experience and Internships

Students may gain research experience in laboratories off campus by registering for MICB 388R or on campus in faculty laboratories by registering for MICB 399. Contact the department office, 454-2848, for more information.

## Honors and Awards

The Honors Program in Microbiology involves an independent research project undertaken with a faculty advisor. For information, contact the Honors Chairman, Dr. M. Voll, 2114 Microbiology Building. The P. Arne Hansen Award may be awarded to an outstanding departmental honors student. The Sigma Alpha Omicron Award is given annually to the graduating senior selected by the faculty as the outstanding student in Microbiology.

## Student Organizations

All students interested in microbiology may join the University of Maryland student chapter of the American Society for Microbiology, the professional scientific society for microbiologists. Students with superior scholastic achievements are invited to join the Sigma Alpha Omicron microbiology honor society. Information on these organizations may be obtained in the department office.

Course Code: MICB

## MUSIC (MUSC)

### College of Arts and Humanities

Tawes Fine Arts Building, 454-2501

Professor and Chair: Major (Acting)

Associate Chair: Cooper

Professors: Bernstein, Cohen, Cossa, Fischbach, Folstrom, Garvey, Guarneri String Quartet (Dalley, Soyer, Steinhardt, Tree), Head, Heifetz, Heim, Helm†, Hudson, Johnson, Koscielny, McDonald, Montgomery, Moss†, Schumacher, Senwer, Traver†, Troth

Associate Professors: Barnett, Davis, Delio, Elliston, Elsing, Fanos, Fleming, Gibson, Gowen, Mabbs, McClelland, McCoy, Olson, Pennington, Robertson, Rodrigue, Ross, Wakefield, Wexler, Wilson

Assistant Professors: Balthrop, Payerle, Saunders, Sparks

Lecturer: Beicken

Instructor: Walters

†Distinguished Scholar-Teacher

The objectives of the department are (1) to provide professional musical training based on a foundation in the liberal arts; (2) to help the general student develop sound critical judgment and discriminating taste in the performance and literature of music; (3) to prepare the student for graduate work in the field; and (4) to prepare the student to teach music in the public schools. To these ends, three degrees are offered: the Bachelor of Music, with majors in theory, composition, and music performance; the Bachelor of Arts, with a major in music; the Bachelor of Science, with a major in music education, offered in conjunction with the College of Education.

Music courses and private lessons are open to all majors who have completed the specified prerequisites, or their equivalents. Lessons are also available for qualified non-majors, if teacher time and facilities permit. The University Bands, University Orchestra, University Chorale, University Chorus, Jazz Ensemble, and other ensembles are likewise open to qualified students by audition.

### The Bachelor of Music Degree

Designed for qualified students with extensive pre-college training and potential for successful careers in professional music. Recommendation for admission is based on an audition before a faculty committee. A description of the audition requirements and prerequisites is available in the departmental office. A grade of C or above is required in all major courses.

### Sample Program Bachelor of Music (Perf. Piano)

	Credits
<b>Freshman Year</b>	
MUSP 119/120—Applied Music .....	8
MUSC 128—Sight Reading for Pianists .....	4
MUSC 150/151—Theory of Music I/II .....	6
University Studies Program .....	12
<b>Total .....</b>	<b>30</b>

<b>Sophomore Year</b>	
MUSP 217/218—Applied Music .....	8
MUSC 228—Accompanying for Pianists .....	4
MUSC 230—History of Music I .....	3
MUSC 250/251—Advanced Theory of Music I/II .....	8
University Studies Program .....	9
<b>Total .....</b>	<b>32</b>

<b>Junior Year</b>	
MUSP 315/316—Applied Music .....	8
MUSC 330/331—History of Music II/III .....	6
MUSC 328—Chamber Music Performance for Pianists .....	4
MUSC 450—Musical Form .....	3
University Studies Program .....	10
<b>Total .....</b>	<b>31</b>

<b>Senior Year</b>	
MUSP 419/420—Applied Music .....	8
MUSC 492—Keyboard Music I .....	3
MUSC 467—Piano Pedagogy I .....	3
Elective .....	4
University Studies Program .....	9
<b>Total .....</b>	<b>27</b>

### The Bachelor of Arts Degree

Designed for qualified students whose interests include a broader liberal arts experience. Recommendation for admission is based on an audition before a faculty committee. A description of the audition requirements, prerequisites, and program options is available in the departmental office. A grade of C or above is required in all major courses.

### Sample Program Bachelor of Arts (Music)

	Credit Hours
<b>Freshman Year</b>	
MUSP 109/110—Applied Music .....	4
MUSC 150/151—Theory of Music I/II .....	6
MUSC 129—Ensemble .....	2
Electives, College and USP Requirements .....	18
<b>Total .....</b>	<b>30</b>

<b>Sophomore Year</b>	
MUSP 207/208—Applied Music .....	4
MUSC 250/251—Advanced Theory of Music I/II .....	8
MUSC 229—Ensemble .....	2
Electives, College and USP Requirements .....	16
<b>Total .....</b>	<b>30</b>

<b>Junior Year</b>	
MUSP 305 .....	2
MUSC 330/331—History of Music II/III .....	6
MUSC 450—Musical Form .....	3
MUSC 329—Ensemble .....	1
Electives, College and USP Requirements .....	18
<b>Total .....</b>	<b>30</b>

<b>Senior Year</b>	
Music Electives .....	10
Electives, College and USP Requirements .....	10
<b>Total .....</b>	<b>20</b>

### The Bachelor of Science Degree (Music Education)

The Department of Music in conjunction with the College of Education offers the Bachelor of Science degree with concentrations available in Instrumental Music Education and Choral-General Music Education for qualified students preparing for careers in teaching K through 12. Recommendation for admission is based on a performance audition before

## 140 Natural Resources Management Program

a faculty committee. Descriptions of audition requirements and interview requirements are available in the Music Department Office on request. For sample program requirements, see Dept. of Curriculum and Instruction, Music Education.

### Special Programs

The Department of Music cooperates with other departments in double majors, double degrees, and Individual Studies programs. Details are available on request.

Course Codes: MUSC, MUED, MUSP

## NATURAL RESOURCES MANAGEMENT PROGRAM (NRMT)

### College of Agriculture

0218 Symons Hall, 454-3738

Coordinator: Vacant  
Adjunct Professor: Flyger  
Instructors: Sieling, Adams

The responsible development and use of natural resources are essential to the full growth and stability of an economy.

The goal of the Natural Resources Management Program is to teach students concepts of the efficient use and management of natural resources. This program identifies their role in economic development while maintaining concern for society and the environment. It prepares students for careers in technical, administrative, and educational work in water and land use, fish and wildlife management, and other areas. Course options also include preparation for graduate study in any of several areas within the biological and social sciences.

Students will pursue a broad education program and then elect subjects concentrated in one of three areas of interest: Plant and Wildlife Resources Management, Land and Water Resources Management, or Environmental Education and Park Management.

### Basic Curriculum Requirements

	Semester Credit Hours
University Studies Program Requirements* .....	40
BIOL 105—Principles of Biology I .....	4
BIOL 106—Principles of Biology II .....	4
CHEM 103, 113—General Chemistry I, General Chemistry II .....	8
GEOL 100, 110—Introductory Physical Geology, Physical Geology Laboratory* OR	
GEOG 201, 211—Geography of Environmental Systems, Geography of Environmental Systems Laboratory* .....	4
AGRO 302—General Soils* .....	4
AREC 240—Environment and Human Ecology* .....	3
MATH 140 or 220—Calculus I or Elementary Calculus I* .....	4-3
BIOM 301—Introduction to Biometrics .....	3
ECON 201 or 205—Economics* .....	3
AREC 453—Economic Analysis of Natural Resources .....	3
BOTN 462, 464—Plant Ecology and Plant Ecology Laboratory .....	4
GEOG 340 3 OR GEOL 340—Geomorphology .....	4
MICB 200—General Microbiology* .....	4
PHYS 117—Introduction to Physics* .....	4
ZOOL 212—Ecology, Evolution and Behavior* .....	4
NRMT 470—Principles of Natural Resource Management .....	4
GVPT 273—Introduction to Environmental Politics .....	3
AREC 432—Introduction to Natural Resource Policy .....	3
BMGT 360—Personnel Management .....	3
CMSC 103—Introduction to Computing for Non-majors OR EDCI 487—Introduction to Computers in Instructional Settings .....	3

\*May satisfy college requirements and/or a University Studies requirement.

### Management Areas (23 hours)

Plant and Wildlife Resource Management	
Science Area .....	10
Management Area .....	10

Related Coursework or Internship .....

3

### Land and Water Resource Management

Science Area .....	10
Management Area .....	10
Related Coursework or Internship .....	3

### Environmental Education and Park Management

Science Area .....	10
Management and Education Area .....	10
Related Coursework or Internship .....	3

### Advising

Advising is mandatory. See the coordinator, 0218 Symons Hall, 454-3738.

### Internships

Natural Resources Management Internships are available. For further information, see the coordinator, 0218 Symons Hall, 454-3738.

### Student Organization

Students may join the campus branch of the Natural Resources Management Society. Further information is available from the Natural Resources Management Society in 0218 Symons Hall.

Course Code: NRMT

## PERSONNEL AND LABOR RELATIONS

For information, see College of Business and Management entry.

## PHILOSOPHY (PHIL)

### College of Arts and Humanities

4360 Computer Science Center, 454-2851/2

Professor and Chair: Campbell  
Professors: Bub, Devitt, Greenspan, Leshner, Martin, Pasch, Perkins (Emeritus), Schlaretzki (Emeritus), Slotte, Suppe, Svenonius, Wallace (part-time)  
Associate Professors: J. Brown, Celanier, Cherniak, Darden, Johnson, Levinson, Odell, Rey, Stars  
Assistant Professors: Horthy, Taylor  
Research Associates: Fullinwider, Lichtenberg, Luban, Sagoff, Wachbrot

### The Major

The Department of Philosophy seeks to develop students' logical and expository skills and their understanding of the foundations of human knowledge and of value, in accordance with its conception of philosophy as essentially an activity rather than a body of doctrine. Thus in all courses students can expect to receive concentrated training in thinking clearly and inventively and in expressing themselves exactly about philosophical issues. This training has general applicability to all professions in which intellectual qualities are highly valued, such as law, medicine, government, publishing and business management. With this in view the major in philosophy is designed to serve the interests of the majority of its students, who are preparing for careers outside of philosophy, as well as the interests of those who are preparing for graduate study in philosophy.

### Requirements for Major

The department requirements for a major in philosophy are as follows: (1) a total of at least thirty hours in philosophy, not including PHIL 100 or PHIL 386-7, (2) PHIL 271, 310, 320, 326, 341, and at least two courses numbered 399 or above, (3) a grade of C or higher in each course counted toward the fulfillment of the major requirement.

Fifteen hours of supporting courses are required to be selected in accordance with guidelines available in the Philosophy Department Office.

## Courses for Non-Majors

The following are among the courses giving the general student training in rigorous thinking, experience in critical and imaginative reflection on philosophical problems or familiarity with the philosophical foundations of Western and other cultures: PHIL 100 (Introduction to Philosophy), PHIL 110 (Plato's Republic), PHIL 140 (Contemporary Moral Issues), PHIL 170 (Introduction to Logic), PHIL 173 and 174 (Logic and the English Language I and II), PHIL 236 (Philosophy of Religion), PHIL 243 (Philosophy of Rural Life), PHIL 341 (Ethical Theory), and the historical courses: 310, 316, 320, 325, 326, 327, 328.

For students interested particularly in philosophical problems arising within their own special disciplines, a number of courses are appropriate: PHIL 233 (Philosophy in Literature), PHIL 250 and 453 (Philosophy of Science I and II), PHIL 245 and 445 (Political and Social Philosophy I and II), PHIL 360 (Philosophy of Language), PHIL 331 (Philosophy of Art), PHIL 332 (Philosophy of Beauty), PHIL 334 (Philosophy of Music), PHIL 438 (Topics in Philosophical Theology), PHIL 385 (Philosophy and Computers), PHIL 450 and 451 (Scientific Thought I and II), PHIL 452 (Philosophy of Physics), PHIL 455 (Philosophy of the Social Sciences), PHIL 456 (Philosophy of Philosophy), PHIL 457 (Philosophy of History), PHIL 458 (Topics in the Philosophy of Science), PHIL 480, 481, 482 (Philosophy of Psychology), PHIL 468 (Topics in Philosophy of Language and Logic), PHIL 472 (Philosophy of Mathematics), and PHIL 474 (Induction and Probability), PHIL 485 (Philosophy of Neuroscience), PHIL 487 (Computer Science for Cognitive Studies), PHIL 488 (Topics in Philosophy of Cognitive Studies)

Pre-law students may be particularly interested in PHIL 140 (Contemporary Moral Problems), PHIL 245 and 445 (Political and Social Philosophy I and II), and PHIL 447 (Philosophy of Law). Pre-medical students may be particularly interested in PHIL 342 (Moral Problems in Medicine), and PHIL 456 (Philosophy of Biology).

The department's curriculum is enriched by courses in philosophy and public policy issues taught by research associates in the Institute for Philosophy and Public Policy under the repeatable designations PHIL 308 (Studies in Contemporary Philosophy) and PHIL 408 (Topics in Contemporary Philosophy), cross-listed under similar headings in Government and Politics. Topics include such subjects as Business Ethics, Welfare and Distributive Justice, Responsibility of Professionals, Environmental Ethics, and the Morality of Forced Military Draft.

Course Code: PHIL

## PHYSICAL EDUCATION

See Kinesiology.

## PHYSICAL SCIENCES PROGRAM

### College of Computer, Mathematical, and Physical Sciences

2300 Mathematics Building, 454-4596

Chair: Williams  
Astronomy: Matthews  
Chemistry: Harwood  
Computer Science: Atchison  
Engineering: Walston  
Geology: Stifel  
Mathematics: Alter  
Meteorology: Carton  
Physics: Hornyak

### Purpose

This program is suggested for many types of students: those whose interests cover a wide range of the physical sciences; those whose interests have not yet centered on any one science; students interested in a career in an interdisciplinary area within the physical sciences; students who seek a broader undergraduate program than is possible in one of the traditional physical sciences; students interested in meteorology; preprofessional students (pre-law, pre-medical); or students whose

interests in business, technical writing, advertising or sales require a broad technical background. This program can also be useful for those planning science-oriented or technical work in the urban field; the urban studies courses must be taken as electives. Students contemplating this program as a basis for preparation for secondary school science teaching are advised to consult the Science Teaching Center staff of the College of Education for additional requirements for teacher certification.

The Physical Sciences Program consists of a basic set of courses in physics, chemistry, and mathematics, followed by a variety of courses chosen from these and related disciplines: astronomy, geology, meteorology, computer science, and engineering. Emphasis is placed on a broad program as contrasted with a specialized one.

Students are advised by members of the Physical Sciences committee. This committee is composed of faculty members from each of the represented disciplines. Assignment of an advisor depends on the interest of the student, e.g., one interested principally in chemistry will be advised by the chemistry member of the committee. Students whose interests are too general to classify in this manner will normally be advised by the chair of the Committee.

### Curriculum

The basic courses include MATH 140, 141 and one other math course for which MATH 141 is a prerequisite (11 or 12 credits); CHEM 103 and 113, or 105 and 115 (8 credits); PHYS 162, 262, 263 (11 credits); or PHYS 171, 272, 273, 275, 276, 375 (14 credits); CMSC 110 (4 credits); or 112/113 (8 credits).

The choice of the physics sequence depends on the student's future aims and his/her background. PHYS 161, 262, 263 is the standard sequence recommended for most physical science majors. This sequence will enable the student to continue with intermediate level and advanced courses. Students desiring a strong background in physics are urged to enroll in PHYS 171/375. This is the sequence also used by physics majors and leads directly into the advanced physics courses.

Beyond these basic courses the student must complete **twenty-four credits at the 300 or 400 level**, chosen from any three of the following disciplines: chemistry, physics, mathematics (including statistics), astronomy, geology, meteorology, computer science, and one of the engineering disciplines, subject to certain limitations. The twenty-four distributive credits must be at the upper level (300/400) and shall be distributed so that at least six credits are earned in each of the three selected areas of concentration. A grade of C or better must be earned in both basic and distributive requirement courses.

All Physical Science students must have a planned program of study approved by the Physical Sciences Committee. **In no case shall the Committee approve a program which has less than 18 credits in the three distributive areas of the Physical Sciences program to be completed**, at the time the program is submitted. Engineering courses used for one of the options must all be from the same department, e.g., all must be ENAE courses, or a student may use a combination of courses in ENCH, ENNU, and ENMA, which are all offered by the Department of Chemical and Nuclear Engineering; courses offered as engineering sciences, ENES, will be considered as a department for these purposes.

Because of the wide choice and flexibility within the program, students are required to submit for approval a study plan during their sophomore year, specifying the courses they wish to use in satisfying the requirements of the major. Students who wish to depart from the stipulated curriculum may present their proposed program for approval by the Physical Sciences Committee. An honors program is available to qualified students in their senior year.

Certain courses offered in the fields included in the program are not suitable for physical science majors and cannot count as part of the requirements of the program. These include any courses corresponding to a lower level than the basic courses specified above (e.g., MATH 115), some of the special topics courses designed for non-science students, as well as other courses. A complete listing of "excluded" courses is available from the CMPS Undergraduate Office.

### Honors

The Physical Sciences Honors Program offers students the opportunity for research and independent study. Interested students should request details from their advisor.

## PHYSICS (PHYS)

### College of Computer, Mathematical, and Physical Science

1302 Physics Building, 454-3512

Professor and Chair: Liu

Professor and Associate Chair: Bardasias

Professor and Associate Chair: Boyd

Professors Emeriti: Glover, Weber

Professors: Alley, Anderson, Antonsen, Banerjee, Bhagat, Boyd, Brill, C. C. Chang, C. Y. Chang, Chant, Chen, Currie, Das Sarma, DeSilva, Dorfman, Dragt, Drew, Earl, Einstein, Falk, Ferrell, Gates, Glick, Gloeckler, Gluckstern, Goldenbaum, Greenberg, Greene, Griem, Griffin, Holmgren, Hornyak, Hu, Korenman, Layman, Lee, Lynn, MacDonald, Misner, Mohapatra, Oneda, Ott, Paik, Papadopoulos, Park, Pati, Prange, Redish, Richard, Roos, Skuja, Snow†, Sucher, Toll, Wallace, Woo, Zorn

Affiliate Professor: Fisher

Professors (part-time): Z. Slawsky, J. Wilson

Visiting Professors: Franklin, Trimble

Adjunct Professors: Boldt, Ramaty, Trivelpiece

Associate Professors: Drake, Ellis, Fivel, Goodman, Hadley, Hassam, Kacser, Kelly, Kim, Kirkpatrick, Mason, Wang, Williams

Assistant Professors: Hamilton, Jacobson, Jawahery, Skiff

Lecturers: Beach, Carlson, Frey, Holt, Kirshner, Nossal, Rapport, M. Slawsky, Solow, Stern, Swank

†Distinguished Scholar-Teacher

The Physics Program includes a broad range of undergraduate courses designed to satisfy the needs of almost every student, from the advanced physics major to the person taking a single introductory physics course. In addition, there are various opportunities for personally-directed studies between student and professor, and for undergraduate research. For further information consult "Undergraduate Study in Physics" available from the department.

### Courses for Non-Majors

The department offers several courses which are intended for students other than physics majors. PHYS 101, 102, 106, 111, and 112 without a laboratory and PHYS 114 and 117 with laboratory are designed to satisfy the University Studies distribution requirements (PHYS 106 may be taken with the lab PHYS 107 to satisfy the lab requirement; PHYS 102 taken with the lab PHYS 103 similarly satisfies the lab requirement). PHYS 121, 122, or 141, 142 satisfy the requirements for professional schools such as medical and dental, and PHYS 161, 262, 263 satisfy the introductory physics requirement for most engineering programs. PHYS 420 is a one-semester modern physics course for advanced students in science or engineering. Either the course sequence 161, 262, 263 or the Physics major sequence 171, 272, and 273 is suitable for mathematics students and those who major in other physical sciences.

### The Major

#### Courses required for Physics Major:

Lower Level Courses	Credit Hours
PHYS 171 Introductory Physics: Mechanics .....	3
PHYS 272 Introductory Physics: Thermodynamics, Electricity and Magnetism .....	3
PHYS 273 Introductory Physics: Electricity and Magnetism, Waves, Optics .....	3
PHYS 275 Introductory Physics Lab: Mechanics and Thermodynamics .....	1
PHYS 276 Introductory Physics Lab: Electricity and Magnetism .....	2
PHYS 375 Introductory Physics Lab: Optics .....	2
MATH 140 Calculus I .....	4
MATH 141 Calculus II .....	4
MATH 241 Calculus III .....	4
MATH 240 Linear Algebra .....	4
<b>Upper Level Courses</b>	
PHYS 410 Elements of Theoretical Physics: Mechanics .....	4
PHYS 411 Elements of Theoretical Physics: Electricity and Magnetism .....	4

PHYS 414 Introduction to Thermodynamics and Statistical Mechanics .....	3
PHYS 421 Introduction to Modern Physics .....	3
PHYS 422 Modern Physics .....	4
PHYS 395 Advanced Experiments .....	3
One upper level mathematics course (preferably differential equation)	
PHYS 429 Atomic and Nuclear Physics: Laboratory .....	3
or PHYS 485 Electronic Circuits .....	4

After taking the basic sequence, the student will be able to take specialty courses, such as those in nuclear physics or condensed matter physics, or courses in related fields which are of particular interest to him or her. In addition, a student interested in doing research may choose to do a bachelor's thesis under the direction of a faculty member.

### Honors

The Physics Honors Program offers to students of good ability and strong interest in physics a greater flexibility in their academic programs, and provides a more stimulating atmosphere through contacts with other good students and faculty members. There are opportunities for part-time research participation which may develop into full-time summer projects. Credit may be given for independent work or study.

Students are accepted by the department's Honors Committee on the basis of recommendations from their advisors and other faculty members. To receive a citation of "with honors in physics" the student must pass a comprehensive examination in his or her senior year. To receive a citation of "with high honors in physics" he or she must also complete a senior thesis.

Course Code: PHYS

## PRODUCTION MANAGEMENT

For information, see College of Business and Management entry.

## PSYCHOLOGY (PSYC)

### College of Behavioral and Social Sciences

1107 Zoology-Psychology Building, 454-6691

Professor and Chair: Goldstein

Professor and Assistant Chair: B. Smith

Professors: Anderson, Brauth, Carter-Porges (affiliate), Dies, Dooling, Fein (affiliate), Fox (affiliate) Fretz, Gelson, Gollub, Hall, Hill, Hodoss†, Horton, Isen (affiliate), Kruglanski, Levinson (Emeritus), Leone, Lightfoot (affiliate), Lissitz (affiliate), Locke (affiliate), Lonon, Magoon, Martin, McIntire, J. Mills, Penner, Porges (affiliate), Pumroy, Reibsame, Rosenfeld (affiliate), Schneider, Scholnick, Sigall, Steinman, Sternheim, Torney-Purta (affiliate), Trickett, Tyler, Waldrop (Emeritus), Yeni-Komshian (affiliate)

Associate Professors: Allen, R. Brown, Coursey, Egel (affiliate), Freeman (affiliate), Counseling Center), Guzzo, Helms, Larkin, Norman, O'Grady, Schneiderman (affiliate), Steele

Assistant Professors: Alexander, Hanges, Johnson, Klein, Kivlighan (affiliate, Counseling Center), Plude, Stangor, Zamosny (affiliate, Counseling Center)

†Distinguished Scholar-Teacher

Psychology can be classified as a biological science (Bachelor of Science degree) and a social science (Bachelor of Arts degree) and offers academic programs related to both of these fields. The undergraduate curriculum in psychology is an introduction to the methods by which the behavior of humans and other organisms is studied, and the biological conditions and social factors that influence such behavior. In addition, the undergraduate program is arranged to provide opportunities for learning that will equip qualified students to pursue further study of psychology and related fields in graduate and professional schools. Students who are interested in the biological aspects of behavior tend to choose a program leading to the Bachelor of Science degree, while those interested primarily in the impact of social factors on behavior tend to choose the Bachelor of Arts degree. The choice of program is made in consultation with an academic advisor.



## Graduation Requirements

Graduation requirements are the same for the Bachelor of Science and Bachelor of Arts degrees. Students must take at least 35 credits in Psychology including 14 credits at the 400 level. PSYC 386, 387, 478 and 479 may not be included in those 35 required credits. The required courses include PSYC 100, 200 and two laboratory courses chosen from PSYC 400, 410, 420 and 440. In order to assure breadth of coverage, Psychology courses must have been divided into four areas. The 35 credit total must include at least two courses from two of the four areas and at least one course from each of the remaining areas. The areas and courses are:

Area I: 206, 301, 310, 400, 401, 402, 403, 404, 405, 410, 453;  
 Area II: 221, 341, 420, 421, 423, 424, 440, 442, 443, 444;  
 Area III: 235, 330, 332, 334, 337, 353, 354, 355, 356, 357, 432, 433, 435, 436, 455, 456, 457, 458;  
 Area IV: 336, 354, 361, 451, 452, 460, 462, 463, 464, 465, 466

In addition, all students must complete (a) either Math 111, 140 or 220, (b) one of the following laboratory courses: BIOL 105, CHEM 103, 104, 105, 113, 115, KNES 360, PHYS 121, 141, 142, 191/5, 192/6, 293/5, 294/6, 262, 263, ZOOL 201, 202, 210, 212 and (c) ENGL 101 or an English literature course from a prescribed department list.

Students wishing to receive a Bachelor of Science degree must complete a 15 credit supporting course sequence in relevant math and/or science courses including two laboratory courses and a total of 9 credits at the advanced level. The 15 credits must be completed with at least a 2.0 average. The students should consult the current Psychology Undergraduate Program Guide for a list of approved advanced Math-Science Courses.

A grade of C or better must be earned in all 35 credits of psychology courses used for the major and all credits used to meet the Math-English-Science supporting course sequence. No course may be used as a prerequisite unless a grade of C is earned in that course prior to its use as a prerequisite. The prerequisite for any required laboratory course is a 2.5 grade point average in PSYC 100 and 200. The departmental grade point average will be a computation of grades earned in all psychology courses taken (except 386, 387, 478, and 479) and the courses selected to meet the Math-English-Science sequence. The GPA in the major must be at least 2.0.

## Advising

Advising and information about the Psychology program are available weekdays from 9 a.m. to 12 noon and 1 p.m. to 4:30 p.m. in the Psychology Undergraduate Office, 1107 Zoology-Psychology Building. A Program Guide is available. Advising appointments may be made by calling 454-6691. Contact Dr. Elin K. Scholnick, Director of the Undergraduate Program, 2147A Zoology-Psychology Building, 454-6394, for more information.

## Student Organizations

The Psychology Honorary Society is Psi Chi which has an office in the Undergraduate Suite, 1107 Zoology-Psychology Building, where information about applications, eligibility, and membership can be obtained. Psi Chi offers a series of workshops on topics of interest to undergraduates.

## Fieldwork

The department offers a program of fieldwork coordinated with a seminar through the course offering PSYC 386, 387. Dr. Robert Coursey, 454-6895, usually administers the course.

## Honors

The Psychology Honors Program offers the exceptional student a series of seminars and the opportunity to do independent research under a faculty mentor. To be admitted to the program students must file a formal application and be interviewed by the Director of the Program, Dr. William S. Hall (2147B Zoology-Psychology Building, 454-6393). Students are eligible to enter the program if they are in their fourth to sixth semester of undergraduate work and have completed three courses in Psychology including PSYC 200 and have a 3.3 GPA overall and in Psychology. Students in the University Honors Program may be admitted in their third

semester providing that they have (a) earned an A in PSYC 100 or 100H, (b) finished the mathematics prerequisite for PSYC 200 and (c) have an overall GPA and Psychology GPA of at least 3.3. Since there are different graduation requirements including an undergraduate thesis and supporting math and science courses, the student is urged to consult the Guide to the Honors Program in Psychology available in the Undergraduate Office.

## Special Facilities

Computer terminals, connected to the University computer system, are available in 1140 Zoology-Psychology Building for student use.

Course Code: PSYC

## RADIO-TELEVISION-FILM

### College of Arts and Humanities 0202

Tawes Fine Arts Building, 454-5054

Professor and Chair: Kolker  
 Professors: Aylward, Gomery  
 Associate Professors: Blum, Ferguson, Kirkley, Weiss  
 Assistant Professors: Brown, Coustaut, Marchetti, Parks, Pecora  
 Instructor: Robinson  
 Lecturers: Lancaster, Niven (p.t.)

## The Major

The purpose of the Radio-Television-Film major is to provide a liberal education, leading to the Bachelor of Arts degree, in all facets of broadcast communications and the cinematic arts. Our curriculum offers courses in historical and critical approaches to film and broadcasting, courses in the cultural effects of communications, broadcasting management studies, and production courses in sound, film, and television. Radio-Television-Film graduates go on to do post-graduate work in communications or cinema studies, or enter the fields of filmmaking, script writing, television production, broadcast management, corporate television, film archival work, film distribution, and other areas of the communications industry.

## Requirements for Major

Thirty hours of course work in Radio-Television-Film, exclusive of courses taken to satisfy college requirements. Only fifteen of these credits may be in production oriented courses. RTVF 222 is required of all majors. RTVF 223 is required for all broadcasting courses. RTVF 314 is required for all film courses. RTVF 124 does not count toward the major.

## Supporting Courses

Fifteen credits in a coherent body of supporting courses, usually in one department, relevant to an Arts & Humanities major. Nine of these credits must be at the 300 or 400 level.

## Admission

Admission to the program in Radio, Television, and Film is competitive. A small number of academically talented freshman can be admitted directly into the program: National Merit Finalists, National Achievement Finalists, Francis Scott Key Scholars, Banneker Scholars, Maryland Distinguished Scholars Finalists, and students with a combined SAT score of 1200 coupled with a minimum of 3.00 high school GPA in academic subjects.

Admission for all others requires that the UMCP or transfer student has:

1. Earned at least twenty-eight credits with a grade point average of 2.6 (this average includes transfer credit grades);
2. Completed, as a part of the twenty-eight required credits, English 101 and Math 110 (or their equivalents) and RTVF 222, all with a grade of C or better.

The student must maintain the cumulative grade point average for at least one semester after admission to the RTVF major.

Students who have met the standards for admission should visit the Office of Undergraduate Admissions (Mitchell Building), with their transcript, to complete an application.

## Fieldwork and Internship Opportunities

Supervised internships in a variety of private, educational, and government broadcasting and film organizations are available to senior RTVF majors with an overall average of at least 2.8.

Students must enroll in matching credits of RTVF 384 (Field Work experience) and RTVF 385 (Field Work Analysis) for a maximum of three credits each. These "courses" are not repeatable. RTVF 384 may only be taken Pass-Fail, the grade based upon a written evaluation by the intern's supervisor at the particular organization. Only the 1-3 credits in RTVF 385, in which a letter grade is given, may be counted toward the major requirement. The grade for RTVF 385 will be assigned by the student's faculty supervisor, based on the quality of a project completed in conjunction with the field work experience, the scope of which must be consistent with the number of credits for which the student is enrolled.

## Financial Assistance

The Eaton Fellowship is offered to high-ranking undergraduate seniors with a broadcasting emphasis.

## Student Organization

Alpha Epsilon Rho is the student honorary organization.

Course Code: RTVF

## RECREATION (RECR)

### College of Health and Human Performance

2367 PERH Building, 454-2930

Chair: Iso-Ahola (Acting)

Professors: Humphrey, Iso-Ahola

Associate Professors: Churchill, Kuss, Strobell, Verhoven

Lecturers: Annand, Kaufman

## The Major

This curriculum is designed to meet the needs of students who wish to qualify for positions in the leisure services fields, to enhance their understanding of leisure behavior and related opportunities, and to enable them to render distinct contributions to community life. The department draws upon various other departments and colleges within the University, and upon notable practitioners in the metropolitan area, to enrich course offerings in the leisure studies curriculum. A total of 120 credits is required for the Bachelor of Science degree.

Those majoring in recreation and leisure studies have opportunity for observation and practical experience in local, county, state and federal recreation programs, in social and group work agency programs, and in various programs of the Armed Forces, American Red Cross, hospitals, voluntary organizations, business and industry, and commercial recreation establishments. Majors are required to select an area of interest around which to center their elective coursework. The "options," accredited by the National Recreation and Parks Association, are Program Services, Recreation Resources Management, and Therapeutic Recreation. Development of an area of professional emphasis within an option consistent with the student's career goals is encouraged. This area should focus on a specific population, setting or function within the more general option.

## Requirements for Major Including Program Options

The Recreation degree consists of 120 credits with course work falling into the following categories: general education (40), major (40), option (30) and pure electives (10). There is ample opportunity for double-counting coursework to provide space for additional elective coursework, if desired.

### Recreation Curriculum

	Semester Credit Hours
University Studies Program (see Schedule of Classes for more specific information) .....	40
RECR 130—Recreation and Leisure .....	3
SPCH 100(or alternate approved by Department) .....	3

GVPT 170/100/273 .....	3
RECR 270—Leisure Services and Special Populations .....	3
RECR 350—Recreational Use of Natural Areas .....	3
EDHD 320—Human Development Through the Life Span .....	3
RECR 420—Program Planning and Analysis .....	3
RECR 200—Sophomore Seminar .....	1
RECR 340—Field Work I .....	6
RECR 460—Leadership Techniques and Practices .....	3
RECR 490—Organization and Administration of Recreation .....	3
RECR 410—Measurement and Evaluation in Recreation .....	3
RECR 432—Philosophy of Recreation .....	3
RECR 300—Senior Seminar .....	1
RECR 341—Field Work II .....	8
Focus Area coursework .....	30
**Option Requirements (Resource Management and Program Services) 6, Therapeutic Recreation .....	10
**Option Competencies .....	6
Option Electives .....	18
Pure Elective .....	1
*Please check advisor for recommended coursework.	
**RECR prefix courses may be mandated by option.	

## Admission

Department admission requirements are consistent with those of the university.

## Advising

Although students are ultimately responsible for progress toward the Bachelor of Science degree, advising in the department is mandatory. For this purpose a faculty advisor is assigned to assist in identifying coursework which maximizes integration of general education and major requirements. Appointments for record evaluations and initial advisement are available through the program coordinator, 454-2930.

## Fieldwork

A unique aspect of the recreation major is the requirement of two practical field-based experiences totalling 560 hours; one is taken at the sophomore level and the other at the senior level.

## Financial Assistance

Recreation majors are eligible to complete for scholarships offered through the Maryland Recreation and Parks Association and the Prince George's County Federation of Parks and Recreation Councils where residence requirements are met.

## Honors and Awards

Phi Alpha Epsilon.

## Student Organizations

University of Maryland Recreation and Parks Society. In the fall of 1959 the University of Maryland Recreation and Parks Society was formed by the undergraduate and graduate majors. The society, an affiliate of the State and national recreation organizations, provides opportunities for University and community service, for rich practical experience, and for social interaction with those students and practitioners having mutual professional interest in parks, recreation and leisure services.

Course Code: RECR

## ROMANCE LANGUAGES PROGRAM

### College of Arts and Humanities

3106 Jimenez Hall, 454-4303

Advisory Committee: Russell (Italian), Little, (Spanish), Mossman (French)

The Romance Languages Program is intended for students who wish to major in more than one Romance language.

## The Major

Students selecting this major must take a total of forty-five credits selected from courses in two of the three components listed below: French, Italian and Spanish. The first four courses listed under each group are required for that particular language component; exceptions or substitutions may be made only with the approval of the student's advisor in consultation with the Romance Languages Advisory Committee. To achieve the total of forty-five credits, twenty-one credits are taken in each of the two languages, as specified, and three additional credits are taken at the 400 level in either of the languages chosen. Literature or civilization courses may not be taken in translation.

There are no requirements for support courses for the Romance Languages major.

No grade lower than C may be used toward the major. Students who wish to apply for Teacher's Certification should consult the College of Education.

## Requirements for Each Language

French — 204, 301, 351, 352; one additional language course at the 300 or 400 level; two additional literature or civilization courses at the 400 level; Italian — 204, 301, 351, 352; three additional literature or civilization courses at the 400 level.

Spanish — 204, 301, 321-322 or 323-324; one additional language course at the 300 or 400 level; two additional literature or civilization courses at the 400 level.

## RUSSIAN AREA STUDIES PROGRAM (RUSS, SLAV)

### College of Arts and Humanities

2115 Francis Scott Key Hall, 454-2843

Professors: Harper (Geography), Brecht and Davidson (Germanic and Slavic), Dawisha (Government and Politics), Foust, Lampe, Yaney (History), and Robinson (Sociology)  
Associate Professors: Murrell (Economics), Berry, Glad and Hitchcock (Germanic and Slavic), Majeska (History)  
Assistant Professors: Lekic, Schallert (Germanic and Slavic), Kaminski (Government and Politics)  
Instructor: Brin (Germanic and Slavic)  
Lecturer: Manukian (Government and Politics)

The Russian Area Studies Program offers courses leading to a Bachelor of Arts in Russian studies. Students in the program study Russian and Soviet culture as broadly as possible, striving to comprehend it in all its aspects rather than focusing their attention on a single segment of human behavior. It is hoped that insights into the Russian way of life will be valuable not only as such but as a means to deepen the students' awareness of their own society and of themselves.

Course offerings are in several departments: language and literature, government and politics, history, economics, geography, philosophy, and sociology. Students may plan their curriculum so as to emphasize any one of these disciplines, thus preparing for graduate work either in the Russian area or in the discipline.

## The Major

Students in the program must meet the general degree requirements of the University and college from which they graduate. They must complete twenty-four hours in Russian language and literature courses selected from among the following equivalent courses: RUSS 101, 102, 201, 202, 301, 302, 303, 321, 322, 401, 402, 403, and 404. In addition, students must complete twenty-four hours in Russian area courses on the 300 level or above. These twenty-four hours must be taken in at least five different departments, if appropriate courses are available, and may include language-literature courses beyond those required above.

It is recommended but not required that the student who plans on doing graduate work complete at least eighteen hours at the 300 level or above (which may include courses applicable to the Russian Area program) in one of the above-mentioned departments. It is also recommended that students who plan on doing graduate work in the social sciences—

government and politics, economics, geography, and sociology—take at least two courses in statistical methods.

The student's advisor will be the program director or the designate. The student must receive a grade of C or better in all the above-mentioned required courses.

In addition to the courses in Russian language, literature, and culture taught in the Department of Germanic and Slavic Languages and Literatures, the following Russian Area courses are regularly offered. Students should check the Schedule of Classes each semester.

ECON 380—Comparative Economic Systems  
ECON 482—Economics of the Soviet Union  
GEOG 325—Soviet Union  
GVPT 445—Russian Political Thought  
GVPT 451—Foreign Policy of the U.S.S.R.  
GVPT 481—Government and Administration of the Soviet Union  
HIST 305—The Eastern Orthodox Church: Its Cultural History  
HIST 340—Eastern Europe Under Communism  
HIST 344—The Russian Revolutions of 1917  
HIST 424—History of Russia to 1801  
HIST 425—History of Russia from 1801-1917  
HIST 442—The Soviet Union  
HIST 443—Modern Balkan History  
HIST 487—Soviet Foreign Relations  
PHIL 328B—Studies in the History of Philosophy: Marxist Philosophy  
SOCY 474—Soviet Ethnic Issues

The various cooperating departments also offer occasional special courses in the Russian and Soviet field. HIST 237, Russian Civilization, is recommended as a general introduction to the program but does not count toward the fulfillment of the program's requirements.

Course Codes: RUSS, SLAV

## SCIENCE COMMUNICATIONS

### College of Computer, Mathematical, and Physical Sciences

The University of Maryland offers several interdisciplinary approaches to the training of science communicators, ranging from specialization in one science or engineering discipline with background in communication to specializing in journalistic communication with background coursework in the sciences. Each of the several program options can be tailored to the needs of individual students.

Undergraduate students interested in science communications can choose from a wide range of possibilities. For example, some may want a career writing about the general happenings of the day in the physical and life sciences; others may prefer writing about the span from a pure science to its applied technology. Others may prefer writing about one field such as astronomy, geology, and its impact on society—in ecological problems, space exploration, and plate tectonics.

The following are several approaches:

#### Writing about the physical sciences

A recommended approach would be to take the Physical Sciences program with a minor in journalism. The Physical Sciences Program consists of a basic set of courses in physics, chemistry, and mathematics, followed by a variety of courses chosen from these and related disciplines: astronomy, geology, meteorology, and computer science.

#### Writing about the life sciences

A recommended approach would be to take the Biological Sciences Program with a minor in journalism. The Biological Sciences Program includes work in botany, entomology, microbiology, and zoology, and introduces the student to the general principles and methods of each of these biological sciences.

#### Writing about engineering

A recommended approach would be to take the B.S.-Engineering Program with a minor in journalism. The B.S.-Engineering Program blends two or three fields of engineering or applied science.

**Writing about a specific field**

A recommended approach would be to take a department major in any of the sciences, agriculture, or engineering and a minor in journalism.

**Journalism combined with an overview of the sciences**

A journalism major could take selected science courses that provide a familiarity with scientific thought and application.

**SOCIOLOGY (SOCY)**

**College of Behavioral and Social Sciences**

2108 Art-Sociology Building, 454-5036

Professor and Chair: Falk  
 Professors: Billingsley\* (Family and Community Development), Brown, Cigniet, Dager, Hage, Kammeyer, Lejins (Emeritus), Janes (Emeritus), Meeker, H. Presser, S. Presser, Ritzer, Robinson, Rosenberg, D. Segal, J. Teachman  
 Associate Professors: Favero\* (MD Ag. Ex. Serv), Finsterbusch, Hamilton, Henkel, Hirzel, J. Hunt, L.Hunt, Landry, Lengermann, McIntyre, Pease, M. Segal, Vanneman  
 Assistant Professors: Harper, Kahn, Neustadt  
 Lecturer: Moghadam

\*Joint appointment with unit indicated.

**The Major**

Sociology is the scientific study of society, its institutions, organizations, and groups. Beginning with the simple interaction between two or more people, sociology examines the social organization of society from the development of social order to the causes and impact of social change. Sociology's subject matter ranges from the study of the social factors that affect the self-concept or the nature of sex roles at the individual level, to group processes, such as organizations designed to produce products or provide services, or the major institutions of society. In the latter category the department has strengths in the study of the military, family, education, health, welfare, and political and economic organizations. At the societal and world system level, the department looks at social movements, the basis of stratification or inequality, sources of instability, war, technology, and a number of other issues.

A major in sociology offers (1) a general education especially directed toward understanding the complexities of modern society and its social problems by using basic concepts, research and statistical skills; (2) a broad preparation for various types of professions, occupations, and services dealing with people; and (3) preparation of qualified students for graduate training in sociology, social work, law, and business. Sociology also forms a valuable background for those interested in other fields or majors. Courses in sociology can be used as preparation for careers in government and private research, urban planning, personnel work, human resources management, and many other policy-making and administrative careers.

**Areas of specialization**

The program of instruction in Sociology offers courses in five major areas. The strong emphasis on advising in the department allows the student to combine these areas into individualized programs directed toward the student's specific goals. Specializations are available in social science research methodology, social psychology, social demography, social institutions, and inequality. These areas of specialization can be combined to advantage or can be taken as part of a double major in conjunction with programs in other compatible areas such as economics, government and politics, psychology, business, etc. This program versatility and the rich experiential learning possibilities of the Washington metropolitan area combine to make the sociology curriculum a valuable career choice.

**Requirements for Major**

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

Students in sociology must complete forty-four\* hours of departmental requirements, none of which may be taken pass/fail. Thirty-two\* of these hours are in sociology coursework which must be completed with a

minimum average of C; fourteen\* hours are in required core courses and eighteen hours are sociology electives, of which nine are required at the 400 level and an additional three are required at either the 300 or 400 level. Required core courses for all majors are SOCY 100 (Introduction), SOCY 201\*\* (Statistics), SOCY 203 (Theory), and SOCY 202 (Methods).\*

\*Forty-four hours are required because SOCY 201 and 202 are four-hour courses. For transfer students or those with equivalent courses which are only three-hour courses, exceptions to this forty-four hour requirement may be made by the Coordinator of the Sociology Undergraduate Program.

SOCY 100 should be taken in the freshman or sophomore year followed by SOCY 203. Three hours of mathematics (STAT 100; MATH 110, 111, 115, 140, 220, or their equivalents) are required of majors as a prerequisite of SOCY 201. SOCY 202 follows SOCY 201.

The supporting course requirement for majors is twelve hours of a coherent series of courses from outside of the department that relate to the student's major substantive\*\*\* or research interests. These courses need not come from the same department, but at least six hours must be from the College of Behavioral and Social Sciences. It is strongly recommended that the student work out an appropriate supporting sequence for the particular specialization with the department advisor.

**Department of Sociology Requirements**

	Semester Credit Hours
University Studies Program Requirements .....	40
SOCY 100 Introduction to Sociology .....	3
SOCY 201* Introductory Statistics for Sociology .....	4
SOCY 202 Introduction to Research Methods in Sociology ...	4
SOCY 203 Sociological Theory .....	3
2 Sociology courses at any level .....	6
1 Sociology course at 300 or 400 level .....	3
3 Sociology courses at 400 level .....	9
4 supporting** courses .....	12
Internship (recommended, not required) .....	6
Electives**** .....	30-36
	120

\*Curriculum changes are currently under review. Students are urged to consult with departmental advisor concerning current requirements.

\*\*Three hours of mathematics (MATH 110, 111, 115, 140, 220 or their equivalents) are required as prerequisite.

\*\*\*Courses complementing Sociology specialization must include at least two courses in behavioral and social sciences.

\*\*\*\*Students choosing to take internships will reduce their elective credit total by six credits.

**Advising**

Further information on coursework, internships, honors program careers, and other topics may be obtained from the Sociology Undergraduate Advisor, 2108 Art/Sociology Building, 454-5036.

**Fieldwork and Internship Opportunities**

Although internships are not a requirement for a major, students are strongly urged to consider the internship program offered by the department or through the Experiential Learning Office located in Hornbake Library. Majors may receive up to six credits in SOCY 386/387 by the combination of working in an internship/volunteer position plus doing some academic project in conjunction with the work experience.

**Honors**

The objective of the Honors Program in the Department of Sociology is to encourage and recognize superior scholarship by providing an opportunity for interested, capable and energetic undergraduate students to engage in study in an area of the student's interest and under the close supervision of a faculty mentor. The honors program is based upon tutorial study and independent research.

Students who have an overall cumulative grade point average of at least 3.3, a cumulative average of 3.5 in sociology courses, and who have taken at least 9 credits in sociology may apply. Transfer students with equivalent academic records at other accredited institutions are also eligible. Admission to the program will be based upon academic performance, and the judgment of the Undergraduate Committee on the degree to which the applicant has sufficient maturity and interest to successfully complete the

requirements for graduation with Honors. Further information on the honors program is available from the Sociology Undergraduate Office.

## Student Organizations

The Sociology Collective is a group open to all Sociology majors. The collective was organized by a group of interested undergraduates. The collective seeks to keep students informed about topics of interest including department activities, career planning, changes with the university that may affect them, etc. and strives to enhance the feelings of community within the department. Also, members of the collective are invited to participate on faculty committees within the department and thereby represent the undergraduate perspective in policy decisions.

Alpha Kappa Delta is the National Honor Society for Sociology majors. Membership is based on Sociology G.P.A. (3.0) and overall G.P.A. (3.0). Students can apply after they have completed 18 credits in Sociology coursework. This organization's activities focus on providing tutoring services for undergraduates in the core courses.

Course Code: SOCY

## SPANISH AND PORTUGUESE LANGUAGES AND LITERATURES (SPAN)

### College of Arts and Humanities

2215 Jimenez Hall, 454-4305/6

Professor and Chair: Sosnowski

Professors: Nemes, Pacheco

Visiting Professor: Martinez

Associate Professors: Aguilar-Mora, Igel

Assistant Professors: Benito-Vessels, Lavine, Naharro-Calderon, Rabasa, Sanjines, Zappala

Instructors: Downey-Vanover, Gordo, Little

### The Majors

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

Undergraduate majors can benefit from a wide range of courses in Spanish and Latin American literature and civilization; technical courses in translation, linguistics and commercial uses of Spanish. Area studies programs are also available in conjunction with other disciplines to provide the student with a solid knowledge of the Spanish and Latin American worlds. The major literature prepares the student for graduate studies in Spanish and opportunities in various fields of study and work.

A grade of at least C is required in all major and supporting area courses.

### Language and Literature Major

Courses: SPAN 204, 221, 301-302, 311 or 312, 321-322 or 323-324, 325-326 or 346-347; plus four courses in literature at the 400-level; Spanish American, or Luso-Brazilian, for a total of thirty-nine credits. Nine credits of supporting courses, six of which must be on the 300 or 400 level in a single area other than Spanish, for a combined total of forty-eight credits. Suggested areas are: art, comparative literature, government and politics, history, philosophy, and Portuguese. All supporting courses should be germane to the field of specialization.

### Foreign Area Major

Courses: SPAN 204; 301-302; 311 or 312; 315 or 316 or 317; 321-322 or 323-324; 325-326 or 346-347; plus three courses in literature at the 400-level; Spanish, Spanish American, or Luso-Brazilian, for a total of thirty six-credits. Twelve credits of supporting courses, six of which must be on the 300 or 400 level in a single area other than Spanish, for a combined total of forty-eight credits. Suggested areas: anthropology, economics, geography, government and politics, history, Portuguese, and sociology. All supporting courses should be germane to the field of specialization.

### Translation Option

Courses: SPAN 301-302, 311 or 312; five courses from 316, 317, 318, 356, 357, 416, 417; 321-322 or 323-324; one course from 325-326 or

346-347; plus two courses in literature at the 400-level; Spanish, Spanish American, or Luso-Brazilian, for a total of thirty-nine credits. Nine credits of supporting courses, six of which must be on the 300 or 400 level in a single area other than Spanish, for a combined total of forty-eight credits. Suggested areas: art, comparative literature, government and politics, history, philosophy, and Portuguese.

Students interested in majoring in a combination of two Romance languages should see the description of the Romance Languages Program, above.

### Honors

A student whose major is Spanish and who, at the time of application, has a general academic average of 3.0 and 3.0 in his or her major field may apply to the chair of the Honors Committee for admission to the Honors Program of the department. Honors work normally begins the first semester of the junior year, but a qualified student may enter as early as the sophomore year or as late as the second semester of the junior year. Honors students are required to take two courses from those numbered 491, 492, 493, and the seminar numbered 496 or equivalent, as well as to meet other requirements for a major in Spanish. There will be a final comprehensive examination covering the honors reading list which must be taken by all graduating seniors who are candidates for honors. Admission of students to the Honors Program, their continuance in the program, and the final award of honors are the prerogatives of the department Honors Committee.

Elementary Honors. SPAN 102H is limited to specially approved candidates who have passed SPAN 101 with high grades, and will allow them to enter 203H. SPAN 203H is limited to students who have received high grades in 102, 102H, or 103 or the equivalent. Upon completion of 203H, with the recommendation of the instructor, a student may skip 204.

### Lower Division Courses

The elementary and intermediate courses in Spanish and Portuguese consist of three semesters of four credits each (101, 102, 203). The language requirement for the B.A. degree in the College of Arts and Humanities is satisfied by passing 203 or equivalent.

Students who wish to enroll in Spanish 101, 102, and 203 must present their high school transcript for proper placement. See the Schedule of Classes for further information.

Transfer students with college credit have the option of continuing at the next level of study, taking a placement examination, or electing courses 103 or 203. If a transfer student takes course 103 for credit, he or she retains transfer credit only for the equivalent of course 101. A transfer student placing lower than his or her equivalent warrants may ignore the placement but does so at his or her own risk. If he or she takes 203 for credit, he or she retains transfer credit for the equivalent of courses 101 and 102.

If a student has received a D in a course, advanced and completed the next higher course, he or she cannot go back and repeat the original course in which he or she received a D. A student who has earned credits for Spanish 204 may not subsequently earn credit for any lower level course.

Course Codes: SPAN, PORT

## SPECIAL EDUCATION (EDSP)

### College of Education

1308 Benjamin Building, 454-2118/9

Professor and Chair: Burke

Professors: Hebel, Simms

Associate Professors: Beckman, Egel, Graham, Harris, Kohl, Leone

Assistant Professors: Cooper, Harry, Lieber, Neubert, Speece

Research Associates: Florian, MacArthur, Malouf, McLaughlin, Pilato, Powers

Instructors: Aiello, Crowley, Hudak, Long, Simon

Faculty Research Assistants: Krishnaswami, Newcomb, Rembacki, Schwartz, Strong, Stettner-Eaton

The Special Education Department offers an innovative and rigorous undergraduate program which prepares teachers of handicapped infants, children, or young adults. This program has been nationally recognized for

many of its exemplary features. It is a five-year (10 semester, 150 credit hour) professional certification program which graduates students with a Bachelor of Science degree in special education with full special education teacher certification in the State of Maryland and certification reciprocity in twenty-eight other states. Students enter the program as pre-special education majors and enroll in courses which meet university and college requirements. At the same time, students take supporting coursework designed to provide an understanding of normal human development and basic psychological and sociological principles of human behavior. Special Education students receive specialized training in the following areas: language development; motor development; social-emotional development; normal human behavior; social and educational needs of the handicapped; diagnostic and educational assessment procedures; instructional procedures and materials; curriculum development; classroom and behavior management; effective communication with the parents and families of handicapped children; community resource planning; and local, State, and Federal laws concerning handicapped children and youth. Graduates of the program are expected to master specific skills in each of these areas.

### Requirements for Major

Admission to the department usually occurs during the sophomore year. Students accepted as Special Education majors take a two-semester sequence of generic special education courses and practicum experiences during the third year (Semesters V and VI). These courses provide the student with a solid foundation in theory and practice related to the education of all handicapped children across a wide range of ages and disabilities. During Semester VI, students select one of the following four areas of specialization:

1. Education of the Severely Handicapped (SH)
2. Early Childhood Special Education (EC)
3. Education of the Educationally Handicapped (EH)
4. Secondary and Transition Special Education (ST)

Students select two specialty areas and are accepted into one of their two specialty area choices. Coursework in each of these four areas is designed to develop expertise with a specific handicapped population. Students work directly with handicapped children or youth during each semester, leading up to student teaching during the last semester. Specialty area programs include twelve to fifteen hours of electives.

### Combined Bachelor's/Master's Program

Selected undergraduate students majoring in special education will be eligible for dual application of credit to both the bachelor's and master's degrees. A student desiring graduate credit should apply for admission to the Graduate School during the last semester of the fourth year. If admitted to the Graduate School, the student may select up to twelve credits (four courses) of specified coursework from the fifth year of the undergraduate program to be applied simultaneously toward the credits required for the master's degree in special education at the University of Maryland. The selected courses may not include field practica or student teaching experiences. Students will be expected to fulfill supplemental requirements in the selected courses. To complete the master's degree, students must fulfill all Graduate School requirements for the degree, with the exception of the selected 400-level courses.

### Admission

Prior to formal acceptance as a special education major, all students are required to enroll in a special education introductory course (EDSP 210) which provides a survey of the history and current issues in special education. Upon successful completion of the introductory course and forty-five semester hours of requirements, pre-special education majors apply for formal admission to the Department of Special Education by submitting an application with a statement of intent specifying their professional goals. With the exception of academically talented students, all students declaring special education as a major will be accepted as pre-special education majors. To be accepted as a full special education major, students must fulfill the College of Education requirements for admission to Teacher Education, as well as the following departmental conditions:

1. Completion of coursework indicated below with an astensk.
2. Admission is competitive beyond the minimum 2.5 grade point average required for consideration.
3. Submission of an application together with a statement of intent specifying the applicant's professional goals.

Admittance will be based on the completion of the required courses, the

grade point average, the applicant's experience with handicapped persons, and the appropriateness and clarity of the professional goal statement. An appeals process has been established for students who do not meet the competitive GPA for admission, but who are applying in connection with special university programs including affirmative action and academic promise.

### Advising

The Department of Special Education provides academic advisement through a faculty and a peer advisement program. Special education majors are assigned a faculty advisor, who is carefully matched to the student's area of interest. It is required that all students receive advisement on a semester basis. Students are urged to use the Special Education Advisory Center, 1235 Benjamin Building.

### Awards

The Department of Special Education Student Service Award is presented annually to the graduating senior who has demonstrated outstanding leadership and service to the Special Education Department.

### Student Organizations

The Department of Special Education encourages student participation in extra-curricular activities within and outside of the university.

### Council for Exceptional Children

The Department of Special Education sponsors Chapter 504 of the Council for Exceptional Children (CEC). The goals of the chapter include both professional development of the members and service to the University and community. Activities include meetings on topics relevant to special education, trips to state and national conventions, and student/faculty social events.

### Student Advisory Board

The department Student Advisory Board is made up of six undergraduate special education students, two graduate special education students, and one representative from CEC. These members are elected by the student body. The purpose of the board is to represent the student body at department faculty meetings and to offer student opinions on matters of concern.

### Volunteer and Career Services

This service, coordinated by students, compiles and disseminates information regarding volunteer and part-time job opportunities for working with handicapped students.

### Required Courses

University Study Program Requirements to include the following courses which are departmental requirements:

- \*HIST 156 (3)
- MATH 210 (4)
- \*Lab Science (4)
- \*ENGL Literature (3)
- \*PSYC 100 (3)
- \*SOCY 100 or 105 (3)

### Other Academic Support Courses

- \*HESP 202 (3)
- HESP 400 (3)
- \*STAT 100 or SOCY 201 (3 4)
- \*EDHD 411 or PSYC 355 (3)
- EDHD 460 (3)

### Professional Courses

- \*EDSP 210—Introduction to Special Education (3)
- EDHD 300—Human Development and Learning (6)
- EDPA 301—Foundations of Education (3)
- EDSP 320—Introduction to Assessment in Special Education (3)
- EDSP 321—Comparative Approaches to Behavior and Classroom Management in Special Education (3)
- EDSP 322—Field Placement in Special Education I (3)

EDSP 443—Assessment and Instructional Design for the Handicapped: Reading and Written Communication Disorders (3)  
 EDSP 331—Introduction to Curriculum and Instructional Methods in Special Education (3)  
 EDSP 332/Interdisciplinary Communication in Special Education (3)  
 EDSP 333—Field Placement in Special Education II (3)

## Specialty Area Requirements

### The Severely Handicapped Option

EDSP 400—Assessment, Curriculum and Instructional Methods for Students with Severe Handicaps (3)  
 EDSP 402—Field Placement: Severely Handicapped I (4)  
 EDSP 403—Physical and Communication Adaptations for Students with Severe Handicaps (3)  
 EDSP 404—Education for Students with Autism (3)  
 EDSP 405—Field Placement: Severely Handicapped II (4)  
 EDSP 410—Community Functioning Skills for Students with Severe Handicaps (3)  
 EDSP 330—Families and the Education of Handicapped Children (3)  
 EDSP 420—Developmental and Behavioral Characteristics of Nonhandicapped and Handicapped Infants and Young Children or  
 EDSP 460—Career/Vocational Education for the Handicapped (3)  
 EDSP 411—Field Placement: Severely Handicapped III (5)  
 EDSP 412—Vocational and Transitional Instruction for Students with Severe Handicaps (3)  
 EDSP 417—Student Teaching: Severely Handicapped (11)  
 EDSP 418—Seminar: Issues and Research Related to the Instruction of the Severely Handicapped (3)

### The Educationally Handicapped Option

EDSP 440—Assessment and Instructional Design for the Educationally Handicapped: Cognitive and Psychosocial Development (3)  
 EDSP 441—Assessment and Instructional Design for the Educationally Handicapped: Oral Language and Communication Disorders (3)  
 EDSP 442—Field Placement: Educationally Handicapped I (3)  
 EDSP 330—Families and the Education of Handicapped Children (3)  
 EDSP 445—Field Placement: Educationally Handicapped II (4)  
 EDHD 413—Adolescent Development (3)  
 EDCI 456—Diagnosis and Treatment of Learning Disabilities in Mathematics (3)  
 EDSP 446—Instructional Design for the Educationally Handicapped: Functional Living Skills (3)  
 EDSP 447—Field Placement: Educationally Handicapped III (4)  
 EDSP 450—Program Management for the Educationally Handicapped (3)  
 EDSP 457—Student Teaching: Educationally Handicapped (11)  
 EDSP 458—Seminar: Special Issues and Research Related to the Educationally Handicapped (3)  
 EDSP 460—Career/Vocational Education for the Handicapped (3)

### The Secondary and Transitional Special Education Option

EDSP 330—Families and the Education of Handicapped Children (3)  
 EDSP 460—Career/Vocational Education for the Handicapped (3)  
 EDSP 461—Field Placement: Career/Vocational I (3)  
 EDSP 462—Vocational Assessment and Instruction in Special Education (3)  
 EDSP 463—Field Placement: Career/Vocational II (3)  
 EDIT 421—Industrial Arts in Special Education (3)  
 EDCI 456—Diagnosis and Treatment of Learning Disabilities in Mathematics (3)  
 EDSP 450—Program Management for the Educationally Handicapped (3)  
 EDSP 465—Field Placement: Career/Vocational III (3)  
 EDSP 467—Student Teaching: Career/Vocational (11)  
 EDSP 468—Special Topics Seminar in Career/Vocational Education for the Handicapped (3)  
 EDSP 464—Secondary and Transition Methods in Special Education (3)  
 EDSP 446—Instructional Design for the Educationally Handicapped: Functional Living Skills (3)

### The Early Childhood Special Education Option

EDSP 420—Developmental and Behavioral Characteristics of Non-Handicapped and Handicapped Infants and Young Children (3)  
 EDSP 421—Field Placement: Early Childhood Special Education I (3)  
 EDSP 422—Curriculum and Instruction in Early Childhood Special Education (Moderate to Mild:3-8 yrs) (3)  
 EDSP 424—Field Placement: Early Childhood Special Education II (4)

EDCI 410—The Child and the Curriculum: Early Childhood (3)  
 EDSP 330—Families and the Education of Handicapped Children (3)  
 EDSP 423—Assessment of Preschool Handicapped Children and Infants (3)  
 EDSP 430—Intervention Techniques and Strategies for Preschool Handicapped Children and Infants (3)  
 EDSP 431—Field Placement: Early Childhood Special Education III (Severe to Moderate) (4)  
 EDSP 437—Student Teaching: Early Childhood Special Education (11)  
 EDSP 438—Seminar: Special Issues in Early Childhood Special Education (3)  
 EDSP 400—Assessment, Curriculum and Instructional Methods for Students with Severe Handicaps or  
 EDSP 441—Assessment and Instructional Design for the Handicapped—Oral Language and Communication Disorders (3)

Course Code: EDSP

## SPEECH COMMUNICATION (SPCH)

### College of Arts and Humanities

1147 Tawes Fine Arts Building, 454-2542

Professor and Chair: Wolvin

Professors: Fink, Solomon

Associate Professors: Falcione, Freimuth, Gaines, Klumpp, McCabe

Assistant Professors: Edgar, Goldsmith

Lecturer: Niles (p.t.)

Speech Communication takes as its subject matter the history, processes, and effects of human communication through speech and its extensions. The departmental curriculum is designed to provide a liberal education in the arts and sciences of human communication as well as preparation for career opportunities in business, government, education, and related fields of endeavor. Within the curriculum, students may pursue academic programs which emphasize a broad range of disciplinary areas, including interpersonal communication, organizational communication, political communication, health communication, educational communication, cognition and persuasion, rhetorical theory, history of rhetoric, and criticism of public discourse.

### The Major

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

Major requirements include completion of thirty semester hours in Speech Communication and eighteen semester hours in supporting courses. No course with a grade less than C may be used to satisfy major or supporting course requirements.

### Requirements for Major

(Thirty semester hours): SPCH 200, 230, 400, 401, and 402. Three semester hours chosen from the following: SPCH 450, 471, 475 (Theories of Persuasion), 424 or 435. Twelve semester hours in SPCH courses, at least nine of which must at the 300-400 level.

### Required Supporting Courses

(Eighteen semester hours): 1. Nine semester hours of cognate courses selected from another discipline complementary to the major. 2. Nine semester hours to develop essential intellectual skills: Three credits in statistical analysis, selected from STAT 100, PSYC 200, SOCY 201, BMGT 230, or EDMS 451. Three credits in critical analysis, selected from ENGL 301, ENGL 453, or CMLT 488. Three credits in structural analysis of language, selected from LING 200, HESP 120, ANTH 371, ENGL 384, or ENGL 385. Courses taken to fulfill the supporting course requirement can also be used to satisfy USP requirements.

Speech Communication offers special opportunities for students interested in co-curricular activities particularly debate and forensics. Superior students may participate in an Honors Program. Interested students should consult with the Director of Undergraduate Studies.

Course Code: SPCH

## STATISTICS AND PROBABILITY

### Department of Mathematics

1105 Mathematics Building, 454-4883/7060

Director: Slud

The Mathematical Statistics Program offers a wide range of undergraduate courses in applied statistics, mathematical statistics, and probability. The program is administered by the Statistics Branch of the Department of Mathematics, and all STAT courses carry credit in mathematics.

An undergraduate program stressing statistics is available to majors in mathematics. See the Department of Mathematics listing for details. The Mathematical Statistics Program offers Master's and doctoral degrees in statistics and a Master's degree in applied statistics.

Course Code: STAT

## TEXTILES AND CONSUMER ECONOMICS (TXCE)

### College of Human Ecology

2100 Marie Mount Hall, 454-2141

Professor and Chair: Smith

Professors: Dardis, Spivak, Yeh

Associate Professors: Block, Brannigan, Paoletti, Pourdeyhimi, Wagner  
Assistant Professors: Anderson, Ettenson, Hacklander, Soberon- Ferrer, Verma

Adjunct Assistant Professors: Basiotis, Morris

Lecturers: Ensor (pt.), Friedman (pt.), Goldberg (pt.), Jaklitsch (pt.), Stone (pt.)

Emeriti: Wilbur

The Department of Textiles and Consumer Economics is devoted to the development and dissemination of knowledge concerning consumers and their near environment. It draws upon and applies the knowledge of and methods of the physical and social sciences, the arts, humanities, and law to improve the welfare of consumers. The department offers the Bachelor of Science, Master of Science, and Doctor of Philosophy degrees. The faculty is multidisciplinary and have degrees in a variety of fields including textiles, human ecology, economics, engineering, chemistry, psychology, and law. In addition to their teaching responsibilities, the faculty conduct research and serve the University community through participation in University committees. The faculty members, together with the graduate students and adjunct faculty (many of whom work in government or industry), form a lively and stimulating community in which students are exposed to many different viewpoints.

The department has modern, well-equipped teaching and research laboratories including a comfort research laboratory, a computer-aided design laboratory, a computer-aided merchandising laboratory, and an historic textiles/costume collection. Students in Textiles and Consumer Economics may select one of four majors which offer diverse professional opportunities. Specific careers depend on the major area of emphasis although there is overlapping of career opportunities in some instances reflecting similar course requirements. The majors offered by the department are as follows:

### Apparel Design

In this major students develop an understanding of the interrelationships between apparel design and apparel performance. Emphasis is placed on artistic expression and creativity, textile materials, and the design of apparel to meet different needs and different socio-economic conditions. Graduates are prepared for positions as designers, assistant designers, stylists, fashion executives, fashion coordinators, consultants to the home sewing industry, or extension and consumer educators.

### Textile Marketing/Fashion Merchandising

These two programs emphasize the marketing and retailing of textile products and combine a background in textile materials with courses in marketing, retailing and consumer behavior. Students may select an option in (a) textile marketing or (b) fashion merchandising. An internship experience gives students the opportunity to apply what they have learned in class and prepares them for careers in marketing and retailing once they

graduate. Graduates completing the textile marketing option will be prepared for marketing positions with fiber, textile, or apparel companies. They may work in product development, sales, merchandising, promotion, market research, and management. Graduates completing the fashion merchandising option will be prepared for careers in retailing with department, specialty, or mass merchandising stores. They may work in buying, merchandising, fashion coordination, publicity, personnel, and management.

### Textile Science

This major emphasizes the scientific and technological aspects of textiles. It is designed to provide students with a background in textile materials and textile science including the engineering and finishing of fabrics for specific end uses. Many students in the major go on to graduate study. Graduates are prepared for careers in industry and government. They may work in research and testing laboratories, in consumer technical service and marketings programs, in quality control, in buying and product evaluation, and in consumer education and information programs.

### Consumer Economics

This major combines economics and marketing with the knowledge of basic consumer goods and services. The program focuses on consumer decision-making and the degree to which the marketplace reflects consumer needs and preferences. The subject matter includes consumption economics, marketing, consumer behavior, consumer policy/law, and consumer product marketing. Graduates may work in the planning, marketing, and consumer relations divisions of business and industry, in program development and analysis for government agencies or in consumer education programs in industry and government.

### Selective Admission

Any student admitted to the University of Maryland at College Park is eligible for admission to Apparel Design, Textile Marketing/Fashion Merchandising or Textile Science. Admission to Consumer Economics is competitive.

Students applying for admission to Consumer Economics must complete MATH 220, ECON 201 and ECON 203 with a grade of C or better in each course.

Students seeking admission to Consumer Economics must meet the grade point average (GPA) set by the Department for admission. ALL students seeking admission to this competitive major should contact the Department for details of the selective admission process.

### Requirements for the Major

To graduate, students must complete the required department and supporting courses with the required grades, Human Ecology requirements and University Studies Program requirements. Students should consult the current Undergraduate Catalog and Department Major Guides and also consult with their faculty advisor. All students must complete a minimum of 120 credit hours to earn a Bachelor of Science degree. Specific requirements for each major (or option) are as follows:

#### Apparel Design

Majors must complete all required TEXT/CNEC courses with a grade of C or better.

	Semester Credit Hours	
	I	II
<b>Freshman Year</b>		
ENGL 101—Introduction to Writing, if not exempt .....	3	
TEXT 105—Introduction to Textiles .....		3
MATH 110 or 115—Elementary Mathematical Models or Pre-Calculus .....	3	
SOCY 100—Introduction to Sociology .....	3	
SPCH 100, 107 or 125—Basic Principles of Speech Communication, Technical Speech Communication or Introduction to Interpersonal Speech Communication ...	3	
APDS 101—Fundamentals of Design .....		3
TEXT 221—Apparel I .....		3
PSYC 100—Introduction to Psychology .....		3
ARTH 200—Art of the Western World I .....	3	
University Studies Program Requirement .....		4
Total .....	15	16



<b>Sophomore Year</b>		
NUTR 100—Elements of Nutrition .....	3	
ARTT 110—Elements of Drawing .....	3	3
ARTH 201—Art of the Western World II .....	3	
ECON 201—Principles of Economics I .....	3	
ECON 203—Principles of Economics II .....	3	
TEXT 205—Textile Materials and Performance .....	3	3
TEXT 222—Apparel II .....	3	
CMSC 103 or TEXT 235—Introduction to Computing or Computer Applications in Textiles .....	3	3
APDS 102—Design II .....	3	
University Studies Program Requirement .....	3	3
<b>Total</b> .....	<b>15</b>	<b>15</b>

<b>Junior Year</b>		
TEXT 347—History of Costume II .....	3	
TEXT 305—Textile Materials: Evaluation and Characterization .....	3	
BGMT 350—Marketing Principles and Organization .....	3	
TEXT 365—Fashion Merchandising .....	3	
University Studies Program Requirements .....	6	
Human Ecology Core .....	3	
Electives .....	6	
ENGL 391 or 393—Advanced Composition or Technical Writing .....	3	
<b>Total</b> .....	<b>30</b>	

<b>Senior Year</b>		
TEXT 420—Apparel Design: Draping .....	3	
TEXT 441—Clothing and Human Behavior .....	3	
TEXT 375—Economics of Textile and Apparel Industry ...	3	
TEXT 425—Apparel Design: Advanced Problems .....	3	
TEXT 430—Portfolio Presentation .....	3	
TEXT 435—Woven Fabric Structure and Design .....	3	
University Studies Program Requirement3 .....		
Electives .....	8-9	
<b>Total</b> .....	<b>29-30</b>	

**Textile Marketing/Fashion Merchandising**

Students in the Textile Marketing/Fashion Merchandising program must complete the common requirements of the program. In addition, they must select either the textile marketing or the fashion merchandising option and complete the courses specified for the option selected. Textile marketing option: CHEM 103, CHEM 104, TEXT 400, TEXT 452 and TEXT 470. Fashion merchandising option: CHEM 103, CHEM 104, TEXT 221, and TEXT 365.

Majors must complete MATH 110 (or MATH 115), ECON 201, ECON 203, and all required TEXT/CNEC courses and BGMT 350 with a grade of C or better. Majors must complete 9 additional credits in upper-level BGMT courses and earn an average grade of "C" or better.

			<b>Semester Credit Hours</b>	
			<b>I</b>	<b>II</b>
<b>Freshman Year</b>				
ENGL 101—Introduction to Writing, if not exempt .....	3			
TEXT 105—Introduction to Textiles .....	3			
MATH 110 or 115—Elementary Mathematical Models or Pre-Calculus .....	3			
SOCY 100—Introduction to Sociology .....	3			
SPCH 100, 107 or 125—Basic Principles of Speech Communication, Technical Speech Communication or Introduction to Interpersonal Speech Communication .....	3			
APDS 101—Fundamentals of Design or ARTT 100— Elements of Design .....	3			
Elective .....	3			
PSYC 100—Introduction to Psychology .....	3			
University Studies Program Requirements .....	3			
<b>Total</b> .....	<b>15</b>		<b>15</b>	

<b>Sophomore Year</b>				
CHEM 103General Chemistry I .....	4			
CHEM 104—Fundamentals of Organic and Biochemistry .....	4			
University Studies Program Requirements .....	3			
ECON 201—Principles of Economics I .....	3			
ECON 203—Principles of Economics II .....	3			
TEXT 205—Textiles Materials and Performance .....	3			
Human Ecology Core .....	3			
TEXT 221—Apparel I or Elective* (See option selected) .....	3			
Elective .....	3			
<b>Total</b> .....	<b>16</b>		<b>16</b>	

<b>Junior Year</b>		
Electives .....	6	
BGMT 350—Marketing Principles and Organization .....	3	
TEXT 355—Textile Furnishings .....	3	
TEXT 400—Research Methods or Department Requirement* (See option selected) .....	3	
Human Ecology Core .....	3	
TEXT 365—Fashion Merchandising or Department Requirement* (See option selected) .....	3	
BGMT Support Area** .....	3	
TEXT 305—Textile Materials: Evaluation and Characterization .....	3	
ENGL 391 or 393—Advanced Composition or Technical Writing .....	3	
<b>Total</b> .....	<b>30</b>	

<b>Senior Year</b>		
TEXT 441—Clothing and Human Behavior or .....		
CNEC 437—Consumer Behavior .....	3	
TEXT 375—Economics of the Textile and Apparel Industry ...	3	
University Studies Program Requirements .....	6	
TEXT 452—Textile Science: Chemical Structure and Properties of Fibers or Department Requirement* .....	3	
(See option selected) .....	3	
BGMT Support Area* .....	6	
TEXT 470—Textile and Apparel Marketing or Department Requirement* (See option selected) .....	3	
Electives .....	4	
<b>Total</b> .....	<b>28</b>	

\*Department Requirement: Select from ALL CNEC and TEXT courses numbered 300 or above.  
\*\*BGMT Support Area: Select from BGMT 353, 354, 360, 364, 372 ,380, 392, 453, 454, 456.

**Textiles**

Majors must complete ALL required TEXT/CNEC courses with a grade of C or better.

			<b>Semester Credit Hours</b>	
			<b>I</b>	<b>II</b>
<b>Freshman Year</b>				
ENGL 101—Introduction to Writing, if not exempt .....	3			
TEXT 105—Introduction to Textiles .....	3			
MATH 115—Pre-Calculus .....	3			
SOCY 100—Introduction to Sociology .....	3			
SPCH 110, 107, or 125Basic Principles of Speech Communication, Technical Speech Communication or Introduction to Interpersonal Speech Communication .....	3			
Human Ecology Core .....	3			
TEXT 205—Textile Materials and Performance .....	3			
CHEM 103—General Chemistry I .....	4			
CHEM 113—General Chemistry II .....	4			
PSYC 100—Introduction to Psychology .....	3			
<b>Total</b> .....	<b>16</b>		<b>16</b>	

<b>Sophomore Year</b>				
University Studies Program Requirements .....	3			
TEXT 305—Textile Materials: Evaluation and Characterization .....	3			
CHEM 233, 243, Organic Chemistry I, II .....	4			
MATH 140—Calculus I .....	4			
MATH 141—Calculus II .....	4			
<b>Total</b> .....	<b>14</b>		<b>14</b>	

<b>Junior Year</b>				
ECON 201 and 203—Principles of Economics I and Principles of Economics II .....	6			
PHYS 141 or 121—Principles of Physics or Fundamentals of Physics I .....	4			
PHYS 142 or 122—Principles of Physics or Fundamentals of Physics II .....	4			
TEXT 452—Textile Science: Chemical Structure and Properties of Fibers .....	3			
Human Ecology Core .....	6			
University Studies Program Requirements .....	3			
Elective .....	3			
<b>Total</b> .....	<b>29</b>		<b>29</b>	

<b>Senior Year</b>				
ENGL 391 or 393—Advanced Composition or Technical Writing .....	3			

BMGT 350—Marketing Principles and Organization .....	3
TEXT 454—Textile Science: Finishes or	
TEXT 456—Textile Science: Dyes and Dye Applications .....	3
TEXT 375—Economics of the Textile and Apparel I Industry .....	3
TEXT 400—Research Methods .....	3
University Studies Program Requirements .....	6
Electives .....	10
Total .....	31

\*ENGL 393 preferred.

**Consumer Economics**

Majors must complete MATH 115, MATH 220, ECON 201, ECON 203. ALL required CNEC/TEXT courses and Support Area courses with a grade of C or better. ECON 305 and ECON 306 MUST be completed with an average grade of C.

	Semester	
	Credit	Hours
<b>Freshman Year</b>	I	II
ENGL 101—Introduction to Writing, if not exempt .....	3	
MATH 115—Pre-Calculus .....		3
SOCY 100—Introduction to Sociology .....	3	
SPCH 100, 107 or 125—Basic Principles of Speech Communication, Technical Speech Communication or Introduction to Interpersonal Speech Communication ....		3
Human Ecology Core .....		3
CNEC 100—Introduction to Consumer Economics .....	3	
University Studies Program Requirements .....	3	3
PSYC 100—Introduction to Psychology .....	3	
Elective .....		3
Total .....	15	15

**Sophomore Year**

University Studies Program Requirements .....	6	3
ECON 201 and 203—Principles of Economics I and II .....	3	3
MATH 220 or 140—Elementary Calculus I or Calculus .....	3-4	
MATH 221 or 141—Elementary Calculus II or Calculus II or Elective .....		3-4
Elective .....		3
Human Ecology Core .....	3	3
Total .....	15-16	15-16

**Junior Year**

CNEC 310—Consumer Economics and Public Policy .....	3
ENGL 391 or 393—Advanced Composition or Technical Writing .....	3
CNEC 431—The Consumer and the Law .....	3
Support Area Requirement* .....	6
BMGT 350—Marketing Principles and Organization .....	3
ECON 305—Intermediate Macroeconomic Theory and .....	3
ECON 306—Intermediate Microeconomic Theory .....	3
Elective .....	6
Total .....	30

**Senior Year**

CNEC 400—Research Methods .....	3
CNEC 437—Consumer Behavior .....	3
CNEC 435—Economics of Consumption .....	3
University Studies Program Requirements .....	6
CNEC 410—Consumer Finance .....	3
Support Area Requirement* .....	3
Electives .....	7-9
Total .....	28-30

\*Majors must select one of four identified Support Areas. These areas are as follows: Product Information, Marketing, Finance or Economics. Majors should check with the Department to obtain specific course requirements for each identified support area.

**Advising**

The department has mandatory advising for ALL majors. Majors are assigned faculty advisors and MUST discuss their program of study with their advisor each semester. Majors should check with the department office (2100 Marie Mount Hall, 454-2141) if they do not know the name of their faculty advisor.

**Honors**

A department Honors Program permits outstanding undergraduates to explore on an individual basis a program of work which will strengthen their undergraduate program and their professional interests. Students selected for the program must have at least a "B" average to be considered. Students in the honors program participate in a junior honors seminar and present a senior thesis. Students completing this program graduate with department honors.

**Internship Opportunities**

An internship program is available to all students majoring in the Department of Textiles and Consumer Economics during their senior year. Students must apply for admission to the internship program, including the retailing internship, in the second semester of their junior year.

Course Codes: TEXT, CNEC

**THEATRE (THET)**

**College of Arts and Humanities**

1146 Tawes Fine Arts Building, 454-2543

Chair: Meersman  
 Professors: Gillespie, Meersman  
 Associate Professor: O'Leary  
 Assistant Professors: Coleman, Elam, Patrick, Huang, Kriebes, Patterson, Schuler, Stowe, Utema  
 Lecturer: Donnelly  
 Emeritus: Pugliese

The department curricula lead to the Bachelor of Arts degree, and permit the student to develop an emphasis in theatre design or performance. In cooperation with the Department of Curriculum and Instruction and the Department of Speech, an opportunity for teacher certification in speech and drama is provided.

The curriculum is designed to provide through the study of theatre history, design, performance, and production: 1) a liberal education through the study of theatre; 2) preparation for various opportunities in the performing arts.

Since theatre is a dynamic field, the course offerings are under continuous review and development. Interested students should seek out specific information about a program a study in a particular emphasis from the appropriate advisor.

**The Major**

Major Requirements are forty-two hours of coursework in theatre, exclusive of those courses taken to satisfy college and university requirements. Of the forty-two hours, at least twenty-one must be upper level (300-400 series). No course with a grade less than C may be used to satisfy major or supporting area requirements.

**Requirements for Major**

Required core courses for all majors are: THET 110, 111, 120, 170, 330, 479, 480, 490, 491.

Design Emphasis: THET 273, 375, 476, 418, plus additional courses in theatre to make the minimum.

Supporting courses for the Design emphasis include one from each of the following: ENGL 403, 404, or 405; ENGL 434 or 454; DANC 100, 210, or 310; MUSC 100 or 130; any ARTH or ARTT course approved by the departmental advisor.

Performing Emphasis: THET 221, 320, 420 or 430, 474 or approved Technical/Design course, plus additional courses in theatre to make the minimum.

Supporting courses for the Performing Emphasis include one from each of the following: ENGL 403, 404, or 405; ENGL 434 or 454; DANC 100; MUSC 100 or 130; any ARTH or ARTT course approved by the departmental advisor.

**Advising**

Advising is required. Students are responsible for checking advisee assignments posted on faculty office doors and bulletin boards.

**Honors**

The Theatre department offers an honors program with several scholarships open to freshmen, transfer, and continuing students. Contact the Honors Program Advisor for information.

**Financial Aid**

Scholarships and Financial Assistance may be awarded to incoming students through a number of Creative and Performing Arts Scholarships and the Theatre Patrons Scholarships. Other scholarships and assistantships are awarded yearly to continuing students. For further information, contact the Theatre Awards Program Advisor.

The department presents a number of University Theatre (UT) productions each year. Students also comprise the Administrative Council for Theater (ACT).

Course Code: THET

**TRANSPORTATION, BUSINESS, AND PUBLIC POLICY**

For information consult College of Business and Management Entry.

**URBAN STUDIES, INSTITUTE FOR**

**College of Behavioral and Social Sciences**

1117 Lefrak Hall, 454-5718

Director: Brower  
 Professors: Levin, Stone\* (Government and Politics)  
 Associate Professors: Baum, Brower, Christian\* (Geography), Howland, Hula†  
 Assistant Professors: Chang, Mintz (Visiting)  
 Lecturers (Part-time) Giloth, Laidlaw, Reich, Werlin  
 Affiliate Faculty: Chen, Fogle, Franciscato  
 †Distinguished Scholar-Teacher  
 \*Joint appointment with unit indicated.

**The Major**

The Institute for Urban Studies offers a program of study leading to the Bachelor of Arts degree in urban studies. The program is designed to encourage students either (1) to direct their learning toward planning and management careers in metropolitan-area organizations, or (2) to study urbanization processes and methods as a means toward earning a general education. The undergraduate urban studies program is built on several introductory and methods courses that examine the city in its metropolitan, interregional, national, and international policy contexts. The problems of planning and management of the metropolis are stressed. Students are encouraged by the multidisciplinary urban studies faculty to take advantage of the rich and extensive cross-departmental resources at College Park and are expected to select an urban-related specialization from another discipline. Inasmuch as the Institute exists to serve the planning and management personnel and research needs of metropolitan organizations in the non-profit, for-profit, and government sectors, career guidance and advice on job placement have a high priority. Students are provided with advice in finding available vacancies, with resume writing and interview preparation. Urban studies majors are prepared to enter the professional arena or to continue with advanced study.

Each year the Institute sponsors the Lefrak lectures. This lecture series features highly-reputed scholars and practitioners in urban planning or urban policy formulation issues of the information age. A feature of the series is to expand our understanding of urbanization driven by job creation in high-technology manufacturing and higher-level services.

**Requirements for Major Including Program Options**

Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

The Urban Studies major consists of a total of forty-two semester credit hours in which the student must earn a C or better in each course. The division of requirements is as follows:

**Institute for Urban Studies Major Requirements\***

	<b>Semester Credit Hours</b>
Required URBS Core Courses (5 of the following 6 courses) .....	15
URBS 100—Introduction to Urban Studies (or GEOG 150)	
URBS 210—Behavioral and Social Dimensions of the Urban Community	
URBS 220—Environmental and Technological Dimensions of the Urban Community	
URBS 350—Quantitative Methods in Urban Studies	
URBS 410—The Development of the American City (or URBS 320, or GEOG 350 or URBS 450)	
URBS Advanced Specialization Courses .....	6
URBS 440—City and Regional Economic Development Planning	
URBS 470—Management and Administration of Metropolitan Areas Supporting Courses (7 courses) .....	21

Students are expected to choose from URBS 480, URBS 486S and additional related upper-division courses from other departments throughout the campus that contribute to their supporting specialization. Supporting courses may be selected from Geography, Architecture, Family and Community Development, Housing and Design, Economics, Sociology, Criminology, Government and Politics, Business and Management, Afro-American Studies, or other urban-related fields.

The institute encourages innovative supporting-course designs that are tailored individually to the particular needs of the student. These designs are developed with an advisor in the Institute for Urban Studies.

Total ..... 42  
 \*Curriculum changes are currently under review. Students are advised to consult with a departmental advisor concerning current requirements.

**Advising**

Prior to each pre-registration and registration, each Urban Studies major is expected to obtain advice from an Institute advisor. The Urban Studies undergraduate advisor is located in 1213 Lefrak Hall, 454-2030.

**Honors**

For information on the Urban Studies Honors Program, contact Professor Hula, 1127 Lefrak Hall, 454-1870, or the Undergraduate Advisor, 1213 Lefrak Hall, 454-2030.

Course Code: URBS

**WOMEN'S STUDIES PROGRAM (WMST)**

**College of Arts and Humanities**

1115 Mill Building, 454-3841

Professor and Director: Beck  
 Professor: Rosenfelt  
 Associate Professors: Bolles, Moses  
 Assistant Professor: King  
 Lecturers: Pratt, Zingo  
 Affiliate Faculty: Harley, Williams (Afro-American Studies); Diner (American Studies); Withers (Art); Doherty, Hallett, Stehle (Classics); Gillespie (Communication Arts and Theater); Peterson (Comparative Literature); Leonard (Counseling and Personnel Services); Heidelbach (Curriculum and Instruction); Beauchamp, Donawerth, Kauffman, Lanser, Leonard, Smith, (English); Leslie (Family and Community Development); Hage, Mossman (French and Italian); Frederiksen, Strauch (Germanic and Slavic Languages); McCarrick (Government and Politics); Gullickson (History); Gips (Housing and Design); Beasley, Grunig (Journalism);

Robertson (Music); Fullinwider (Philosophy and Public Policy); Hult (Physical Education); Coutaut, (RTVF); Hunt, McIntyre, Presser, Segal (Sociology); Solomon (Speech and Communication); Schuler (Theater).

## The Program

The Women's Studies Program is an interdisciplinary academic program designed to examine the historical contributions made by women, reexamine and reinterpret existing data about women, and introduce students to the methodology of feminist scholarship. The program offers interdisciplinary core courses on women, encourages the offering of courses on women in other disciplines, and promotes the discovery of new knowledge about women. Women's Studies courses challenge students to question traditional knowledge about women and men and to examine differences among women. Students gain an understanding of and respect for differences in human lives as they encounter issues of diversity in the classroom: age, ability, class, ethnicity, race, religion, and sexual preference.

## The Certificate Program

The Women's Studies Certificate Program consists of an integrated, interdisciplinary curriculum on women that is designed to supplement a student's major.

## Requirements for Certificate

To qualify for a Certificate in Women's Studies, a student will be required to earn twenty-one (21) credits in Women's Studies courses, nine of which must be at the 300/400 level. No more than 3 credit hours of special topics courses may be counted toward the Certificate. No more than 9 credit hours which are applied toward a major may be included in the Certificate Program. No more than 9 credit hours may be taken at institutions other than UMCP. Each student must obtain a grade of C or better in each course that is to be counted toward the Certificate. Of the twenty-one credits, courses must be distributed as follows:

1. A core of nine (9) credit hours from the following WMST courses: WMST 200—Introduction to Women's Studies: Women and Society (3) OR WMST 250—Introduction to Women's Studies: Women, Art, and Culture (3) WMST 400—Theories of Feminism (3) WMST 490—Senior Seminar: Feminist Reconceptualizations (3)
2. At least one course from three of the four distributive areas listed below. Two of these courses must be from departments other than Women's Studies. At least one course must be identified as adding a multi-cultural dimension.

### Area I

ARTH 489—Feminist Perspectives on Women in Art  
 CMLT 498—Feminist Literary Criticism  
 CMLT 498—Special Topics in Women in Literature  
 ENGL 250—Women in Literature  
 ENGL 348—Literary Works by Women  
 FREN 478—French Women Writers in Translation  
 GERM 439—Women in German Literature  
 JPN 418—Japanese Women Writers in Translation  
 MUSC 448—Women and Music in Cross-Cultural Perspective  
 WMST 250—Introduction to Women's Studies: Women, Art, and Culture

### Area II

EDCP 498—Issues Related to Counseling Women  
 FMCD 430—Gender Role Development in the Family  
 HLTH 471—Women's Health  
 PSYC 336—Psychology of Women  
 SOCY 325—Sex Roles  
 SOCY 425—Sex Roles and Social Institutions  
 SPCH 324—Communication and Sex Roles  
 WMST 200—Introduction to Women's Studies: Women and Society

### Area III

AMST 418—Women and Family in American Life  
 AASP 428—Black Women in America  
 CLAS 309—Women in Ancient Greece and Rome  
 CLAS 320—Women in Classical Antiquity  
 GERM 281—Women in German Literature and Society

HIST 210—American Women to 1880  
 HIST 211—American Women 1880 to the Present  
 HIST 301—Women and Industrial Development  
 HIST 309—Proseminar in the History of Women  
 HIST 318—Women in the Middle East  
 HIST 458—Selected Topics in Women's History  
 HIST 618—Readings in the History of Women  
 PHED 492—History of the American Sportswoman

### Area IV

AASP 428—EEO Laws: Implications for Women and Minorities  
 AASP 428—Women and Work  
 ECON 374—Sex Roles in Economic Life  
 GVPT 436—Legal Status of Women  
 GVPT 471—Women and Politics  
 JOUR 460—Women in the Mass Media  
 PHED 451—Sport and the American Woman

3. The remaining courses may be chosen from any of the four distributive areas, or from among any of the WMST courses including WMST 498—Special Topics in Women's Studies and WMST 499—Independent Study. The Women's Studies Program also provides students with opportunities for co-curricular activities. In the past, students have supported their coursework with practical experience working with legal defense funds, rape crisis centers, battered women's shelters, feminist journals, and on Capitol Hill, as well as in the classroom applying feminist methodology to teaching strategies.

## Admission

Any student in good academic standing at the University of Maryland at College Park may enroll in the Certificate Program by declaring his or her intentions to the Women's Studies undergraduate advisor.

## Advising

It is suggested that students meet with the advisor in order to plan individual programs. Advising is available during regular office hours both with appointments and on a walk-in basis. The advisor is located in 1117 Mill Building.

Students may also earn an undergraduate major in Women's Studies by designing a major in consultation with the Assistant Dean for Undergraduate Studies and a member of the Women's Studies faculty.

Course Code: WMST

## ZOOLOGY (ZOOL)

### College of Life Sciences

2227 Zoology-Psychology Building, 454-5131

Professor and Chair: Popper  
 Professors: Allan, Carter-Porges, Clark, Colombini, Gill, Highton, Levitant, Pierce  
 Associate Professors: Ades, Barnett, Bonar, Borgia, Goode, Higgins, Imberski, Inouye, Linder, Reaka, Small  
 Assistant Professors: Chao, Olek, Palmer, Payne, Shapiro, Stephan, Wilkinson

Instructors: Kent, Piper, Spalding  
 Adjunct Professors: Kleiman, Manning, Morton, O'Brien, Potter, Smith-Gill, Vermeij  
 Adjunct Associate Professors: Kelly, Platt, Wemmer  
 Adjunct Assistant Professor: Braun

†Distinguished Scholar-Teacher

The Zoology Program is designed to give each student an appreciation of the diversity of programs studied by zoologists, an opportunity to explore more specialized biological subject areas, and an appreciation of the nature of observation and experimentation appropriate to investigations within these fields.

### Requirements for Major

The required Zoology core courses are listed below. All majors are required to complete the College of Life Sciences core curriculum (see

College of Life Sciences entry in Chapter 7) which includes BIOL 105 and 106. In addition, students must also complete a minimum of 24 credit hours of Zoology including:

ZOOL 213—Genetics (4), prerequisite one semester of organic chemistry AND either,

ZOOL 210—Animal Diversity (4) OR

ZOOL 211—Cell Biology & Physiology (4), prerequisite one semester of general chemistry (CHEM 103) AND

Fourteen hours of junior-senior level Zoology courses, including two courses with laboratory, AND one of the following:

BIOM 301 or 401, BCHM 461, MATH 240 or 400, PSYC 200, STAT 250 or 400 or 464.

ZOOL 181, 201, 202, 301, 328Z, 330, 346, 361 and 381 do not satisfy major requirements. ZOOL 308H, 309H, 318H and up to three credits of 319, Special Problems in Zoology, may be used to fulfill six of the required 14 hours at the junior-senior level but not the laboratory requirements. MICR 453 is accepted as a laboratory course towards the major. College credit for research experience obtained off campus may be earned under ZOOL 328Z, but cannot be used to fulfill major requirements.

All majors must have a grade of "C" or better in BIOL 105, 106 and all Zoology courses and an average grade of "C" in the other College of Life Sciences core curriculum courses.

Students may specialize by registering for those courses particularly appropriate to their academic objectives. Areas of specialization include: molecular and cellular biology; physiology and neurobiology; ecology, evolution and behavior; marine science; and genetics. The Zoology major is suitable for students seeking preparation for post-graduate work in medicine, dentistry and graduate programs in the biological sciences and for employment in science related fields.

## Advising

Advising for zoology majors is mandatory. Appointments can be scheduled through the Undergraduate Office, 454-5131.

## Honors

The Department of Zoology Honor's Program, directed by Dr. Herbert Levitan, offers highly motivated and academically qualified students the opportunity to work closely with a faculty mentor on an original research project. Information on this program and additional information on the Zoology program may be obtained from the Undergraduate Office, 2227 Zoology-Psychology Building, 454-5131.

## Student Organization

Zoology Undergraduate Student Committee (ZUSC) promotes interactions with the faculty, provides information about departmental services, opportunities and events and sponsors a variety of educational and social activities. Interested students may contact ZUSC by stopping by the ZUSC office, 2230 Zoology-Psychology Building, 454-5131.

Course Code: ZOOL

## UNDERGRADUATE STUDIES

### University Honors Program

0110 Hornbake Library, 454-2532/2535

Director: (Vacant)

The University Honors Program is designed to allow academically-talented students to make the most of the educational and cultural resources of a great metropolitan research university. Honors students combine Honors coursework with pursuit of their major field of study. Freshmen and sophomores broaden their intellectual horizons in a wide variety of special Honors seminars and Honors versions of regular courses, in the arts and sciences. Many of the courses have an interdisciplinary focus. Juniors and seniors may apply to departmental or college Honors programs that emphasize working with a faculty mentor on an independent research project, or they may propose their own interdisciplinary research programs.

Students may apply for admission as freshmen or as transfer students. A separate application form for the Honors Program is included in the UMCP Undergraduate Admissions Application packet. The Honors Program seeks bright, intellectually curious students who will thrive in a challenging academic environment. Applications are individually reviewed for evidence of academic achievement in course work, special talents or skills, and maturity. For transfer students, the applicant's previous college-level work is weighed heavily.

Student participation in the Honors community extends beyond the classroom, with a wide range of social and educational extracurricular activities available. An energetic student association oversees student-run committees, a lecture series, social and cultural events, a newsletter, a literary magazine, and a lively Honors lounge. A newly renovated Honors dormitory is scheduled to open Fall 1991.

For an application form and information about the University Honors Program, write to Director, University Honors Program, University of Maryland, College Park, MD 20742, or call (301) 454-2532/2535.

### Individual Studies Program (IVSP)

1115 Hornbake Library, 454-2530

Assistant Dean for Undergraduate Studies: Oh

The Individual Studies Program provides an opportunity for students to create and complete individualized majors. To be accepted into the program, a student must:

- 1) have a clearly-defined academic goal which cannot reasonably be satisfied in an existing curriculum at College Park, and
- 2) be able to design, with faculty assistance, a sequence of courses and other learning experiences which is judged to have adequate substance for the awarding of a degree in the special field of study.

Most IVSP majors are either a form of "area study" utilizing offerings from many departments or a clear combination of two disciplines. Many include internships or independent study projects in the program. All work is done under the supervision of a faculty advisor.

Applicants are required to write a detailed prospectus outlining their proposed program of study. They must meet the general education requirements according to year of entry. The process of applying often involves considerable consultation and several drafts of a prospectus, so it should be begun as early as possible. Students may be admitted to the Individual Studies Program after completion of 30 college credits and must be officially approved by the Individual Studies Faculty Review Committee prior to the final 30 credits. Individual Studies programs must be approved before students can declare Individual Studies as a major.

Individual Studies provides three courses specifically for its majors. IVSP 319, a one-credit course graded Satisfactory/Fail, is a program report which each IVSP student must complete each semester. IVSP 318 is an independent study course which students can use for a variety of out-of-class internship and research opportunities. A variable-credit course, it may be taken for one to fifteen credits per semester. IVSP 320, the Bachelor's Report, is required for all students who complete more than 40% of their coursework through independent study, but many IVSP students enjoy the opportunity to complete a major work of synthesis that is evaluated by three faculty members.

More information on requirements and procedures is available from the Office of the Dean for Undergraduate Studies, 1115 Hornbake Library, 454-2530. After reading that material, arrange a meeting with the Assistant Dean for Undergraduate Studies to discuss ideas informally and to plan the next steps.

### Pre-Professional Programs

Health Professions Advising Office

3103 Turner Laboratory, 454-2540

Advisors: Love, Stewart

### General Information

Pre-professional programs are designed to provide the necessary academic foundation required for entrance into professional schools. Some require two or three years of pre-professional study before admission to professional school. Others normally require completion of a bachelor's degree. Five programs, for which completion of a bachelor's degree is NOT a normal prerequisite, may be declared as the official undergraduate academic major: pre-dental hygiene, pre-medical technology, pre-nursing, pre-pharmacy, and pre-physical therapy.

In contrast, seven programs, for which a bachelor's degree IS a normal pre-requisite, are advisory ONLY and these cannot be declared as the official undergraduate academic major. These include: pre-dentistry, pre-law, pre-medicine, pre-optometry, pre-osteopathy, pre-podiatry and pre-veterinary medicine. Students interested in such programs may choose from a wide variety of academic majors across campus. The pre-professional advisor can provide guidance concerning the choice of major.

Successful completion of a pre-professional program at College Park does not guarantee admission to any professional school. Each professional school has its own admissions requirements and criteria, which may include grade point average in undergraduate courses, scores in aptitude tests (Medical College Admission Test, Law School Admission Test, Dental Aptitude Test, Allied Health Professions Admission Test, etc.), a personal interview, faculty recommendations, and an evaluation from the pre-professional advisor. For admissions requirements, the student is urged to study the catalog of each professional school.

Although completion of the bachelor's degree is a normal prerequisite for admission for dental, law, and medical schools, three professional schools of the University of Maryland at Baltimore—Dentistry, Law, and Medicine—have arrangements whereby a student who meets certain stringent requirements may be accepted for professional school after three years of undergraduate study (90 credit hours). After the successful completion of the first year in professional school at Baltimore, the student may apply for the bachelor's degree to be awarded by College Park.

Because of the competitive nature of professional school admissions, pre-professional students should consider applying to more than one school and should also give some thought to alternative careers. The degree to which this is necessary varies with the program in which one is enrolled. It is helpful to discuss this with the pre-professional advisor.

The Health Professions Advising Office offers advising and information on health professions. Reading material on health careers, options, and alternatives as well as catalogs from many professional schools across the country are available. The reading room is open to anyone seeking information about health careers.

**Pre-Dental Hygiene**

Advisor: Stewart

College Park students may prepare themselves not only for entrance into the UMAB Dental Hygiene Program but also for entrance into dental hygiene programs at other colleges and universities. To do this efficiently, students should obtain program information when first entering college so that requirements can be taken in normal sequence. Information for the University of Maryland Dental Hygiene Program is available at the Health Professions Advising Office, 3103 Turner Lab.

The Dental School of the University of Maryland, located in Baltimore (UMAB), offers a baccalaureate degree program in dental hygiene, as well as a post-certificate program for registered dental hygienists who have completed a two-year accredited dental hygiene program and are interested in completing the requirements for a baccalaureate degree. Completion of a two-year pre-professional curriculum at any University of Maryland campus except UMAB or at another accredited institution is required for eligibility to apply for admission as a junior in the Dental School at UMAB.

For registered dental hygienists, completion of a two-year accredited dental hygiene program, completion of all required preprofessional courses, and a minimum of one year of clinical experience as a dental hygienist are required for eligibility to apply for admission to the Dental School at UMAB.

The following courses are required for admission to the UMAB Dental Hygiene Program:

	<b>Semester Credit Hours</b>
<b>Freshman Year</b>	
ENGL 101—Introduction to Writing .....	3
BIOL 105—Principles of Biology I .....	4
CHEM 103—General Chemistry 1 .....	4
CHEM 104—Fundamentals of Organic and Biochemistry .....	4
PSYC 100—Introduction to Psychology .....	3
SOCY 100 or SOCY 105—Introduction to Sociology or Introduction to Contemporary Social Problems .....	3
MATH 110 or 115—Elementary Mathematical Models or Precalculus .....	3
Humanities .....	3
Elective .....	3

**Sophomore Year**

ZOOL 201 and 202—Human Anatomy & Physiology I, II .....	4
MICB 200—General Microbiology .....	4
NUTR 200—Nutrition for Health Services .....	3
ENGL 291 (or 391 for juniors) .....	3
Social Sciences .....	6
SPCH 100 or 107—Basic Principles of Speech Communication or Technical Speech Communication .....	3
STAT 100—Elementary Statistics & Probability .....	3

**Application and Admission**

High school students who wish to enroll in the pre-dental hygiene curriculum at College Park should request applications directly from the Admissions Office, The University of Maryland, College Park, MD 20742. It is recommended that those preparing for a baccalaureate degree program in dental hygiene pursue an academic program in high school which includes biology, chemistry, math, and physics.

Pre-dental hygiene students should begin the application process for professional school in fall of the sophomore year. UMAB applications and instructions are available in the Health Professions Advising Office. Enrollment as a pre-dental hygiene student or as a registered dental hygienist at any institution does not guarantee admission to the Dental Hygiene Program on the Baltimore City Campus (UMAB).

**Further Information**

At College Park contact the Dental Hygiene Advisor, 3103 Turner Laboratory, The University of Maryland, College Park, MA 20742, (301) 454-2540. In Baltimore contact the Dental Hygiene Department, The University of Maryland at Baltimore, 666 W. Baltimore Street, Baltimore, MD 21201, (301) 328-7773.

**Pre-Dentistry**

Advisor: Love

The pre-professional program for pre-dental students is a program of advising for students preparing to apply to dental school. The advice is based on requirements and recommendations of American dental schools and the requirements for a baccalaureate degree at College Park.

The recommendations made during advising are meant to prepare the student to take the Dental Admissions Test (DAT) in the spring of the junior year. Application to dental school is made during the summer-fall of the senior year. In addition to faculty letters of recommendation, most admissions committees request or require an evaluation from the student's pre-dental advisor. It is important, therefore, for the student to contact the pre-dental advisor early in the academic career and to become familiar with the proper procedures necessary in the evaluation and application process.

For more information on the pre-dental advising program, contact the Pre-dental Advisor, 3103 Turner Laboratory, University of Maryland, College Park, MD 20742, (301) 454-2540.

There are two ways to prepare for admission to dental school: a four-year program is preferable, but a three-year program is possible.

**Four-Year Baccalaureate Program**

Most pre-dental students at College Park complete a four-year undergraduate degree prior to entrance into dental school. Students are encouraged to pursue a diversified curriculum, balancing humanities courses with science and mathematics courses. Since there is no required, fixed "pre-dent" curriculum, the pre-dental student may choose an academic major from the variety of approved campus programs in the arts, humanities, behavioral and social sciences, mathematics, or physical and lifesciences. No specific major is required, favored, or preferred by dental school admissions committees.

The four-year student will plan an undergraduate experience which includes courses to satisfy major and supporting arequirements, University Studies Program requirements, and the dental school admission requirements. The student's academic advisor will advise about the first two topics, while the Pre-dental Advisor will advise about dental school admission requirements.

Although specific admission requirements vary somewhat from dental school to dental school, the undergraduate courses which constitute the basic admission requirements and which prepare the student for the DAT are the following:

	Semester Credit Hours
ENGL 101 and 391—English Composition .....	3, 3
CHEM 103,113—General Chemistry I, II, .....	4, 4
CHEM 233, 243—Organic Chemistry I, II .....	4, 4
PHYS 121, 122 or PHYS 141, 142—Physics .....	4, 4
MATH 220, 221 or MATH 140, 141—Calculus .....	*3, 3 or 4, 4
Biology, minimum** .....	8

\*Although calculus is not an entrance requirement of many dental schools and is not included in the DAT, one year of calculus is strongly recommended for the pre-professional student.

\*\*Although the minimum biology requirement is eight credits, the successful applicant will have more, including advanced training in biological sciences at the 300 to 400 level. BOTN 100, BIOL 101 and 124, and MICB 100 should not be taken to meet this requirement.

### Three Year Arts-Dentistry Degree Program

Students whose performance during the first two years is exceptional may apply to the University of Maryland School of Dentistry at the beginning of their third year, for entry after three years of college work. By the end of the third year the student must have earned 90 academic credits, exclusive of physical education, the last 30 of which must have been earned at the University of Maryland at College Park. Within the 90 credits the student must have completed all the requirements listed below.

	Semester Credit Hours
University Studies Program Requirements .....	30
Chemistry (inorganic and organic) CHEM 103, 113, 233, 243, or CHEM 105, 115, 235, 245 .....	16
Biological Sciences .....	19-20
ZOOL 210: Animal Diversity	
ZOOL 211—Cell Biology and Physiology	
MICB 200—General Microbiology	
Either ZOOL 213 or MICB 380	
One of the following:	
ZOOL 411—Cell Biology	
ZOOL 422—Vertebrate Physiology	
ZOOL 430—Vertebrate Embryology	
ZOOL 495—Mammalian Histology	
MICB 360—Medical Virology	
MICB 440—Pathogenic Microbiology	
MICB 450—Immunology	

Mathematics  
MATH 220, 221, or MATH 140, 141 .....

Physics 121, 122, or 141, 142

Additional upper level courses from any one of the following combinations .....

- Zoology: seven hours on the 300-400 level including one laboratory course
- Microbiology: seven hours on the 300-400 level including one laboratory course
- CHEM 321: Quantitative Analysis plus any three credit course as the 300-400 level in the physical or biological sciences which is approved by the Pre-Dental Advisor
- BCHM 41, 462, 463, and 464
- Nine hours on the 300-400 level in any one department of the College of Arts and Humanities or the College of Behavioral and Social Sciences

Electives as needed to total at least 90 credits .....

Total .....

Incoming freshmen interested in this three year program are strongly urged to consult the pre-dental advisor before registration for the first semester at College Park.

Students accepted in the combined Arts-Dentistry program, may received the B.S. degree (Arts-Dentistry) after satisfactory completion of the first year at the University of Maryland Dental School on recommendation by the dean of the dental school and approval by College Park the degree to be awarded in August following the first year of Dental School. The courses of the first year of dental school constitute the major, the College Park courses listed above constitute the supporting area.

Participation in the three year program in no way guarantees admission to the University of Maryland Dental School. Three-year students complete with the four-year students for admission.

### Pre-Law

117 Hornbake Library, 454-2733  
Advisor Ulysses Connor, J.D.

Although some law schools will consider only applicants with a B.A. or B.S. degree, others will accept applicants who have successfully completed a three-year program of academic work. Most law schools do not prescribe specific courses which a student must present for admission, but do require that the student follow one of the standard programs offered by the undergraduate college. Many law schools require that the applicant take the Law School Admission Test, preferably in July or October of the academic year preceding entry into professional school.

### Four-Year Program

The student who plans to complete the requirements for the B.A. or B.S. degree before entering law school should select a major field of concentration. Most law schools do not prescribe specific majors or courses which must be presented for admission, but do require that one of the standard programs offered by the undergraduate college be followed. A student's choices can be guided by the need to develop some of the essential skills needed for the law profession, namely, clear and imaginative thinking, accurate and perceptive reading, and literate expression.

### Three-Year Arts-Law Program

Although some law schools will consider only applicants with a B.A. or B.S. degree, others will accept applicants who have successfully completed a three-year program of academic work. Students planning to enter law school at the end of the third year should complete the University Studies Program Requirements. By the end of the junior year, the student will complete the requirements for a "minor" (eighteen semester hours in one department, six hours being at the 300-400 level). The program during the first three years should include all of the basic courses required for a degree (including the eighteen-hour "minor" course program) and all University requirements. The academic courses must total ninety hours, and must be passed with a minimum average of 2.0. To be acceptable to law schools, however, students in virtually all cases must have a considerably higher average.

Students with exceptional records who are accepted to the School of Law of the University of Maryland under the arts-law program may receive a B.A. degree (arts-law) after satisfactory completion of the first year of law school, upon recommendation by the dean of the University of Maryland Law School and approval by College Park. The degree is awarded in August following the first year of law school (or after thirty credit hours are completed).

For additional information, contact the Pre-law Advisor, 1117 Hornbake Library, (301) 454-2733.

### Pre-Medical Technology

Advisor: Stewart

College Park students may prepare themselves not only for entrance into the UMAB Medical Technology Program but also for entrance into medical technology programs at other colleges and universities. To do this efficiently, students should obtain program information when first entering college so that requirements can be taken in normal sequence. Information for the University of Maryland Medical Technology Program is available at the Health Professions Advising Office, 3103 Turner Laboratory.

A Bachelor of Science degree in Medical Technology is offered through the Medical Technology Program of the University of Maryland Medical School, located in Baltimore (UMAB). The first two years, consisting of pre-professional studies, may be completed at any University of Maryland institution, except UMAB, or at any regionally accredited university or college.

### Application and Admission

High school students who wish to enroll in the pre-medical technology curriculum at College Park must meet admission requirements of that institution. While in high school students are encouraged to enroll in a college preparatory curriculum emphasizing biology, chemistry, and college preparatory mathematics.

Pre-medical technology students should begin the application process for professional school in fall of the sophomore year. UMAB applications and instructions are available in the Health Professions Advising Office. Enrollment as a pre-medical technology student at any campus does not

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guarantee admission to the Medical Technology Program at UMAB.

The following courses are required for admission to the UMAB Medical Technology Program:

	<b>Semester Credit Hours</b>
Chemistry 103, 113—Gen. Chem I, II .....	4, 4
Chemistry 233, 243—Organic Chem I, II .....	4, 4
Biology 105—Prin. of Biology I .....	4
Microbiology 200—Gen. Microbiology .....	4
Mathematics 110, 111 or above .....	3, 3
English 101—Intro. to Writing, and literature .....	3, 3
Speech 107—Tech. Speech Communication, or SPCH 100 .....	3
Humanities (History, literature, philosophy, appreciation of Art, Music, Drama, Dance) .....	3
Behavioral and Social Sciences (Anthropology, Economics, Government & Politics, Geography, Psychology, Sociology) .....	6
Electives* .....	12
<b>Total Semester Hours</b> .....	<b>60</b>

\*Recommended electives include statistics, computer science, and biochemistry.

### Further Information

At College Park, contact the Medical Technology Advisor. The University of Maryland, 3103 Turner Laboratory, College Park, MD 20742, (301) 454-2540. In Baltimore, contact the Medical Technology Program, The University of Maryland, Allied Health Professions Building, 32 S. Greene Street, Baltimore, Maryland 21201, (301) 328-7664.

### Pre-Medicine

Advisor: Love

The pre-professional program for pre-medical students is a program of advising for students preparing to apply to medical school. The advice is based on requirements and recommendations of American medical schools and the requirements for a baccalaureate degree at College Park. The pre-medical advisor in the Health Professions Advising Office is prepared to assist students in setting career objectives, selecting undergraduate coursework to meet the admissions criteria of the professional schools, and in all phases of the application process itself.

The recommendations made during advising are meant to prepare the student to take the Medical College Admission Test (MCAT) in the spring of the junior year. Application to medical school is made during the summer-fall of the senior year. Medical admissions committees generally request or require an evaluation from the student's pre-medical advisor. It is important, therefore, for the student to contact the pre-medical advisor early in the academic career and to become familiar with the proper procedures necessary in the evaluation and application process.

For more information on the pre-medical advising program, contact the Pre-medical Advisor, 3103 Turner Laboratory, The University of Maryland, College Park, MD 20742, (301) 454-2540.

There are two ways to prepare for admission to medical school; a four-year program is preferable, but a three-year program is possible.

### Four-Year Baccalaureate Program

Most pre-medical students at College Park complete a four-year undergraduate degree prior to entrance into medical school. Students are encouraged to pursue a diversified curriculum, balancing humanities courses with science and mathematics courses. Since there is no required, fixed "pre-med" curriculum, the pre-medical student may choose an academic major from the variety of approved campus programs in the arts, humanities, behavioral and social sciences, mathematics, or physical and life sciences. No specific major is required, favored, or preferred by medical school admissions committees.

The four-year student will plan an undergraduate experience which includes courses to satisfy major and supporting area requirements, University Studies Program requirements, and the medical school admission requirements. The student's academic advisor will advise about the first two topics, while the pre-medical advisor will advise about medical school admission requirements.

Although specific admission requirements vary somewhat from medical school to medical school, the undergraduate courses which constitute the

basic admission requirements and which prepare the student for the MCAT are the following:

	<b>Semester Credit Hours</b>
ENGL 101, 391—English Composition .....	3, 3
CHEM 103, 113—General Chemistry I, II .....	4, 4
CHEM 233, 243—Organic Chemistry I, II .....	4, 4
PHYS 121, 122, or PHYS 141, 142—Physics .....	4, 4
MATH 220, 221, or MATH 140, 141—Calculus .....	3, 3
or .....	4, 4
Biology, minimum** .....	8
*Although calculus is not an entrance requirement of many medical schools and is not included in the MCAT, one year of calculus is strongly recommended for the pre-professional student.	
**Although the minimum biology requirement is eight credits, the successful applicant will have more, including advanced training in biological sciences at the 300-400 level. BOTN 100, BIOL 101 and 124, and MICB 100 should not be taken to meet this requirement.	

### Three-Year Arts-Medicine Degree Program

Students whose performance during the first two years is exceptional may apply to the University of Maryland School of Medicine at the beginning of their third year, for entry after three years of college work. By the end of the third year the student must have earned 90 academic credits, exclusive of physical education, the last 30 of which must have been earned at the University of Maryland College Park. Within the 90 credits the student must have completed all the requirements listed below.

	<b>Semester Credit Hours</b>
University Studies Program Requirements .....	30
Chemistry (inorganic and organic) .....	16
CHEM 103, 113, 233, 243 or CHEM 105, 115, 235, 245 .....	16
Biological Sciences .....	19-20
ZOOL 210—Animal Diversity	
ZOOL 211—Cell Biology and Physiology	
MICB 200—General Microbiology	
Either ZOOL 213 or MICB 380	
One of the following:	
ZOOL 411—Cell Biology	
ZOOL 422—Vertebrate Physiology	
ZOOL 430—Vertebrate Embryology	
ZOOL 495—Mammalian Histology	
MICB 360—Medical Virology	
MICB 440—Pathogenic Microbiology	
MICB 450—Immunology	
Mathematics .....	6-8
MATH 220, 221 or MATH 140, 141 .....	6-8
Physics 121, 122, or 141, 142 .....	8
Additional upper-level courses from any one of the following combinations: .....	
1. Zoology: seven hours on the 300-400 level, including one laboratory course	7-10
2. Microbiology: seven hours on the 300-400 level, including one laboratory course	
3. CHEM 321: Quantitative Analysis, plus any three-credit course at the 300-400 level in the physical or biological sciences which is approved by the Pre-medical Advisor.	
4. BCHM 461, 462, 463, and 464	
5. Nine hours on the 300-400 level in any one department of the College of Arts and Humanities or the College of Behavioral and Social Sciences.	
Electives as needed to total at least ninety credits .....	0-4
<b>Total</b> .....	<b>90-92</b>

Incoming freshmen interested in this three-year program are strongly urged to consult the Pre-medical Advisor before registration for the first semester at College Park.

Students accepted in the combined arts-medicine program may receive the B.S. degree (Arts-Medicine) after satisfactory completion of the first year at the University of Maryland Medical School upon recommendation by the dean of the School of Medicine and approval by College Park, the degree to be awarded in August following the first year of medical school. The courses of the first year of medical school constitute the major; the College Park courses listed above constitute the supporting area.

Participation in the three-year program in no way guarantees admission to the University of Maryland School of Medicine. Three-year students compete with the four-year students for admission.



**Pre-Nursing**

Advisor: Stewart

College Park students may prepare themselves not only for entrance into the University of Maryland nursing program but also for entrance into nursing programs at other colleges and universities. To do this efficiently, students should obtain program information when first entering college so that requirements can be taken in normal sequence. Information for The University of Maryland School of Nursing is available at the Health Professions Advising Office, Room 3103, Turner Laboratory

The School of Nursing, located in Baltimore (UMAB), offers a four-year program leading to the Bachelor of Science degree in nursing. The first two years of pre-professional courses may be taken at any University of Maryland institution except UMAB, or any other accredited college or university, while the final two years of upper level work are offered only at the School of Nursing.

In addition to the aforementioned generic program, an "RN to BSN" program is offered for registered nurses wishing to earn a BSN. There are several options for completing pre-professional requirements for this program. Interested nurses should contact the "RN to BSN" advisor listed below.

**Application and Admission**

High school students who wish to enroll in the pre-nursing curriculum at College Park must meet admission requirements of that institution. While in high school students should enroll in a college preparatory curriculum including biology, chemistry, and three units of college preparatory mathematics.

Pre-nursing students should begin the application process for professional school in fall of the sophomore year. UMAB applications and instructions are available in the Health Professions Advising Office. Enrollment as a pre-nursing student at any campus does not guarantee admission to the nursing program at UMAB.

The following courses are required for admission to the University of Maryland School of Nursing. In addition, there is an optional 1-credit internship available.

	Semester Credit Hours
Chemistry 103, 104—General Chemistry I, Fundamentals	4, 4
of Organic and Biochemistry .....	3
English 101—Introduction to Writing .....	3, 3
(and 291 or 391) Intermediate Writing or Advanced Composition .....	4
Biology 105 .....	3
MATH 110—Elementary Mathematical Models (or higher) ....	9
Humanities (literature, history, philosophy, math, fine arts, language, speech) .....	3
Psychology 100/Introduction to Psychology .....	3
Sociology 100—Introduction to Sociology or 105 Introduction to Contemporary Social Problems .....	3
EDHD 320—Human Development Through The Lifespan .....	3
Other social sciences (sociology, psychology, anthropology, government and politics, economics, geography) .....	4, 4
Zoology 201, 202—Human Anatomy & Physiology I, II .....	4
Microbiology 200—General Microbiology .....	3
Nutrition 200/Nutrition for Health Services .....	2-3
Elective .....	59-60

Courses must include at least one course which is not mathematics or English.

**Further information**

At College Park contact the Nursing Advisor, 3103 Turner Laboratory, College Park, MD 20742, (301) 454-2540. In Baltimore contact the Director for Admissions, The University of Maryland, School of Nursing, 655 W. Lombard Street, Baltimore, Maryland 21201, (301) 328-6282. "RN to BSN" advisor: UMBC, 5401 Wilkens Ave., Catonsville, MD 21228 (301) 454-3450.

**Pre-Optometry**

Advisor: Love

Requirements for admission to schools and colleges of optometry vary somewhat, and the pre-optometry student should consult the catalogs of the optometry schools and colleges for specific admission requirements. A minimum of two years of pre-optometry studies is required for admission

to all accredited schools, and about half of the schools require a minimum of three years. At present, more than two thirds of successful applicants hold a bachelor's or higher degree. Students who contemplate admission to optometry schools may major in any program that the University offers, but would be well-advised to write to the optometry schools of their choice for specific course requirements for admission. In general, pre-optometry students should follow a four-year baccalaureate program which includes the following:

	Semester Credit Hours
Biology and Microbiology and Zoology .....	4-12
Inorganic Chemistry .....	8
Organic Chemistry .....	4-8
Physics .....	8
Math through differential calculus .....	6
English .....	6
Psychology .....	3-6
Statistics .....	3
Social Sciences .....	6

The State of Maryland participates in interstate contracts with five schools and colleges of optometry, located in Alabama, Illinois, Pennsylvania, Tennessee, and Texas. The contracts ensure available places in entering classes and provide for partial tuition remission for qualified applicants who are residents of Maryland.

For additional information on pre-optometry studies, contact the Pre-medical Advisor, 3103 Turner Laboratory, The University of Maryland, College Park, MD 20742, (301) 454-2540.

**Pre-Osteopathic Medicine**

Advisor: Love

The pre-professional requirements for osteopathic medical school are essentially identical to those for allopathic medical school, and the student is referred to the pre-medicine discussion above.

The State of Maryland participates in an interstate contract with the West Virginia School of Osteopathic Medicine. This contract will ensure available places in entering classes, and will provide for partial tuition remission, for qualified applicants who are residents of Maryland.

For additional information on pre-osteopathy studies, contact the Pre-medical Advisor, 3103 Turner Laboratory, The University of Maryland, College Park, MD 20742, (301) 454-2540.

**Pre-Pharmacy**

Advisor: Stewart

College Park students may prepare themselves not only for entrance into the UMAB School of Pharmacy but also for entrance into pharmacy programs at other colleges and universities. To do this efficiently, students should obtain program information when first entering college so that requirements can be taken in normal sequence. Information for the University of Maryland School of Pharmacy is available at the Health Professions Advising Office, 3103 Turner Laboratory. Also at this location students may read about other schools of pharmacy.

The School of Pharmacy, which is located in Baltimore (UMAB), offers both a 3-year professional program leading to a Bachelor of Science in Pharmacy and a 4-year program leading to a Doctor of Pharmacy degree. Both programs are the same until the third year, when some students are accepted into the Doctor of Pharmacy program. Preprofessional studies may be completed at any University of Maryland institution except UMAB or at another accredited institution. The final three or four years of professional study must be completed in the School of Pharmacy at UMAB.

**Application and Admission**

Applicants for pre-pharmacy at College Park must meet all admission requirements of that institution. While in high school students are encouraged to enroll in a college preparatory curriculum emphasizing biology, chemistry, and college preparatory mathematics.

Pre-pharmacy students should begin the application process for professional school in fall of the sophomore year. UMAB applications and instructions are available in the Health Professions Advising Office. Applications for other programs must be obtained individually from the respective colleges.

## 160 Campus-Wide Programs

Enrollment as a pre-pharmacy student at any campus does not guarantee admission to the School of Pharmacy on the Baltimore City Campus (UMAB). Students who are uncertain about their chances of admission to professional school are encouraged to consult the advisor.

The following courses are required for admission to the UMAB School of Pharmacy:

	Semester Credit Hours
CHEM 103, 113—General Chemistry I, II .....	4, 4
CHEM 233, 243—Organic Chemistry I, II .....	4, 4
MATH 220—Elementary Calculus I .....	3
BIOL 105—Principles of Biology I .....	4
PHYS 121, 122—Fundamentals of Physics I, II .....	4, 4
ENGL 101—Introduction to Writing .....	3
Other English .....	3
Humanities (English, Journalism, Fine Arts, Classics, Modern Language, Philosophy, or Speech) .....	6
Social Science (Anthropology, Economics, Geography, History, Government and Politics, Psychology, or Sociology) .....	6
Additional humanities or social sciences .....	6
Electives .....	5-6 60-61

### Further Information

At College Park contact the Pharmacy Advisor, The University of Maryland, 3103 Turner Laboratory, College Park, MD 20742, (301) 454-2540. In Baltimore, contact Admissions Committee Chairman, The University of Maryland School of Pharmacy, 20 North Pine Street, Baltimore, Maryland 21201, (301) 328-7650.

### Pre-Physical Therapy

Advisor: Stewart

College Park students may prepare themselves not only for entrance into University of Maryland physical therapy programs but also for entrance into physical therapy programs at other colleges and universities. To do this efficiently, students should obtain program information when first entering college so that requirements can be taken in normal sequence. Information for the University of Maryland programs is available at the Health Professions Advising Office, 3103 Turner Laboratory. Bulletins from other colleges may be seen at the same location.

The University of Maryland offers two B.S. programs in physical therapy. One is given by the Department of Physical Therapy at Baltimore City (UMAB) and the other is given at Eastern Shore (UMES), in Princess Anne.

For either of these programs, the first two years, consisting of pre-professional studies, may be completed on any University of Maryland institution (except UMAB) or any regionally accredited university or college. It should be noted that the junior year course sequence for the UMAB program begins in summer, while the junior year course sequence for the UMES program begins in the fall.

### Application and Admission

Applicants for the pre-physical therapy program at College Park must meet all admission requirements for that campus. While in high school students should pursue a college preparatory program. Subjects specifically recommended are biology, chemistry, physics, and at least three units of college preparatory mathematics.

Pre-physical therapy students should begin the application process for professional school in fall of the sophomore year. UMAB or UMES applications and instructions are available in the Health Professions Advising Office. Applications for other programs must be obtained individually from the respective colleges.

Enrollment as a pre-physical therapy student at any campus does not guarantee admission to the physical therapy programs at either UMAB or UMES. In view of the heavy competition for admission, all applicants are encouraged to apply to several programs. This entails looking at schools in other states and even other geographic regions.

The following courses are required for admission to the UMAB and UMES Physical Therapy Programs:

	Semester Credit Hours UMAB UMES
CHEM 103, 104*: General Chemistry I; Fundamentals of Organic and Biochemistry .....	8, 8
PHYS 121, 122—Fundamentals of Physics I, II .....	8, 8
BIOL 105—Principles of Biology I, 4	
ZOOL 201 and/or 202—Human Anatomy & Physiology I, II .....	4, 8
MATH 115 .....	3
MATH 115, 220** .....	6
Statistics .....	3, 3
Social Science (Afro American Studies, Anthropology, Economics, Government and Politics, Urban Studies, Sociology, Geography, Women's Studies) .....	3
PSYC 100—Introduction to Psychology .....	3
Psychology (developmental, abnormal, educational, or personality study recommended) .....	3, 3
ENGL 101—Introduction to Writing .....	3, 3
ENGL 240—Introduction to Literary Forms and 391 or 393—Advanced Composition or Technical Writing .....	6
SPCH 107— Technical Speech Communication or 100— Basic Principles of Speech Communication .....	3, 3
Arts and humanities (history [not for UMES], literature, foreign language, philosophy, or fine arts) .....	6, 6
Health education .....	2-3
Physical education .....	2
Electives*** .....	6, 1-2
Total .....	60, 64

\*CHEM 113 may be substituted for CHEM 104

\*\*Preferred course, but other selections are possible. See advisor.

\*\*\*For the UMAB program no more than two credits of non-theory or skills may be used. Review of introductory courses may not be used if below the required level in biology, chemistry, physics, math, or English.

### Further information

At College Park contact the Physical Therapy Advisor, 3103 Turner Laboratory, College Park, MD 20742, (301) 454-2540. At UMES, contact Dr. Raymond Blakely, Department of Physical Therapy, UMES, Princess Anne, MD 21853, (301) 651-2200, extension 577. In Baltimore contact the Department of Physical Therapy, 32S, Greene Street, Baltimore, MD 21201, (301) 328-7720.

### Pre-Podiatric Medicine

The pre-professional requirements for podiatric medical school are essentially identical to those for allopathic medical school, and the student is referred to the pre-medicine discussion above.

For additional information on pre-podiatry studies, contact the Pre-medical Advisor, The University of Maryland, 3103 Turner Laboratory, College Park, MD 20742, (301) 454-2540.

## CAMPUS-WIDE PROGRAMS

### Air Force Aerospace Studies Program (ROTC)

2132 Cole Student Activities Bldg., 454-3242

Director: Davis

Assistant Professors: Hughes, Fields, Meyer

The Air Force Reserve Officers Training Corps (ROTC) provides two programs for college men and women to earn a commission as a Second Lieutenant in the United States Air Force while completing their University degree requirements.

### Four-Year Program

This program is composed of a General Military Course (GMC) and a Professional Officer Course (POC). The first two years (GMC) normally for freshmen and sophomores, give a general introduction to the Air Force and the various career fields. Students enrolled in the GMC program incur no obligation and may elect to discontinue the program at any time. The final two years (POC) are concentrated on the development of management skills and study of United States defense policy. Students must compete for acceptance into the POC. All students enrolled in the last two years of the program receive approximately \$1,000 annually tax free.

Students in the four-year program who successfully complete the first two years of the program and are accepted into the POC program must attend

four weeks of field training at a designated Air Force base during the summer after completing the sophomore year of college. To enter the AFROTC program, one should inform his or her advisor and register for classes in the same manner as for other courses.

## Two-Year Program

This program is normally offered to prospective juniors but may be taken by seniors and graduate students. The academic requirements for this program are identical to the final two years of the four-year program. During the summer preceding entry into the program, all candidates must complete a six-week field training at a designated Air Force base.

## The Curriculum

### General Military Course (GMC)

**Freshman year**—ARSC 100 (Fall) and ARSC 101 (Spring). In combination these two courses are designed to introduce the student to the roles of the Department of Defense and the U.S. Air Force in the contemporary world through a study of the total force structure, strategic offensive and defensive forces, general purpose forces, and aerospace support forces. Each one-credit course consists of one hour of academic class and one hour of leadership laboratory each week.

**Sophomore year**—ARSC 200 (Fall) and ARSC 201 (Spring). These two courses provide a study of air power from balloons and dirigibles through the jet age; an historical review of air power employment in military and nonmilitary operations in support of national objectives; and a look at the evolution of air power concepts and doctrine. Each one-credit course consists of one hour of academic class and one hour of leadership laboratory each week.

### Professional Officer Course (POC)

**Junior year**—ARSC 310 (Fall) and ARSC 311 (Spring). Each of these courses consists of three hours of academic classes and one hour of leadership laboratory each week. Here the student is introduced to concepts and skills required by the successful manager and leader. The curriculum includes individual motivational and behavioral processes, leadership, communication, and group dynamics, providing the foundation for the development of the junior officer's professional skills (officer-ship). Course material on the fundamentals of management emphasizes decision making, the use of analytic aids in planning, organizing, and controlling in a changing environment, as necessary professional concepts. Organizational and personal values (ethics), management of change, organizational power, politics, and managerial strategy and tactics are discussed within the context of the military organization. Actual Air Force case studies are used throughout the course to enhance the learning and communication process. ARSC 310 is an approved course for the University Studies Program in the Social and Behavioral Studies area.

**Senior year**—ARSC 320 (Fall) and ARSC 321 (Spring). Each of these courses consists of three hours of academic classes and one hour of leadership laboratory each week. This course is a study of the United States National Security Policy which examines the formulation, organization, and implementation of national security; context of national security; evolution of strategy; management of conflict; and civil-military interaction. It also includes blocks of instruction on the military profession, officership, and the military justice system. The course is designed to provide future Air Force officers with a background of United States National Security Policy so they can effectively function in today's Air Force.

All Aerospace courses are open to any university student for credit whether or not he or she is in the AFROTC Program. Only the AFROTC cadets attend the leadership laboratories. ARSC 320 is an approved course for the University Studies Program in the Social and Behavioral Studies area.

## Scholarships

The AFROTC College Scholarship Program provides eight, seven, six, five, and/or four semester scholarships to students on a competitive basis. Scholarships are currently available in numerous technical fields and are based on merit and not need. Those selected receive full tuition, lab expenses, incidental fees, and book allowance plus a non-taxable allowance of \$100 monthly.

Air Force ROTC College Scholarships are available on a competitive basis to qualified applicants enrolled in the four- and two-year AFROTC programs. (For a full explanation of Air Force ROTC, see AFROTC under

"Financial Aid".) Four through eight semester scholarships are available and are based on merit and not need. These scholarships provide full tuition, laboratory fees, incidental fees, an allowance for textbooks, and a non-taxable allowance of \$100 monthly. Any student accepted by The University of Maryland may apply for these scholarships. AFROTC membership is required if one receives an AFROTC scholarship.

## Air Force Nurse Program

Air Force ROTC makes it possible for qualified applicants of nursing schools to enroll in its programs and, upon completion of all academic and licensing requirements, receive a commission as a Second Lieutenant in the United States Air Force Medical Corps.

## General Requirements for Acceptance into the POC

The student must complete the General Military Course and a four-week field training session, or the six-week field training session, pass the Air Force Officer Qualification Test, be physically qualified, be in good academic standing, and meet age requirements. Successful completion of the Professional Officer Course and a bachelor's degree (higher) are prerequisites for a commission as a Second Lieutenant in the United States Air Force. Additional information may be obtained by telephoning the Office of Aerospace Studies, (301) 454-3242/43.

Course Code: ARSC

## Study Abroad Programs

3125 Mitchell Bldg., 454-8645

Coordinator: Rick Weaver

The goal of the Study Abroad Office is to enable students to incorporate a summer, semester, or year abroad into their degree program at Maryland. Study abroad increases awareness of other cultures and languages while providing a comparative international perspective. Many students find study abroad essential for their major or career plans. Others view it as part of their liberal arts education.

## Advising and Information

The Study Abroad Office provides handouts and advising on the wide variety of programs available. A small library provides information on programs offered by other universities. The office assists students in obtaining credit for their experience abroad.

## Maryland Study Abroad Semester/Year Programs

**Denmark's International Study Program:** Maryland acts as a coordinator for DIS in Copenhagen, which offers many liberal arts and business subjects taught in English.

**Semester in Israel:** From January to May students learn Hebrew and take courses in Jewish and Israeli studies taught in English by faculty members at Tel Aviv University.

**s** Offers courses in the social sciences, business, and the humanities that focus on Britain.

**Study in Beijing:** Offers a spring semester of intensive Chinese language from beginner to advanced level.

**Study in Brazil:** Offers a summer and fall semester at the Catholic University of Rio to take regular university courses offered in Portuguese.

**Maryland-in-Nice:** Offers French language courses for foreigners and regular courses at the University of Nice for students with sufficient French language background.

## Summer Programs

**Architecture Abroad:** The School of Architecture sponsors various summer study programs which allow students at an advanced undergraduate and graduate level to deal creatively with architectural issues in a foreign environment. Program locations vary, but include Tunisia, Turkey, and Western Europe.

**Summer in Kassel:** The Department of Germanic and Slavic Languages and Literature sponsors a five-week intensive language and culture program in Kassel, West Germany.

**Summer in Madrid:** The Department of Spanish and Portuguese sponsors a five-week intensive language and culture program in Madrid, Spain.

### Exchanges

The Study Abroad Office administers reciprocal exchanges with specific universities overseas. These exchanges are often related to academic departments and require extensive language or academic background. All the exchanges require at least a 3.0 grade point average. Exchanges are available with the following British Universities: University of Kent for Government and Politics majors; University of Sheffield for English majors and American Studies majors; University of Lancaster for Math majors; University of Bristol for Philosophy majors; University of Surrey for Sociology majors; University of Bath for Horticulture majors; and University of Liverpool for History majors. In Japan, Keio University in intensive Japanese. In West Germany, the University of Bremen, the Free University of Berlin, and the Gesamthochschule Kassel. In Austria, the University of Vienna.

## Certificate Programs

Four undergraduate certificates are currently available: Afro-American Studies, East Asian Studies, Liberal Arts in Business, and Women's Studies.

### Afro-American Studies Certificate

**College of Behavioral and Social Sciences**  
2169 LeFrak, 454-5665

The Afro-American Studies Certificate program offers the opportunity to gain a concentration in an interdisciplinary package of courses on the black experience. Courses include such disciplines as Anthropology, Art, Literature, History, Public Policy, and Sociology.

Undergraduates in good standing may apply for the program by contacting Charlotte Gills of the Afro-American Studies Program in 2169 LeFrak Hall. Students pursuing the certificate must meet the University Studies Program and department requirements.

To receive the certificate in Afro-American Studies, students must take twenty-one credit hours stipulated as follows:

1. Twelve hours of core courses: AASP 100; 200 or 202; 300; and 400 or 401.
2. Nine hours of electives from 300 or 400 level courses, of which three hours must be taken from courses outside the Afro-American Studies Program and approved by the AASP faculty.
3. A maximum of three credit hours of special topics or selected topics courses (numbers ending in -8 or -9).
4. A maximum of nine credit hours applied toward a major.
5. No more than nine credit hours taken at institutions other than UMCP.
6. A minimum grade of C in each course applied toward the certificate.

### East Asian Studies Certificate

**College of Arts and Humanities**  
2101 Jimenez Hall, 454-4307

The Undergraduate Certificate in East Asian Studies is a twenty-four-credit course of instruction designed to provide specialized knowledge of the cultures, histories, and contemporary concerns of the peoples of China, Japan, and Korea. It will complement and enrich a student's major. The curriculum focuses on language instruction, civilization courses, and electives in several departments and programs of the university. It is designed specifically for students who wish to expand their knowledge of East Asia and demonstrate to prospective employers, the public, and graduate and professional schools a special competence and set of skills in East Asian affairs.

Upon satisfactory completion of the courses, with a grade of C or better in each course, and recommendation by the chairperson of the Committee on East Asian Studies, a certificate will be awarded. A notation of the award of the certificate will be included on the student's transcript. The student must have a baccalaureate degree awarded previously to or simultaneously with an award of the certificate.

## Certificate Requirements

**Core Courses:** The student is required to take:

1. HIST 284—East Asian Civilization I
2. HIST 285—East Asian Civilization II
3. Six semester hours of introduction to one of the following East Asian languages (Chinese, Japanese, or Korean):  
CHIN 101—Elementary Chinese I  
JAPN 101—Elementary Japanese I  
Both FOLA 109—Elementary Korean II  
and FOLA 118K—Intermediate Korean I

Students with language competence equivalent to these language courses are exempted from the language requirement. Such students are required to complete an additional six hours of electives in East Asian courses to fulfill the twenty-four-credit requirement for the certificate.

**Electives:** Students must complete at least twelve hours of electives selected from four regular formally approved courses on East Asia in at least two of the following categories: (1) art history, (2) geography, (3) government and politics, (4) history, (5) language, linguistics, and literature, (6) music, (7) sociology, and (8) urban studies. Nine of the twelve hours of electives must be upper division (300-400 level) courses. A maximum of three credit hours of special topics courses on East Asia will be allowed with the approval of the student's certificate adviser. No more than nine credits from any one department may be applied toward the certificate. No more than nine credits applied to the student's major may also apply to the certificate. In addition, no more than nine credits of the courses applied toward the certificate may be transferred from other institutions. Students are asked to work with their advisor in ensuring that the electives maintain an intercollegiate and interdisciplinary locus (at least three disciplines are recommended).

Interested students should contact Dr. Bonnie Oh, Assistant Dean, Undergraduate Studies Office, from January-December 1990 (1115 Hornbake Library; (301) 454-2530) and thereafter Dr. Marlene Mayo, Department of History, Francis Scott Key Hall, (301) 454-2843.

### Liberal Arts in Business Certificate

**College of Arts and Humanities**  
1102 Francis Scott Key Hall, 454-6794

The College of Arts and Humanities offers an interdisciplinary certificate program, the Liberal Arts in Business, for students pursuing any of the traditional majors within the college. Any student in the college of Arts and Humanities may apply for admission to this program which is designed to provide the student with an understanding of the world of business and an awareness of some of the skills needed to compete successfully for entry-level employment in the business world. The core of LAB courses includes special sections of required speech and writing courses, some courses designed especially for the LAB program, Work, Workers, Work Settings (SOCY), The Law and Ethics of Business (BMGT), and Integrated Accounting Budgeting and Planning (BMGT), and some courses open to all students, Economics of Social Problems, Modern Business History. For further information contact Dr. Charles S. Rutherford in the office of the Dean of Arts and Humanities.

### Women's Studies Certificate

**College of Arts and Humanities**  
1115 Mill Building, 454-3841

The Women's Studies Certificate Program consists of an integrated, interdisciplinary curriculum on women which is designed to supplement a student's major. Any student in good standing may enroll in the certificate program by declaring her/his intention to the Women's Studies undergraduate advisor. For additional information, contact the Women's Studies Office, 454-3841.

To qualify for a certificate in Women's Studies a student must earn twenty-one credits in required Women's Studies core courses and electives. Programs are designed in consultation with the Women's Studies undergraduate advisor. Each student must obtain a grade of C or better in each course that is to be counted toward the certificate.

Of the 21 credits, courses must be distributed as follows: Nine credit hours from the following WMST courses:

WMST 200—Introduction to Women's Studies  
 Women and Society OR  
 WMST 250—Introduction to Women's Studies: Women, Art, and Culture  
 WMST 400—Theories of Feminism  
 WMST 490—Senior Seminar: Feminist Reconceptualizations

The remaining 12 credit hours consist of courses chosen from 3 of the 4 distributive areas listed below and one elective. Two courses must be from departments other than WMST. One course must be identified as adding a multi-cultural dimension.

#### Distributive Areas

The content of courses with numbers ending in 8 or 9 may change. Students should check the Schedule of Classes to verify each semester's Special Topics offerings.

- I. ARTH 489—Women in Art  
 CMLT 498—Feminist Literary Criticism  
 CMLT 498—Special Topics in Women in Literature  
 ENGL 250—Women in Literature  
 ENGL 348—Literary Works by Women  
 FREN 478—French Women Writers in Translation  
 GERM 439—Women in German Literature  
 JAPN 418—Japanese Women Writers in Translation  
 MUSC 448—Women and Music in Cross-Cultural Perspective  
 WMST 250—Introduction to Women's Studies: Women, Art, and Culture
- II. EDCP 498—Issues Related to Counseling Women  
 FMCD 430—Gender Role Development in the Family  
 HLTH 471—Women's Health  
 PSYC 336—Psychology of Women  
 SOCY 325—Sex Roles  
 SOCY 425—Sex Roles and Social Institutions  
 SPCH 425—Communication and Sex Roles  
 WMST 200—Introduction to Women's Studies: Women and Society

- III. AMST 418—Women and Family in American Life  
 AASP 428—Black Women in America  
 CLAS 309—Women in Ancient Greece and Rome  
 CLAS 320—Women in Classical Antiquity  
 GERM 281—Women in German Literature and Society  
 HIST 210—American Women to 1880  
 HIST 211—American Women 1880 to Present  
 HIST 301—Women and Industrial Development  
 HIST 309—Proseminar in History of Women  
 HIST 318—Women in the Middle East  
 HIST 458—Selected Topics in Women's History  
 HIST 618—Readings in the History of Women  
 PHED 492—History of the American Sportswoman
- IV. AASP 428—EEO Laws: Implications for Women and Minorities  
 AASP 428—Women and Work  
 ECON 374—Sex Roles in Economic Life  
 GVPT 436—Legal Status of Women  
 GVPT 471—Women and Politics  
 JOUR 460—Women in the Mass Media  
 PHED 451—Sport and the American Woman

#### Internships

Women's Studies internships are available to certificate students and any other interested students. WMST internships enable students to gain practical experience by working as interns for businesses, agencies, and organizations that provide services for women. The internship is a six-credit, two-unit course combining field work with a weekly seminar. The internship program focuses on integrating feminist theory into our understanding of the work place.

Course Code: WMST

# APPROVED COURSES

The following list includes undergraduate courses which have been approved as of February 1, 1990. Courses added after that date do not appear in this list. Courses eliminated after that date may still appear. Not every course is offered regularly. Students should consult the Schedule of Classes to ascertain which courses are actually offered during a given semester.

## Course Numbering System

### NUMBER ELIGIBILITY

000-099	Non-credit course
100-199	Primarily freshman course
200-299	Primarily sophomore course
300-399	Junior, senior course not acceptable for credit toward graduate degrees.
386-387	Campus-wide internship courses; refer to information describing the office of Experiential Learning in Part 1.
400-499	Junior, senior course acceptable for credit towards some graduate degrees.
500-599	Professional School course (Dentistry, Architecture, Law, Medicine) or postbaccalaureate course.
600-699	Course restricted to graduate students
799	Masters Thesis credit.
899	Doctoral Dissertation credit.

Courses with last digit of 8 or 9 can be repeated for additional credit.

## AASP — Afro-American Studies

**AASP 100 Introduction to Afro-American Studies (3)** Significant aspects of the history of Afro-Americans with particular emphasis on the evolution and development of black communities from slavery to the present. Interdisciplinary introduction to social, political, legal and economic roots of contemporary problems faced by blacks in the United States with applications to the lives of other racial and ethnic minorities in the Americas and in other societies.

**AASP 101 Public Policy and the Black Community (3)** Formerly AASP 300. The impact of public policies on the black community and the role of the policy process in affecting the social, economic and political well-being of minorities. Particular attention given to the post-1960 to present era.

**AASP 200 African Civilization (3)** A survey of African civilizations from 4500 B.C. to present. Analysis of traditional social systems. Discussion of the impact of European colonization on these civilizations. Analysis of the influence of traditional African social systems on modern African institutions as well as discussion of contemporary processes of Africanization.

**AASP 202 Black Culture in the United States (3)** The course examines important aspects of American Negro life and thought which are reflected in Afro-American literature, drama, music and art. Beginning with the cultural heritage of slavery, the course surveys the changing modes of black creative expression from the nineteenth-century to the present.

**AASP 298 Special Topics in Afro-American Studies (3)** Repeatable to 6 credits if content differs. An introductory multi-disciplinary and inter-disciplinary educational experience to explore issues relevant to black life, cultural experiences, and political, economic and artistic development.

**AASP 301 Applied Policy Analysis and the Black Community (3)** Prerequisite: AASP 101. Recommended: one semester of statistics. Development and application of the tools needed for examining the effectiveness of alternative policy options confronting minority communities. Review policy research methods used in forming and evaluating policies. Examination of the policy process.

**AASP 303 Computer Applications in Afro-American Studies (3)** Prerequisite: STAT 100 or SOCV 201 or MATH 111 or equivalent. Introduction to statistics and database processing software used in model estimation and simulation in policy analysis. Special emphasis on applications for applied research on policy problems confronting minority communities.

**AASP 305 Theoretical, Methodological and Policy Research Issues in Afro-American Studies (3)** Prerequisite: AASP 101 or permission of department. Formerly AASP 401. Theories and concepts in the social and behavioral sciences relating to problems in minority communities. Issues include validity and soundness of theoretical arguments, epistemological questions of various methodologies and the relationship between policy making and policy research.

**AASP 310 African Slave Trade (3)** Formerly AASP 311. The relationship of the slave trade of Africans to the development of British capitalism and its industrial revolution; and to the economic and social development of the Americas.

**AASP 312 Social and Cultural Effects of Colonization and Racism (3)** A comparative approach to the study of the social and cultural effects of colonization and racism on black people in Africa, Latin America and in the United States—community and family life, religion, economic institutions, education and artistic expression.

**AASP 397 Senior Thesis (3)** Prerequisites: AASP 305, and permission of department. Directed research in Afro-American Studies resulting in the completion and defense of a senior thesis.

**AASP 400 Directed Readings in Afro-American Studies (3)** The readings will be directed by the Director of Afro-American Studies. Topics to be covered; the topics will be chosen by the director to meet the needs and interests of individual students.

**AASP 402 Classic Readings in Afro-American Studies (3)** Classic readings of the social, economic and political status of blacks and other minorities in the United States and the Americas.

**AASP 410 Contemporary African Ideologies (3)** Analysis of contemporary African ideologies. Emphasis on philosophies of Nyerere, Nkrumah, Senghor, Sekou Toure, Kaunda, Cabral, et al. Discussion of the role of African ideologies on modernization and social change.

**AASP 411 Black Resistance Movements (3)** A comparative study of the black resistance movements in Africa and America; analysis of their interrelationships as well as their impact on contemporary pan-Africanism.

**AASP 441 Science, Technology, and the Black Community (3)** Prerequisite: AASP 100 or AASP 202 or HIST 255 or permission of department. Scientific knowledge and skills in solving technological and social problems, particularly those faced by the black community. Examines the evolution and development of African and Afro-American contributions to science. Surveys the impact of technological changes on minority communities.

**AASP 443 Blacks and the Law (3)** Prerequisite: AASP 100 or AASP 202 or HIST 255 or permission of department. The relationship between black Americans and the law, particularly criminal law, criminal institutions and the criminal justice system. Examines historical changes in the legal status of blacks and changes in the causes of racial disparities in criminal involvement and punishments.

**AASP 497 Policy Seminar in Afro-American Studies (3)** Prerequisite: AASP 301 or permission of department.

Application of public policy analysis to important social problems and policy issues affecting black Americans. Policy research and analysis procedures through an in-depth study of a critical, national black policy issue.

**AASP 498 Special Topics in Black Culture (3)** Prerequisite: AASP 100 or AASP 202. Repeatable to 6 credits if content differs. Advanced study of the cultural and historical antecedents of contemporary African and Afro-American society. Emphasis on the social, political, economic and behavioral factors affecting blacks and their communities. Topics vary.

**AASP 499 Advanced Topics in Public Policy and the Black Community (3)** Prerequisite: AASP 301 or permission of department. Repeatable to 6 credits if content differs. Examination of specific areas of policy development and evaluation in black and other communities. Application of advanced tools of policy analysis, especially quantitative, statistical and micro-economic analysis.

## AEEP — Agricultural and Extension Education

**AEEP 200 Environmental Interpretation (3)** The natural history concepts and conservation practices useful for understanding natural and man-modified environments of the mid-Atlantic region. Three arranged weekend field trips.

**AEEP 302 Introduction to Agricultural Education (2)** An overview of the job of the teacher of agriculture; examination of agricultural education programs for youth and adults.

**AEEP 303 Teaching Materials and Demonstrations (2)** Principles and practices of the demonstration method; construction and use of visual aids in teaching agriculture.

**AEEP 305 Teaching Young and Adult Farmer Groups (1)** Characteristics of young and adult farmer instruction in agriculture. Determining needs for and organizing a course, selecting materials for instruction, and class management. Emphasis is on the conference method of teaching.

**AEEP 311 Teaching Secondary Vocational Agriculture (3)** A comprehensive course in the work of high school departments of vocational agriculture. It emphasizes particularly placement, supervised farming programs, the organization and administration of future farmer activities, and objectives and methods in all-day instruction.

**AEEP 313 Student Teaching (5)** Prerequisite: satisfactory academic average and permission of department. Full-time student teaching in an off-campus student teaching center under an approved supervising teacher of agriculture, participating experience in all aspects of the work of a teacher of agriculture.

**AEEP 315 Student Teaching (1-4)** Prerequisite: satisfactory academic average and permission of department. Full-time observation and participation in work of teacher of agriculture in off-campus student teaching center. Provides students opportunity to gain experience in the summer program of work, to participate in opening of school activities, and to gain other experience needed by teachers.

**AEEP 322 An Introduction to Adult and Continuing Education (3)** This course introduces students to the field of nonformal adult and continuing education. It examines the social functions, studies the critical issues, explores career opportunities and surveys some of the nonformal adult education delivery systems.

**AEEP 323 Developing Youth Programs (3)** A study of concepts involved in planning and executing programs

developed to meet the needs of youth especially those living in rural and suburban areas. Emphasis will be placed on the identification of attitudes, needs, and problems of youth in all socio-economic levels. An analysis of methods or working with youth groups and developing volunteer leaders will also be included.

**AEED 325 Directed Experience in Extension Education (1-5)** Prerequisite: satisfactory academic average and permission of department. Full-time observation and participation in selected aspects of extension education in an approved training county.

**AEED 389 Selected Topics (1-3)** Repeatable to 6 credits if content differs.

**AEED 398 Seminar in Agricultural Education (1)** Examination of current literature, reports and discussions of problems, trends, and issues in agricultural education.

**AEED 464 Rural Life in Modern Society (3)** The historical and current nature of rural and agricultural areas and communities in the complex structure and culture of U.S. society. Basic structural, cultural, and functional concepts for analyses and contrasts of societies and the organizations and social systems within them.

**AEED 466 Rural Poverty in an Affluent Society (3)** Factors giving rise to conditions of rural poverty. Problems faced by the rural poor. Programs designed to alleviate rural poverty.

**AEED 488 Critique in Rural Education (1)** Current problems and trends in rural education.

**AEED 489 Field Experience (1-4)** Prerequisite: permission of department. Repeatable to 4 credits. Planned field experience for both major and non-major students.

**AEED 499 Special Problems (1-3)**

## AGRI — Agriculture

**AGRI 105 Risk and Responsibility - An Introduction to Agriculture (3)** Formerly AGRI 101. Technical and human components of agriculture in a cross-disciplinary context. Agricultural origins, crop and animal domestication, agricultural geography, food and nutrition, the natural resource base and environmental concerns, agricultural policy formation, agricultural marketing and trade, sustainable agriculture, international agriculture, and the future of farming.

**AGRI 489 Special Topics in Agriculture (1-4)** Credit according to time scheduled and organization of the course. A lecture series organized to study in depth a selected phase of agriculture not normally associated with one of the existing programs.

## AGRO — Agronomy

**AGRO 101 Introductory Crop Science (4)** Credit will be granted for only one of the following: AGRO 101 or AGRO 100 and AGRO 102. Major crop plants including: anatomy, physiology, morphology, history, use, adaptation, culture, improvement and economic importance.

**AGRO 105 Soil and Environmental Quality (3)** Soils as an irreplaceable natural resource, the importance of soils in the ecosystem, soils as sources of pollution, and soils as a medium of the storage, assimilation, or inactivation of pollutants. Acid rain, indoor radon, soil erosion and sedimentation, nutrient pollution of waters, homewoners problems with soils, and the effect of soils on the food chain.

**AGRO 302 Fundamentals of Soil Science (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: CHEM 103. Study and management of soils as natural bodies, media for plant growth, and ecosystem components. Morphology, composition, formation, and conservation of soils. Chemical, biological, and physical properties of soils in relation to the production of plants, the functioning of hydrologic and nutrient cycles, the protection of environmental quality, and engineering uses of soils. Lab emphasizes hands-on procedures and field skills.

**AGRO 303 International Crop Production (3)** Prerequisite: BIOL 105 or equivalent. An introduction to the biological dimension of world hunger. The problems and potentials for increasing world food supply based on current agronomic knowledge. Emphasis on international aspects of food crop production and the interrelationships

between agriculture and human populations in the developing world.

**AGRO 305 Introduction to Turf Management (3)** Formerly AGRO 405. Principles of turf culture identification and uses of turfgrass species, turfgrass fertilization, cultivation, mowing and establishment, and identification of turf pests.

**AGRO 308 Field Soil Morphology (1-2)** One hour of lecture and two hours of laboratory per week. Prerequisite: permission of department. Repeatable to 4 credits. Intensive field study of soils with particular emphasis on soil morphology, soil classification, and agricultural and urban soil interrelations. Focus in fall semesters is on soils of the Northeast U.S.; focus in spring semesters is on soils outside the Northeast region. The lab period is devoted to fields trips and student efforts culminate in a mandatory extended field trip.

**AGRO 398 Senior Seminar (1)** Reports by seniors on current scientific and practical publications pertaining to agronomy.

**AGRO 401 Pest Management Strategies for Turfgrass (3)** Prerequisite: AGRO 305. Interdisciplinary view or weed, disease, and insect management from an agronomy perspective. Plant responses to pest invasion, diagnosis of pest-related disorders, and principles of weed, disease and insect suppression through cultural, biological and chemical means are discussed.

**AGRO 402 Sports Turf Management (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: AGRO 305 and AGRO 401. Sports turf management, including design, construction, soil modification, soil cultural techniques, pesticide use, fertilization, and specialized equipment.

**AGRO 403 Crop Breeding (3)** Prerequisite: BOTN 414 or ZOOL 213. Principles and methods of breeding annual self and cross-pollinated plant and perennial forage species.

**AGRO 406 Forage Crops (3)** Prerequisite: BIOL 105. Recommended: BIOL 106. World grasslands and their influence on early civilizations; current impact on human food supply; role of forages in soil conservation and a sustainable agriculture. Production and management requirements of major grass and legume species for silage and pasture for livestock feed. Cultivar development; certified seed production and distribution.

**AGRO 407 Cereal and Oil Crops (3)** Pre- or corequisites: BIOL 105 and AGRO 101. A study of principles and practices of corn, small grains, rice, millets, sorghums, and soybeans and other oil seed crops. A study of seed production, processing, distribution and federal and state seed control programs of corn, small grains and soybeans.

**AGRO 410 Commercial Turf Maintenance and Production (3)** Prerequisite: AGRO 305 and AGRO 401. Commercial lawn care industry, sod production and turfgrass seed production. Fertilizer, renovation programs, and weed and insect control programs used in professional lawn care. Environmental effects of lawn care programs.

**AGRO 411 Principles of Soil Fertility (3)** Soil factors affecting plant growth and quality with emphasis on the bio-availability of mineral nutrients. The management of soil systems to enhance plant growth by means of crop rotations, microbial activities, and use of organic and inorganic amendments.

**AGRO 413 Soil and Water Conservation and Management (3)** Prerequisite: AGRO 302. Importance and causes of soil erosion, methods of soil erosion control. Effects of conservation practices on soil physical properties and the plant root environment. Irrigation and drainage as related to water use and conservation.

**AGRO 414 Soil Morphology, Genesis and Classification (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: AGRO 302. Processes and factors of soil genesis. Taxonomy of soils of the world by U.S. System. Soil morphological characteristics, composition, classification, survey and field trips to examine and describe soils.

**AGRO 415 Soil Survey and Land Use (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: AGRO 302. Evaluation of soils in the

of land and the environmental implications of soil utilization. Interpretation of soil information and soil surveys as applied to both agricultural and non-agricultural problems. Incorporation of soil data into legislation, environmental standards and land use plans.

**AGRO 417 Soil Physics (3)** Two hours of lecture and three hours of laboratory per week. Prerequisites: AGRO 302 and a course in physics, or permission of department. A study of physical properties of soils with special emphasis on relationship to soil productivity.

**AGRO 421 Soil Chemistry (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: AGRO 302. Spring semester. The chemistry and composition of mineral and organic colloids in soils, including on exchange, oxidation-reduction, acidity, surface charge, and solution chemistry. Lectures and readings pertain to plant nutrition, waste disposal and groundwater quality.

**AGRO 422 Soil Microbiology (3)** Prerequisite: AGRO 302. CHEM 104 or permission of department. Relationship of soil microorganisms to the soils: physical and chemical properties. Nitrogen fixation, mycorrhizal-plant interactions and microbially mediated cycling.

**AGRO 423 Soil-Water Pollution (3)** Prerequisites: AGRO 302 and CHEM 104 or permission of department. Reaction and fate of pesticides, agricultural fertilizers, industrial and animal wastes in soil and water with emphasis on their relation to the environment.

**AGRO 440 Crop, Soils, and Civilization (3)** Role and importance of crop and soil resources in the development of human civilization. History of crops and soils as they relate to the persistence of ancient and modern cultures.

**AGRO 441 Sustainable Agriculture (3)** Environmental, social and economic needs for alternatives to the conventional, high-input farming systems which currently predominate in industrial countries. Strategies and practices that minimize the use of non-renewable resources.

**AGRO 444 Remote Sensing of Agriculture and Natural Resources (3)** Interaction of electromagnetic radiation. Remote sensing technology to agriculture and natural resource inventory, monitoring and management and related environmental concerns.

**AGRO 451 Crop Culture and Development (3)** Pre or corequisite: BOTN 441. Application of basic plant physiology to crop production. Photosynthesis, respiration, mineral nutrition, water and temperature stress, and post-harvest physiology.

**AGRO 453 Weed Science (3)** Two hours of lecture and three hours of laboratory per week. Weed identification, ecology, and control (cultural, mechanical, biological, and chemical methods).

**AGRO 454 Air and Soil Pollution Effects on Crops (3)** Effects of air pollutants such as ozone, sulfur dioxide, acid rain, etc., and soil pollutants such as toxic metals, pesticides, on the growth, productivity and quality of crops.

**AGRO 483 Plant Breeding Laboratory (2)** Prerequisites: AGRO 403 and permission of department. Current plant breeding research being conducted at The University of Maryland and USDA at Beltsville. Discussion with plant breeders about pollination techniques, breeding methods, and program achievements and goals. Field trips to selected USDA laboratories.

**AGRO 499 Special Problems in Agronomy (1-3)** Prerequisites: AGRO 302, AGRO 406, AGRO 407 or permission of department. A detailed study, including a written report of an important problem in agronomy.

## AMST — American Studies

**AMST 201 Introduction to American Studies (3)** Introduction to American cultural studies—past and present—by examining the concept of “self” in American autobiographical writing and the concept of “society” in accounts of various communities.

**AMST 203 Popular Culture in America (3)** An introduction to American popular culture, its historical development, and its role as a reflection of and influence on our culture and society.

**AMST 204 Film and American Culture Studies (3)** Exploration of the American film from an historical perspective, illustrating the motion picture's role as an institutional phenomenon, as a form of communication, and as a source of cross-cultural study

**AMST 205 Material Aspects of American Life (3)** Historical survey of American material culture. Ways of describing and interpreting accumulated material evidence, e.g. buildings, town plans, introduced by stressing relationship between artifact and culture.

**AMST 206 Business and American Culture Studies (3)** Investigates the traditional definitions of personal success, the process of corporate rituals and the role of innovation in American business since 1945. Contemporary business discussed within the context of national and global socio-cultural changes applying organizational theory, historical studies, and anthropological field work to an analysis of audiotapes, videotapes, films and popular literature.

**AMST 207 Contemporary American Cultures (3)** World views, values, and social systems of contemporary American cultures explored through readings on selected groups such as middle-class suburbanites, old order Amish, and urban tramps.

**AMST 298 Selected Topics in American Studies (3)** Repeatable to 6 credits if content differs. Cultural study of a specific theme or issue involving artifacts and documents from both past and contemporary American experience.

**AMST 330 Critics of American Culture (3)** Prerequisite: prior course in AMST, HIST, or SOCY. Philosophies of American social purpose and promise. Readings from "classical" American thinkers, contemporary social commentators, and American studies scholars.

**AMST 398 Independent Studies (1-3)** Prerequisite: permission of department. Repeatable to 6 credits. Provides the student with the opportunity to pursue independent, interdisciplinary research and reading in specific areas of American culture studies.

**AMST 418 Cultural Themes in America (3)** Repeatable to 6 credits if content differs. Examination of structure and development of American culture through themes such as "growing up American", "culture and mental disorders", "race", "ethnicity", "regionalism", "landscape", "humor".

**AMST 426 Culture and the Arts in America (3)** Analysis of development of American cultural institutions and artifacts.

**AMST 428 American Cultural Eras (3)** Repeatable to 6 credits if content differs. Investigation of a decade, period, or generation as a case study in significant social change within an American context. Case studies include "Antebellum America, 1840-1860", "American culture in the Great Depression".

**AMST 429 Perspectives on Popular Culture (3)** Repeatable to 6 credits if content differs. Topics in popular culture studies, including the examination of particular genres, themes, and issues.

**AMST 432 Literature and American Society (3)** Prerequisite: prior course in AMST, SOCY, American literature, or American history. Examination of the relationship between literature and society; including literature as cultural communication and the institutional framework governing its production, distribution, conservation and evaluation.

**AMST 450 Seminar in American Studies (3)** Prerequisite: permission of department. Developments in theories and methods of American studies scholarship, with emphasis upon interaction between the humanities and the social sciences in the process of cultural analysis and evaluation.

**AMST 498 Special Topics in American Studies (3)** Prerequisite: a course in American history, literature, or government; or permission of department. Repeatable to 6 credits if content differs. Topics of special interest.

## ANSC — Animal Science

**ANSC 101 Principles of Animal Science (3)** Two hours of lecture and two hours of laboratory per week. A comprehensive course, including the development of

animal science, its contributions to the economy, characteristics of animal products, factors of efficient and economical production and distribution.

**ANSC 201 Basic Principles of Animal Genetics (3)** Credit will be granted for only one of the following: ZOO 213, ANSC 201, BOTN 414, HORT 274. The basic principles and laws of Mendelian genetics as applied to economically important domestic animals. Molecular genetics including DNA, RNA, genetic code and the regulation of protein synthesis. Other topics stressed include linkage and crossing over, recombination, cytological maps, chromosomal aberrations, mutations, population genetics and genetic engineering.

**ANSC 203 Feeds and Feeding (3)** Two hours of lecture and one hour of laboratory per week. Prerequisite: ANSC 101. Elements of nutrition, source, characteristics and adaptability of the various feedstuffs to the several classes of livestock. A study of the composition of feeds, the nutrient requirements of farm animals and the formulation of economic diets and rations for livestock.

**ANSC 211 Anatomy of Domestic Animals (4)** Three hours of lecture and two hours of laboratory per week. Prerequisite: BIOL 105. A systematic gross and microscopic comparative study of the anatomy of the major domestic animals. Special emphasis is placed on those systems important in animal production.

**ANSC 212 Applied Animal Physiology (3)** Prerequisite: ANSC 211 or equivalent. The physiology of domesticated animals with emphasis on functions related to production, and the physiological adaptation to environmental influences.

**ANSC 214 Applied Animal Physiology Laboratory (1)** Three hours of laboratory per week. Pre- or corequisite: ANSC 212. Application of physiological laboratory techniques to laboratory and domestic animals.

**ANSC 221 Fundamentals of Animal Production (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: ANSC 101. The adaptation of beef cattle, sheep, swine and horses to significant and specific uses. Breeding, feeding, management practices and criteria for evaluating usefulness are emphasized.

**ANSC 230 Light Horse Management (4)** Three hours of lecture and two hours of laboratory per week. Prerequisite: ANSC 101. A general course in horse management for students who intend to be involved in the care and management of light horses. The principles of nutrition, anatomy, physiology, health and disease, growth, reproduction, locomotion and basic management techniques.

**ANSC 242 Dairy Production (3)** Prerequisite: ANSC 101. A comprehensive course in dairy breeds, selection of dairy cattle, dairy cattle nutrients, feeding and management.

**ANSC 244 Dairy Cattle Type Appraisal (1)** Two laboratory periods. Prerequisite: permission of department. Laboratory. Analysis of dairy cattle type with emphasis on the comparative judging of dairy cattle.

**ANSC 252 Introduction to the Diseases of Wildlife (2)** Prerequisite: BIOL 105. The principal diseases of North American wildlife will be briefly considered. For each disease, specific attention will be given to the following signs, evidence by the affected animal or bird, causative agent, means of transmission and effects of the disease on the population of the species involved.

**ANSC 262 Commercial Poultry Management (3)** Prerequisite: ANSC 101. A symposium of finance, investment, plant layout, specialization, purchase of supplies and management problems in baby chick, egg, broiler and turkey production, foremanship, advertising, selling. By products, production and financial records. Field trips required.

**ANSC 265 Fundamentals of Pet Nutrition (2)** A basic course on the nutrition of those animals commonly kept as household pets. Designed to acquaint students with minimal science background with the basic principles and techniques of animal nutrition.

**ANSC 305 Companion Animal Care (3)** Prerequisite: BIOL 105. Care, and management of the companion

small animals. Species covered include the cat, dog, rodents, lagomorphs, reptiles, amphibians, birds and others as class interest and schedule dictate. Basic description, evolutionary development, breeding, nutritional and environmental requirements, and public health aspects will be presented for each species.

**ANSC 327 Principles of Breeding I (4)** Three hours of lecture and two hours of discussion/recitation per week. Prerequisite: ANSC 201. Population and quantitative genetics as applicable to domestic livestock, concepts of variation, heredity, inbreeding and relationship principles of genetic evaluation and selection for livestock improvement, breeding systems and programs. Theoretical aspects and applications.

**ANSC 332 Horse Management (3)** Prerequisite: ANSC 230. Major topics include nutrition, reproduction, breeding, performance evaluation, basic training and management techniques.

**ANSC 337 The Science of Horse Training (2)** Prerequisite: ANSC 230. Major topics include evaluation of behavioral repertory, use of positive and negative reinforcement, successive approximation, as techniques for the basic training of the horse. The basic training to include teaching an untrained horse to lunge, accept tack, drive, be mounted and perform certain movements while being ridden.

**ANSC 350 Ornithology (4)** Three hours of lecture and three hours of laboratory per week. Three mandatory field trips. Prerequisite: BIOL 105. Includes systematics, anatomy, physiology, behavior, life histories, ecology, population dynamics, evolution and conservation of birds.

**ANSC 370 Animal Agriculture: Scientific and Cultural Perspectives (3)** Prerequisite: BIOL 105. Study will focus on the enhancement of biological efficiency that permits more extensive options for choice of human activities, within the limitations of ecological constraints. The course examines the growth of knowledge, of both cultural and scientific origin, as applied in the development of successful human-animal systems.

**ANSC 398 Seminar (1)** Repeatable to 2 credits if content differs. Presentation and discussion of current literature and research work in animal science.

**ANSC 399 Special Problems in Animal Science (1-2)** Work assigned in proportion to amount of credit. A course designed for advanced undergraduates in which specific problems relating to animal science will be assigned.

**ANSC 401 Fundamentals of Nutrition (3)** Prerequisite: CHEM 104 and ANSC 212. Recommended: BCHM 261. A study of the fundamental role of all nutrients in the body including their digestion, absorption and metabolism. Dietary requirements and nutritional deficiency syndromes of laboratory and farm animals and humans.

**ANSC 402 Applied Animal Nutrition (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: MATH 115 and ANSC 401. A critical study of those factors which influence the nutritional requirements of ruminants, swine and poultry. Practical feeding methods and procedures used in formulation of economically efficient rations will be presented.

**ANSC 406 Environmental Physiology (3)** Prerequisite: anatomy and physiology. The specific anatomical and physiological modifications employed by animals adapted to certain stressful environments will be considered. Particular emphasis will be placed on the problems of temperature regulation and water balance. Specific areas for consideration will include: animals in cold (including hibernation), animals in dry heat, diving animals and animals in high altitudes.

**ANSC 412 Introduction to Diseases of Animals (3)** Two lectures and one laboratory period per week. Prerequisite: MICB 200 and BIOL 105. This course gives basic instruction in the nature of disease including causation, immunity, methods of diagnosis, economic importance, public health aspects and prevention and control of the common diseases of sheep, cattle, swine, horses and poultry.

**ANSC 413 Laboratory Animal Management (3)** A comprehensive course in care and management of laboratory animals. Emphasis will be placed on physiology, anatomy and special uses for the different



species. Disease prevention and regulations for maintaining animal colonies will be covered. Field trips will be required.

**ANSC 415 Parasitic Diseases of Domestic Animals (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: ANSC 412 or equivalent. A study of parasitic diseases resulting from protozoan and helminth infection and arthropod infestation. Emphasis on parasites of veterinary importance: their identification, life cycles, pathological effects and control by management.

**ANSC 421 Swine Production (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: ANSC 101, ANSC 221; ANSC 203 or ANSC 401. A study of swine production systems including the principles of animal science for the efficient and economical management of swine breeding, feeding, reproduction and marketing.

**ANSC 422 Meats (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: ANSC 221. A course designed to give the basic facts about meat as a food and the factors influencing acceptability, marketing, and quality of fresh meats. It includes comparisons of characteristics of live animals with their carcasses, grading and evaluating carcasses as well as wholesale cuts, and the distribution and merchandising of the nation's meat supply. Laboratory periods are conducted in packing houses, meat distribution centers, retail outlets and University Meats Laboratory.

**ANSC 423 Beef Production (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: ANSC 221 and ANSC 203 or ANSC 401. Application of various phases of animal science to the management and production of beef cattle.

**ANSC 424 Sheep Production (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: ANSC 221 and ANSC 203 or ANSC 401. A study of sheep production systems including the principles of animal science for the efficient and economical management of sheep breeding, feeding, reproduction and marketing.

**ANSC 430 Topics in Equine Science (4)** Three hours of lecture and two hours of discussion/recitation per week. Prerequisites: ANSC 211; ANSC 212 and ANSC 230. Pre- or corequisite: ANSC 401. Specific problems of importance to the equine industry, including such areas as nutrition, physiology, anatomy, genetics and pathology.

**ANSC 431 Horse Production (2)** One hour of lecture and two hours of laboratory per week. Prerequisite: ANSC 101; ANSC 211; ANSC 212; ANSC 230 and permission of department. Laboratory and assigned project to be performed at University of Maryland Horse Farm, Ellicott City, Md. Field trips. Application of equine science principles to the management and production of horses.

**ANSC 432 Breeding Farm Management (2)** One hour of lecture and two hours of laboratory per week. Prerequisite: ANSC 211; ANSC 212; ANSC 230 and permission of department. Animal equine science principles in the management of equine breeding establishments. Field trips.

**ANSC 443 Physiology and Biochemistry of Lactation (3)** Prerequisite: ANSC 212 or equivalent; and BCHM 261 or BCHM 461. The physiology and biochemistry of milk production in domestic animals, particularly cattle. Mammary gland development and maintenance from the embryo to the fully developed lactating gland. Abnormalities of the mammary gland.

**ANSC 444 Analysis of Dairy Production Systems (3)** Prerequisites: AREC 306 and ANSC 203. The business aspects of dairy farming including an evaluation of the costs and returns associated with each segment. The economic impact of pertinent management decisions is studied. Recent developments in animal nutrition and genetics, agricultural economics, agricultural engineering, and agronomic practices are discussed as they apply to management of a dairy herd.

**ANSC 446 Physiology of Mammalian Reproduction (3)** Prerequisite: ZOOL 422 or ANSC 212. Anatomy and physiology of reproductive processes in domesticated and wild mammals.

**ANSC 447 Physiology of Mammalian Reproduction Laboratory (1)** Three hours of laboratory per week. Pre- or corequisite: ANSC 446. Animal handling, artificial insemination procedures and analytical techniques useful in animal management and reproductive research.

**ANSC 452 Avian Physiology (2)** Two two-hour lecture/demonstration periods per week. Prerequisite: a basic course in animal anatomy or physiology. The digestive, immune, excretory, respiratory, muscle, circulatory, endocrine and nervous systems of avian species. Laboratory exercises include use of anesthetics, suturing techniques, use of a polygraph and instrumentation for analyzing blood, urine, liver, kidney and brain tissue.

**ANSC 462 Physiology of Hatchability (1)** Two lectures and one laboratory period per week. Prerequisite: BIOL 105. The physiology of embryonic development as related to principles of hatchability and problems of incubation encountered in the hatchery industry are discussed.

**ANSC 487 Special Topics in Animal Science (1)** Prerequisite: permission of department. This course is designed primarily for teachers of vocational agriculture and extension service personnel. One primary topic to be selected mutually by the instructor and students will be presented each session.

## ANTH — Anthropology

**ANTH 101 Introduction to Anthropology: Archaeology and Physical Anthropology (3)** May be taken for credit in the general education program. General patterns of the development of human culture; the biological and morphological aspects of man viewed in his cultural setting.

**ANTH 102 Introduction to Anthropology: Cultural Anthropology and Linguistics (3)** Social and cultural principles as exemplified in ethnographic descriptions. The study of language within the context of anthropology.

**ANTH 103 Introduction to Primate Social Behavior (3)** An introduction of the primate socialization process as evidenced in the prosimians, monkeys, apes and humans. Social organization, function and ecology will be stressed within the framework of modern ethology.

**ANTH 221 Man and Environment (3)** A geographical introduction to ethnology, emphasizing the relations between cultural forms and natural environment.

**ANTH 241 Introduction to Archaeology (3)** A survey of the basic aims and methods of archaeological field work and interpretation, with emphasis on the reconstruction of prehistoric ways of life.

**ANTH 261 Introduction to Physical Anthropology (3)** The biological evolution of man, including the process of race formation, as revealed by the study of the fossil record and observation of modern forms.

**ANTH 271 Language and Culture (3)** Also offered as HESP 121. A non-technical introduction to linguistics, with special consideration of the relations between language and other aspects of culture.

**ANTH 298 Special Topics in Anthropology (3)** Repeatable to 6 credits if content differs. Anthropological perspectives on selected topics of broad general interest.

**ANTH 361 Human Evolution and Fossil Man (3)** A survey of the basic principles of human evolution as seen by comparative anatomic study of fossil specimens.

**ANTH 371 Introduction to Linguistics (3)** Introduction to the basic concepts of modern descriptive linguistics. Phonology, morphology, syntax. Examinations of the methods of comparative linguistics, internal reconstruction, dialect geography.

**ANTH 389 Research Problems (1-6)** Prerequisite: permission of department. Introductory training in anthropological research methods. The student will prepare a paper embodying the results of an appropriate combination of research techniques applied to a selected problem in any field of anthropology.

**ANTH 397 Anthropological Theory (3)** Prerequisite: permission of department. A survey of the historical development and current emphasis in the theoretical approaches of all fields of anthropology, providing an integrated frame of reference for the discipline as a whole.

**ANTH 401 Cultural Anthropology: Principles and Processes (3)** Prerequisites: ANTH 101, ANTH 102, or ANTH 221. An examination of the nature of human culture and its processes, both historical and functional. The approach will be topical and theoretical rather than descriptive.

**ANTH 402 Cultural Anthropology: World Ethnography (3)** Prerequisites: ANTH 101, ANTH 102, or ANTH 221. A descriptive survey of the culture areas of the world through an examination of the ways of selected representative societies.

**ANTH 412 Peoples and Cultures of Oceania (3)** A survey of the cultures of Polynesia, Micronesia, Melanesia and Australia. Theoretical and cultural-historical problems will be emphasized.

**ANTH 414 Ethnology of Africa (3)** Prerequisites: ANTH 101 and ANTH 102. The native peoples and cultures of Africa and their historical relationships, with emphasis on that portion of the continent south of the Sahara.

**ANTH 417 Peoples and Cultures of the Far East (3)** A survey of the major sociopolitical systems of China, Korea and Japan. Major anthropological questions will be dealt with in presenting this material.

**ANTH 423 Ethnology of the Southwest (3)** Prerequisites: ANTH 101 and ANTH 102. Culture history, economic and social institutions, religion, and mythology of the Indians of the southwest United States.

**ANTH 424 Ethnology of North America (3)** Prerequisites: ANTH 101 and ANTH 102. The native people and cultures of North America north of Mexico and their historical relationships, including the effects of contact with European-derived populations.

**ANTH 426 Ethnology of Middle America (3)** Prerequisites: ANTH 101 and ANTH 102. Cultural background and modern social, economic and religious life of Indian and Mesoizo groups in Mexico and central America; processes of acculturation and currents in cultural development.

**ANTH 431 Social Organization of Primitive Peoples (3)** Prerequisites: ANTH 101 and ANTH 102. A comparative survey of the structures of non-literate and folk societies, covering both general principles and special regional developments.

**ANTH 434 Religion of Primitive Peoples (3)** Prerequisites: ANTH 101 and ANTH 102. A survey of the religious systems of primitive and folk societies, with emphasis on the relation of religion to other aspects of culture.

**ANTH 436 Primitive Technology and Economy (3)** A survey of technology, food economy and general economic processes in non-industrial societies.

**ANTH 437 Politics and Government in Primitive Society (3)** A combined survey of politics in human societies and of important anthropological theories concerning this aspect of society.

**ANTH 441 Archaeology of the Old World (3)** Prerequisite: ANTH 101 or ANTH 241. A survey of the archaeological materials of Europe, Asia and Africa, with emphasis on chronological and regional interrelationships.

**ANTH 451 Archaeology of the New World (3)** Prerequisite: ANTH 101 or ANTH 241. A survey of the archaeological materials of North and South America with emphasis on chronological and regional interrelationships.

**ANTH 461 Human Osteology Laboratory (3)** Prerequisite: ANTH 101. A laboratory study of the human skeleton, its morphology, measurement, and anatomic relationships.

**ANTH 462 Primate Anatomy Laboratory (3)** Prerequisite: ANTH 101. The gross anatomy of non-human primates. Laboratory dissection of various primate cadavers under supervision. Occasional lectures.

**ANTH 463 Primate Studies (3)** Prerequisite: ANTH 101. A combination lecture and laboratory examination of non-human primates. Major studies of various types that have been undertaken in the laboratory and in the field.

**ANTH 465 Human Growth and Constitution (3)** Prerequisite: ANTH 101. A laboratory study of the growth, development and age changes in the human body from conception through old age, including gross photographic, radiographic, and microscopic study of growth and variation.

**ANTH 466 Forensic Anthropology Laboratory (3)** Prerequisite: ANTH 461 or permission of department. A laboratory study of the methods used to identify human remains by anthropological techniques and discussion of the role of the anthropologist in medico-legal investigation.

**ANTH 467 Human Population Biology Laboratory (3)** Prerequisite: ANTH 101. A laboratory study of human population genetics, dynamics and variation, including anthropological serology, biochemistry, dermatoglyphics and hair microscopy.

**ANTH 496 Field Methods in Archaeology (8)** Formerly ANTH 499. Field training in the techniques of archaeological survey and excavation.

**ANTH 498 Field Methods in Ethnology (1-6)** Field training in the collection and recording of ethnological data.

### APDS — Applied Design

**APDS 101 Fundamentals of Design (3)** For pre-design, design, fashion merchandising, textile marketing, apparel design and landscape design majors only. Knowledge of basic art elements and principles gained through design problems which employ a variety of media.

**APDS 102 Design II (3)** Prerequisite: APDS 101. For pre-design, advertising design, and interior design majors only. Continued exploration of design as a means of visual expression with added emphasis on color and lighting.

**APDS 103 Design III: Three-Dimensional Design (3)** Pre- or corequisite: APDS 102. For pre-design, advertising design, and interior design majors only. Creative efforts directed at discriminating use of form, volume, depth, and movement.

**APDS 104 Survey of Design History (3)** A general introduction to, and historical development of, the design fields from 1850 to the present. Examination of the influence of design on our lives and our environment with emphasis on western culture.

**APDS 210 Presentation Techniques I (3)** Five hours of studio per week. Prerequisites: EDIT 160; and APDS 103 or equivalent. For advertising design majors only. Emphasis on basic drawing including the human figure and illustration techniques used in several areas of graphic design.

**APDS 211 Action Drawing: Fashion Sketching (3)** Three studio periods per week. Prerequisites: EDIT 160, and APDS 103. For advertising design majors only. Study of the balance and proportion of the human figure. Sketch techniques applied to action poses and fashion drawing in soft and lithograph pencils, pastels, water color, ink. Drawing from model.

**APDS 237 Photography (3)** One hour of lecture and four hours of studio per week. Additional lab to be arranged. Prerequisite: APDS 103. For advertising design majors only. Study of fundamental camera techniques. Exploration of the expressive possibilities in relation to the field of design and visual communication.

**APDS 320 Fashion Illustration (3)** Three studio periods per week. Prerequisites: APDS 210, and APDS 211. For advertising design majors only. First semester. Fabric and clothing structure as they relate to illustration. Opportunity to explore rendering styles and techniques appropriate to reproduction methods currently used in advertising. Guidance in development of individuality in presentations.

**APDS 330 Typography and Lettering (3)** Three studio periods per week. Prerequisites: APDS 210 and APDS 211. For advertising design majors only. Experience in hand lettering techniques as a means of understanding lettering styles in design composition. Recognition of type faces used in advertisement, book and magazine layout. Effect of printing processes on design choices.

**APDS 331 Advertising Layout (3)** Three studio periods per week. Prerequisite: APDS 330. For advertising

design majors only. Design of advertising layouts from initial idea to finished layout. Typography and illustration as they relate to reproduction processes used in direct advertising.

**APDS 332 Display Design (3)** Three studio periods per week. Prerequisite: APDS 330 or equivalent. For advertising design majors only. Application of design principles to create display appropriate to exhibits, design shows, merchandising. Display construction.

**APDS 337 Advanced Photography (3)** Two two-hour studio periods and two hours of photo laboratory per week. Prerequisite: APDS 237. For advertising design majors only. Composition, techniques and lighting applicable to illustration, documentation, advertising design, and display.

**APDS 380 Professional Seminar (3)** Prerequisite: permission of department. For advertising design majors only. Professional and career opportunities, ethics, practices, professional organizations, portfolio evaluation.

**APDS 430 Advanced Problems in Advertising Design (3)** Two studio periods per week. Prerequisites: APDS 320, and APDS 331. For advertising design majors only. Advanced problems in design and layout planned for developing competency in one or more areas of advertising design.

**APDS 431 Advanced Problems in Advertising Design (3)** Two studio periods per week. Prerequisite: APDS 430. For advertising design majors only. Advanced problems in design and layout planned for developing competency in one or more areas of advertising design.

**APDS 437 Advanced Photography (3)** Three studio periods per week. Continuation of APDS 337.

**APDS 499 Individual Problems in Applied Design (3-4)** Prerequisite: permission of department. Repeatable to 9 credits. Open only to advanced students who, with guidance, can work independently.

### ARCH — Architecture

**ARCH 170 Introduction to the Built Environment (3)** Introduction to conceptual, perceptual, behavioral and technical aspects of environmental design; methods of analysis, problem solving and project implementation.

**ARCH 217 Technology, Human Settlements, and Shelter (3)** A survey of developments in technology through history and their impacts and influences on the form and fabric of human settlements and shelter. Emphasis on the technologies most relative to examples of buildings in cities in North America and Europe.

**ARCH 220 History of Architecture I (3)** Survey of Western architectural history to the Renaissance. With consideration of parallel developments in the Eastern World.

**ARCH 221 History of Architecture II (3)** Prerequisite: ARCH 220 or permission of department. Survey of Western architectural history from the Renaissance to the Twentieth Century. With consideration of parallel developments in the Eastern World.

**ARCH 222 History of Western Architecture (3)** Prerequisite: ARCH 170 or permission of department. Not open to students who have completed ARCH 220, ARCH 221, ARCH 340 or ARCH 341. Survey of the major monuments and styles of western architectural history from the ancient world to the twentieth century.

**ARCH 242 Drawing I (2)** Introduces the student to basic techniques of sketching and use of various media.

**ARCH 250 Survey of Urban Planning (3)** A survey of urban development and planning, ancient through modern cities; focus on the roots of modern planning in 19th and 20th century England and America, study of a planning issue in the Baltimore-Washington Metropolitan area.

**ARCH 312 Architectural Structures I (3)** Prerequisites: MATH 220, and PHYS 122. Recommended: ARCH 401. For ARCH majors only. Principles of behavior displayed in architectural structural systems, elements and materials, equilibrium and stability, distribution of forces and stresses, strength and stiffness. Resolutions of forces, reactions, movements, shears, deflection, and buckling of systems and elements.

**ARCH 313 Environmental Control and Systems I (3)** Prerequisite: MATH 220, PHYS 122. ARCH 401. For majors only. Theory, quantification and architectural design applications for mechanical systems and acoustics.

**ARCH 343 Drawing II: Line Drawing (2)** Studio, four hours per week. Prerequisite: ARCH 400 or permission of department. Basic free hand line drawing for architectural perception and design.

**ARCH 375 Architectural Construction and Materials (3)** Prerequisite: MATH 220, PHYS 122. For majors only. Construction processes of building, related terminology; review of primary building materials, physical characteristics, use and performance of materials as related to environmental forces.

**ARCH 400 Architecture Studio I (6)** Three hours of lecture and nine hours of studio per week. Prerequisite: ARCH majors only. Introduction to the processes of visual and architectural design including field problems.

**ARCH 401 Architecture Studio II (6)** Three hours of lecture and nine hours of studio per week. Prerequisite: ARCH 400 with a grade of C or better. For ARCH majors only. Continuation of ARCH 400.

**ARCH 402 Architecture Studio III (6)** Three hours of lecture and nine hours of studio per week. Prerequisite: ARCH 401 with a grade of C or better. For ARCH majors only. Design projects involving the elements of environmental control, basic structural systems, building processes and materials.

**ARCH 403 Architecture Studio IV (6)** Prerequisite: ARCH 402 with a grade of C or better. For ARCH majors only. Three hours of lecture and nine hours of studio per week. Design projects involving forms generated by different structural systems, environmental controls and methods of construction.

**ARCH 408 Selected Topics in Architecture Studio (1-6)** Prerequisite: ARCH 403 or equivalent and permission of department. Repeatable to 6 credits if content differs. Topical problems in architecture and urban design.

**ARCH 412 Architectural Structures II (3)** Prerequisite: ARCH 312, ARCH 400. For ARCH majors only. Design of steel, timber, and reinforced concrete elements, and subsystems, analysis of architectural building systems. Introduction to design for both natural and man-made hazards.

**ARCH 414 Solar Energy Applications For Buildings (3)** Prerequisite: ARCH 313 or permission of department. Methods of utilizing solar energy to provide heating, cooling, hot water, and electricity for buildings and related techniques for reducing energy consumption.

**ARCH 415 Environmental Control and Systems II (3)** Prerequisite: ARCH 313, ARCH 402. For ARCH majors only. Theory, quantification, and architectural design applications for water systems, fire protection, electrical systems, illumination, signal equipment, and transportation systems.

**ARCH 418 Selected Topics in Architectural Science (1-4)** Prerequisite: permission of department. Repeatable to 7 credits if content differs.

**ARCH 419 Independent Studies in Architectural Science (1-4)** Repeatable to 7 credits. Proposed work must have a faculty sponsor and receive approval of the curriculum committee.

**ARCH 420 History of American Architecture (3)** Prerequisite: ARCH 221 or permission of department. American architecture from the late 17th to the 20th century.

**ARCH 422 History of Greek Architecture (3)** Prerequisite: ARCH 220 or permission of department. Survey of Greek architecture from 750-100 B.C.

**ARCH 423 History of Roman Architecture (3)** Prerequisite: ARCH 220 or permission of department. Survey of Roman architecture from 500 B.C. To A.D. 325.

**ARCH 427 Theories of Architecture (3)** Prerequisite: ARCH 221 or permission of department. For ARCH majors only. Selected historical and modern theories of architectural design.

**ARCH 428 Selected Topics in Architectural History (1-3)** Prerequisite: permission of department. Repeatable to 7 credits if content differs.

**ARCH 429 Independent Studies in Architectural History (1-4)** Repeatable to 6 credits. Proposed work must have a faculty sponsor and receive approval of the curriculum committee.

**ARCH 432 History of Medieval Architecture (3)** Prerequisite: ARCH 220 or permission of department. Architecture of western Europe from the early Christian and Byzantine periods through the late Gothic, with consideration of parallel developments in the eastern world.

**ARCH 433 History of Renaissance Architecture (3)** Prerequisite: ARCH 221 or permission of department. Renaissance architectural principles and trends in the 15th and 16th centuries and their modifications in the Baroque period.

**ARCH 434 History of Modern Architecture (3)** Prerequisite: ARCH 221 or permission of department. Architectural trends and principles from 1750 to the present, with emphasis on developments since the mid-19th century.

**ARCH 436 History of Islamic Architecture (3)** Prerequisite: ARCH 220 or permission of department. Survey of Islamic architecture from the seventh through the eighteenth century.

**ARCH 437 History of Pre-Columbian Architecture (3)** Architecture of Pre-Columbian Mexico and Central America from the Pre-Classical Period through the Spanish conquest.

**ARCH 442 Studies in Visual Design (3)** Prerequisite: ARCH 401. Studio work in visual design independent of architectural problem solving.

**ARCH 445 Visual Analysis of Architecture (3)** Two hours of lecture and two hours of studio per week. Prerequisite: ARCH 401 and ARCH 343, or permission of department. Visual principles of architectural design through graphic analysis.

**ARCH 448 Selected Topics in Visual Studies (1-4)** Prerequisite: permission of department. Repeatable to 7 credits if content differs.

**ARCH 449 Independent Studies in Visual Studies (1-4)** Repeatable to 6 credits. Proposed work must have a faculty sponsor and receive approval of the curriculum committee.

**ARCH 450 Introduction to Urban Planning (3)** Introduction to city planning theory, methodology and techniques, dealing with normative, urban, structural, economic, social aspects of the city; urban planning as a process. Architectural majors or by permission of the instructor. Lecture, seminar, 3 hours per week.

**ARCH 451 Urban Design Seminar (3)** Prerequisite: ARCH 350 or permission of department. Advanced investigation into problems of analysis and evaluation of the design of urban areas, spaces and complexes with emphasis on physical and social considerations, effects of public policies, through case studies. Field observations.

**ARCH 453 Urban Problems Seminar (3)** Prerequisite: permission of department. A case study of urban development issues, dealing primarily with socio-economic aspects of changes in the built environment.

**ARCH 454 Theories of Urban Form (3)** Theories of planning and design of urban spaces, building complexes, and new communities.

**ARCH 458 Selected Topics in Urban Planning (1-4)** Prerequisite: permission of department. Repeatable to 7 credits if content differs.

**ARCH 459 Independent Studies in Urban Planning (1-4)** Repeatable to 6 credits. Proposed work must have a faculty sponsor and receive approval of the curriculum committee.

**ARCH 460 Site Analysis and Design (3)** Prerequisite: ARCH majors only or permission of department. Principles and methods of site analysis; the influence of natural and man-made site factors on site design and architectural form.

**ARCH 461 Design and Energy (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: ARCH 402 and ARCH 415. Energy strategies in building related to the broader context of architectural problem solving.

**ARCH 470 Computer Applications in Architecture (3)** Prerequisite: ARCH 400 or permission of department. Introduction to computer programming and utilization, with emphasis on architectural applications.

**ARCH 472 Economic Determinants in Architecture (3)** Introduction to economic factors influencing architectural form and design, including land economics, real estate, financing, project development, financial planning, construction and cost control.

**ARCH 478 Selected Topics in Architecture (1-4)** Prerequisite: permission of department. Repeatable to 7 credits if content differs.

**ARCH 479 Independent Studies in Architecture (1-4)** Repeatable to 6 credits. Proposed work must have a faculty sponsor and receive approval of the curriculum committee.

**ARCH 480 Problems and Methods of Architectural Preservation (3)** Prerequisite: ARCH 420 or permission of department. Theory and practice of preservation in America, with emphasis on the problems and techniques of community preservation.

**ARCH 481 The Architect in Archaeology (3)** Prerequisite: permission of department. The role of the architect in field archaeology and the analysis of excavating, recording, and publishing selected archaeological expeditions.

**ARCH 482 The Archaeology of Roman and Byzantine Palestine (3)** Archaeological sites in Palestine (Israel and Jordan) from the reign of Herod the Great to the Moslem conquest.

**ARCH 483 Field Archaeology (3)** Prerequisite: permission of department. Participation in field archaeology with an excavation officially recognized by proper authorities of local government.

**ARCH 488 Selected Topics in Architectural Preservation (1-4)** Prerequisite: permission of department. Repeatable to 7 credits if content differs.

**ARCH 489 Independent Studies in Architectural Preservation (1-4)** Repeatable to 6 credits. Proposed work must have a faculty sponsor and receive approval of the curriculum committee.

## AREC — Agriculture and Resource Economics

**AREC 227 Marketing Agricultural Products (3)** The development of marketing, its scope, channels, and agencies of distribution, functions, costs, methods used and services rendered.

**AREC 240 Environment and Human Ecology (3)** Costs and social impacts of pollution and human crowding in the modern environment. The economic, legal and institutional causes of these problems. Public policy approaches to solutions and the costs and benefits of alternative solutions.

**AREC 250 Elements of Agricultural and Resource Economics (3)** An introduction to economic principles of production, marketing, agricultural prices and incomes, farm labor, credit, agricultural policies, and government programs.

**AREC 306 Farm Management (3)** The organization and operation of the farm business to obtain an income consistent with family resources and objectives. Principles of production economics and other related fields as applied to the individual farm business. Laboratory period will be largely devoted to field trips and other practical exercises.

**AREC 310 Horse Industry Economics (3)** Prerequisites: ANSC 230 and ANSC 332. An introduction to the economic forces affecting the horse industry and to the economic tools required by horse farm managers, trainers, and others in the industry.

**AREC 365 World Hunger, Population, and Food Supplies (3)** An introduction to the problem of world hunger and possible solutions to it. World demand, supply, and distribution of food. Alternatives for leveling off world food demand, increasing the supply of food, and improving its distribution. Environmental limitations to increasing world food production.

**AREC 398 Seminar (1)** Students will obtain experience in the selection. Preparation and presentation of economic topics and problems which will be subjected to critical analysis.

**AREC 399 Special Problems (1-2)** Concentrated reading and study in some phase of problem in agricultural economics.

**AREC 404 Prices of Agricultural Products (3)** Prerequisite: ECON 403. An introduction to agricultural price behavior. The use of price information in the decision-making process, the relation of supply and demand in determining agricultural prices, and the relation of prices to grade, time, location, and stages of processing in the marketing system. Elementary methods of price analysis, the concept of parity and the role of price support programs in agricultural decisions.

**AREC 405 Economics of Agricultural Production (3)** Prerequisite: ECON 403 and MATH 220. The use and application of production economics in agriculture and resource industries through graphical and mathematical approaches. Production functions, cost functions, multiple product and joint production, and production processes through time.

**AREC 407 Agricultural Finance (3)** Prerequisite: AREC 250. Application of economic principles to develop criteria for a sound farm business, including credit source and use, preparing and filing income tax returns, methods of appraising farm properties, the summary and analysis of farm records, leading to effective control and profitable operation of the farm business.

**AREC 414 Agricultural Business Management (3)** Prerequisite: AREC 250. The different forms of businesses. Management functions, business indicators, measures of performance, and operational analysis. Case studies are used to show applications of management techniques.

**AREC 427 Economics of Agricultural Marketing Systems (3)** Prerequisite: AREC 250. Basic economic theory as applied to the marketing of agricultural products, including price, cost, and financial analysis. Current developments affecting market structure including effects of contractual arrangement, vertical integration, governmental policies and regulation.

**AREC 432 Introduction to Natural Resources Policy (3)** Development of natural resource policy and analysis of the evolution of public intervention in the use of natural resources. Examination of present policies and of conflicts between private individuals, public interest groups, and government agencies.

**AREC 433 Food and Agricultural Policy (3)** Prerequisite: AREC 250. Economic and political context of governmental involvement in the farm and food sector. Historical programs and current policy issues. Analysis of economic effects of agricultural programs, their benefits and costs, and comparison of policy alternatives. Analyzes the interrelationship among international development, agricultural trade and general economic and domestic agricultural policies.

**AREC 445 Agricultural Development in the Third World (3)** Prerequisite: ECON 203 or ECON 205 or AREC 250. Development theories, the role of agriculture in economic development, the agricultural policy environment, policies impacting on rural income and equity, environmental impacts of agricultural development.

**AREC 453 Natural Resources and Public Policy (3)** Prerequisite: AREC 250 and ECON 203. Rational use and reuse of natural resources. Theory, methodology, and policies concerned with the allocation of natural resources among alternative uses. Optimum state of conservation, market failure, sale minimum standard, and cost-benefit analysis.

**AREC 484 Introduction to Econometrics in Agriculture (3)** An introduction to the application of econometric techniques to agricultural problems with

emphasis on the assumptions and computational techniques necessary to derive statistical estimates, test hypotheses, and make predictions with the use of single equation models. Includes linear and non-linear regression models, internal least squares, discriminant analysis and factor analysis

**AREC 489 Special Topics in Agricultural and Resources Economics (3)** Repeatable to 9 credits

### ARHU — Arts and Humanities

**ARHU 308 Critical Eras: An Interdisciplinary View (3)** Repeatable to 6 credits if content differs. An interdisciplinary exploration of a critical period, ranging from a year to an era, stressing the relationship between different forms of human expression and the social milieu

**ARHU 309 Forms and Forces of Human Experience: An Interdisciplinary Exploration (3)** Prerequisite: one course in at least one of the departments participating in the particular section. Repeatable to 6 credits if content differs. An interdisciplinary analysis of a particular social or cultural topic, attitude, or concern.

**ARHU 319 Human Understanding in Interdisciplinary Perspective (3)** Prerequisite: one course in at least one of the departments participating in the particular section. Repeatable to 6 credits if content differs. An interdisciplinary analysis of the methodology of humanistic knowledge and aesthetic expression, and of the assumptions underlying differing interpretations.

### ARSC — Air Science

**ARSC 100 The Air Force Today I (1)** One hour of lecture and one hour of laboratory per week. Study of U.S. Air Force in contemporary society. Survey of Air Force doctrine, mission, organization and systems. Freshman course for AFROTC Cadets. Open to all university students.

**ARSC 101 The Air Force Today II (1)** Continuation of ARSC 100. The mission, organization and systems of U.S. Air Force offensive, defensive, and aerospace support forces and the use of these forces to support contemporary societal demands. Freshman year course for AFROTC cadets. Open to all university students.

**ARSC 110 Fundamentals of Flying (1)** A study of basic aviation knowledge for the beginning student pilot. The basic principles of flight, simple aerodynamics, a description of aircraft systems and flight instruments, federal aviation regulations, basic meteorology, the use of the flight computer for simple flight computations and visual flight operations (VFR).

**ARSC 200 The Development of Air Power I (1)** Development of air power from balloons and dirigibles through employment in World War I and II. Chronological approach to growth of air power in response to civil and military requirements. Sophomore year course for AFROTC cadets. Open to all university students.

**ARSC 201 The Development of Air Power II (1)** One hour of lecture and one hour of laboratory per week. Growth and development of air power and aerospace support forces from 1945 in response to Korea, the Cold War, Southeast Asia, and the Space Age. The peaceful employment of aerospace forces for relief and civic action program. Sophomore year course for AFROTC cadets. Open to all university students.

**ARSC 205 The U.S. Air Force and Air Power (4)** Open only to applicants selected by AFROTC to compete for entrance into the two-year AFROTC program as a contract cadet. Six week field training session held during summer months at designated Air Force bases. Successful completion is a pre-requisite for acceptance into the two year AFROTC program. Course content consists of a combination of academics, physical training and leadership laboratory experiences approximating those four year cadets gain in ARSC 100/101 and ARSC 200/201.

**ARSC 310 Management and Leadership I (3)** Study of management functions, techniques and skills. Emphasis on application of same in laboratory environment structured to approximate a contemporary military or bureaucratic organization. Junior year course for AFROTC cadets. Open to all university students.

**ARSC 311 Management and Leadership II (3)** Continuation in study and application of management

and leadership skills to a contemporary military environment. Emphasis on leadership, the uniform code of military justice and current issues for the military manager and leaders. Junior year course for AFROTC cadets. Open to all university students.

**ARSC 320 National Security Forces in Contemporary American Society I (3)** The role of the military profession in contemporary American society, its responsibilities to society and its impact on society. The definition, development and alteration of defense policy in supporting national objectives. Senior year course for AFROTC cadets. Open to all university students.

**ARSC 321 National Security Forces in Contemporary American Society II (3)** A continuation of the study on the formulation, development and alteration of strategy and of the factors in the modern world which necessitate the continuous reassessment of American defense policy. Investigation of the interplay of various governmental agencies in the formulation of American defense policy. Senior year AFROTC course. Open to all university students.

### ARTE — Art Education

**ARTE 100 Fundamentals of Art Education (3)** Two hours of laboratory and two hours of lecture per week. Fundamental principles of the visual arts for teaching on the elementary level. Elements and principles of design and theory of color. Studio practice in different media

### ARTH — Art History

**ARTH 100 Introduction to Art (3)** Major approaches to understanding the visual arts, and includes analysis of techniques, subject matter, and form. Painting, sculpture, architecture, and the graphic arts.

**ARTH 200 Art of the Western World I (3)** Formerly ARTH 260. Painting, sculpture, and architecture from prehistoric times to the Renaissance.

**ARTH 201 Art of the Western World II (3)** Formerly ARTH 261. Painting, sculpture, and architecture from the Renaissance to the present

**ARTH 275 Art of Africa (3)** Formerly ARTH 284. Appreciation of the art of African cultures. A survey of African culture through painting, sculpture, and architecture from prehistoric times to the present

**ARTH 290 Art of Asia (3)** Formerly ARTH 262. South and East Asian art from prehistory through the mid-nineteenth century.

**ARTH 355 Twentieth-Century Art (3)** Survey of major trends in painting and sculpture, in Europe and America, from approximately 1900 to the present.

**ARTH 380 Masterpieces of Painting (3)** Formerly ARTH 320. Selected masterworks of painting, revealing the creative process, artistic personality, and cultural context of these works

**ARTH 381 Masterpieces of Sculpture (3)** Formerly ARTH 330. Selected masterworks of sculpture, revealing the creative process, artistic personality, and cultural context of these works.

**ARTH 382 Masterpieces of Architecture (3)** Formerly ARTH 340. Selected masterworks of architecture, revealing the creative process, artistic personality, and cultural context of these works. **ARTH 390 Art of China (3)** Formerly ARTH 406. A chronological survey of Chinese painting, sculpture, and the applied arts

**ARTH 395 Art of Japan (3)** Formerly ARTH 407. A chronological survey of Japanese painting, sculpture, architecture, and the applied arts.

**ARTH 400 Egyptian Art and Archaeology (3)** Formerly ARTH 404. Sites and monuments of ancient Egyptian architecture, and the minor arts of ancient Egypt from earliest times through the Roman conquest. Emphasis on the pharaonic period

**ARTH 401 Aegean Art and Archaeology (3)** Formerly ARTH 404. Sites and monuments of painting, sculpture, architecture, and the minor arts of Crete, the Cycladic islands, and the Greek mainland from the earliest times to the downfall of the Mycenaean.

**ARTH 402 Greek Art and Archaeology (3)** Sites and monuments of painting, sculpture, architecture, and the

minor arts from the Geometric through the Hellenistic period with emphasis on mainland Greece in the Archaic and Classical periods

**ARTH 403 Roman Art and Archaeology (3)** Sites and monuments of painting, sculpture, architecture, and the minor arts from the earliest times through the third century A.D. with emphasis on the Italian peninsula from the Etruscan period through that of Imperial Rome.

**ARTH 405 Late Roman and Early Christian Art (3)** Formerly ARTH 410. Painting, sculpture, architecture, and the minor arts from the early third century through the sixth century A.D.

**ARTH 406 Byzantine Art (3)** Formerly ARTH 411. Painting, sculpture, architecture, and the minor arts from the seventh century to 1453 A.D.

**ARTH 410 Early Medieval Art (3)** Formerly ARTH 412. Painting, sculpture and architecture in Western Europe, ca. 500-1150

**ARTH 411 Gothic Art (3)** Formerly ARTH 413. Painting, sculpture and architecture in Western Europe, ca. 1150-1400.

**ARTH 415 Italian Renaissance Art (3)** Formerly ARTH 424. Painting, sculpture and architecture of the fifteenth and sixteenth centuries.

**ARTH 418 Special Problems in Italian Renaissance Art (3)** Repeatable to 6 credits if content differs. Focus upon aspects of painting, sculpture, and architecture of Renaissance

**ARTH 420 Fourteenth and Fifteenth-Century Northern European Art (3)** Formerly ARTH 416. The art of northern Europe with an emphasis on painting in the Netherlands and France.

**ARTH 425 Sixteenth-Century Northern European Painting (3)** Formerly ARTH 417. Painting in France, Germany, England, and the Low Countries during the Renaissance and Reformation.

**ARTH 426 Renaissance and Baroque Sculpture in Northern Europe (3)** Sculpture in France, Germany, England, and the Low Countries from the fourteenth to the seventeenth century

**ARTH 430 Seventeenth-Century European Art (3)** Painting, sculpture and architecture concentrating on Italy, Spain, France, and England

**ARTH 435 Seventeenth-Century Art in the Netherlands (3)** Formerly ARTH 431. Painting, sculpture and architecture in seventeenth-century Netherlands

**ARTH 443 Eighteenth-Century European Art (3)** From the Rococo to Neo-classicism, major developments in painting, architecture, sculpture, and the landscape garden in eighteenth-century France, England, Italy, Spain, and Germany

**ARTH 444 British Painting, Hogarth to the Pre-Raphaelites (3)** A survey of British painting focusing on the establishment of a strong native school in the genres of history painting, narrative subjects, portraiture, sporting art, and landscape

**ARTH 445 Nineteenth-Century European Art to 1850 (3)** Formerly ARTH 440. The major trends from Neo-Classicism to Romanticism in painting, sculpture and architecture in Europe

**ARTH 446 Nineteenth-Century European Art from 1850 (3)** Formerly ARTH 441. The major trends from Realism through Impressionism to Symbolism and Art Nouveau, in painting, sculpture, and architecture.

**ARTH 452 Nineteenth-Century Black American Art (3)** Formerly ARTH 473. The visual arts of Black Americans from the Colonial period through the nineteenth century, including crafts and decorative arts.

**ARTH 453 History of American Art to 1876 (3)** Painting, sculpture, architecture, and decorative arts in North America from the colonial period to 1876.

**ARTH 454 Nineteenth and Twentieth Century Sculpture (3)** Trends in sculpture from Neo-Classicism to the present

**ARTH 455 Twentieth-Century Art to 1945 (3)** Formerly ARTH 450 Painting, sculpture, and architecture in Europe and America from the late nineteenth century to the end of World War II

**ARTH 456 Twentieth-Century Art from 1945 (3)** Formerly ARTH 451 Painting, sculpture and architecture in Europe and America from 1945 to the present

**ARTH 457 History of Photography (3)** Formerly ARTH 452 History of photography as art from its inception in 1839 to the present

**ARTH 460 American Art Since 1876 (3)** Formerly ARTH 477 Painting, sculpture, architecture, and the decorative arts in North America after 1876

**ARTH 462 Twentieth-Century Black American Art (3)** Formerly ARTH 474. The visual arts of Black Americans in the twentieth century, including crafts and decorative arts.

**ARTH 466 Feminist Perspectives on Women in Art (3)** Principal focus on European and American women artists of the 19th and 20th centuries, in the context of the new scholarship on women.

**ARTH 470 Latin American Art and Archaeology before 1500 (3)** Pre-Hispanic painting, sculpture, and architecture, with a focus on the major archaeological monuments of Mexico

**ARTH 471 Latin American Art and Archaeology after 1500 (3)** The effect of mingling European visual ideas with pre-Hispanic traditions. The formation of Latin American colonial art. How native American people transformed European ideas and forms.

**ARTH 475 Ancient Art of Africa (3)** Formerly ARTH 462. Art of the African continent from rock art through the nineteenth century. The cultural meaning of painting, sculpture, architecture, and artifacts from major archeological sites

**ARTH 476 Living Art of Africa (3)** Formerly ARTH 463. Art styles among the segmentary, centralised and nomadic people of Africa. The iconography and function of their art and its relationship to their various societies, cults and ceremonies.

**ARTH 483 Structure and Analysis of Art (3)** Basic concepts of structuralism applied to the analysis of art. Visual examples, including photography, cartoons, painting, and sculpture, emphasize the underlying logic of narrative themes in Western art ranging from the time of Giotto to the present.

**ARTH 489 Special Topics in Art History (3)** Prerequisite: permission of department. Repeatable to 6 credits.

**ARTH 490 Chinese Painting (3)** Chinese painting history from the second century B.C. through the twentieth century, covering cultural, stylistic and theoretical aspects.

**ARTH 495 Japanese Painting (3)** Formerly ARTH 405. Japanese painting from the sixth through the nineteenth century, including Buddhist icon painting, narrative scrolls, and Zen-related ink painting.

**ARTH 498 Directed Studies in Art History I (2-3)** Prerequisite: permission of department. Repeatable if content differs. Junior standing.

**ARTH 499 Directed Studies in Art History II (2-3)**

**ARTH — Art Studio**

**ARTH 100 Elements of Design (3)** Two hours of lecture and two hours of laboratory per week. Formerly ARTS 100. Principles and elements of design through manipulation and organization of materials in two and three dimensions.

**ARTH 110 Elements of Drawing (3)** Six hours of laboratory per week. Formerly ARTS 110. An introductory course with a variety of media and related techniques. Problems based on still life, figure and nature.

**ARTH 200 Intermediate Design (3)** Six hours of laboratory per week. Prerequisites: ARTT 100; and ARTT 110. Formerly ARTS 200. A continuation of Design I with more individually structured problems in terms of form, composition and meaning.

**ARTT 208 Design (3)** Six hours of laboratory per week. Prerequisites: ARTT 100; and ARTT 110. Repeatable to 6 credits if content differs. Formerly ARTS 208. A continuation of ARTT 100 with more individually structured problems in terms of form, composition and meaning

**ARTT 210 Intermediate Drawing (3)** Six hours of laboratory per week. Prerequisites: ARTT 100, and ARTT 110. Formerly ARTS 210. Emphasis on understanding organic form, as related to study from the human figure and to pictorial composition.

**ARTT 215 Anatomical Drawing (3)** Six hours of laboratory per week. Prerequisite: ARTT 210 or permission of department. Formerly ARTS 215. A drawing course based on the study of anatomical structure emphasizing the human body

**ARTT 277 Architectural Presentation (3)** Six hours of laboratory per week. Prerequisites: ARTT 100; and ARTT 110. Formerly ARTS 277. Techniques of wash and watercolor in architectural, interior and landscape architectural rendering.

**ARTT 320 Elements of Painting (3)** Six hours of laboratory per week. Prerequisite: ARTT 210. Formerly ARTS 320. Basic tools and language of painting. Oil and/or water based paints.

**ARTT 330 Elements of Sculpture: Modeling/Casting (3)** Six hours of laboratory per week. Prerequisite: ARTT 210. Formerly ARTS 330. Basic techniques and processes related to the modeling of clay and related material and the casting of these materials in bronze.

**ARTT 334 Elements of Sculpture: Construction (3)** Six hours of laboratory per week. Prerequisite: ARTT 210. Formerly ARTS 334. Basic techniques and processes related to metals, plastics, fiberglass and wood construction.

**ARTT 335 Elements of Sculpture: Carving (3)** Six hours of laboratory per week. Prerequisite: ARTT 210. Formerly ARTS 335. Basic techniques and processes related to carving in stone and wood. Direct experience in handling volume, mass, movement and structure.

**ARTT 340 Elements of Printmaking: Intaglio (3)** Six hours of laboratory per week. Prerequisite: ARTT 210. Formerly ARTS 340. Basic techniques and processes related to etching, aquatint and drypoint.

**ARTT 341 Elements of Printmaking: Woodcut and Relief (3)** Six hours of laboratory per week. Prerequisite: ARTT 210. Formerly ARTS 341. Basic techniques and processes related to woodcuts, linocuts and other relief media

**ARTT 342 Elements of Printmaking: Collagraphy (3)** Six hours of laboratory per week. Prerequisite: ARTT 210. Formerly ARTS 342. Basic techniques and processes related to collagraph printing.

**ARTT 343 Elements of Printmaking: Screen Printing (3)** Six hours of laboratory per week. Prerequisite: ARTT 210. Formerly ARTS 343. Basic techniques and processes related to serigraph and silkscreen printing.

**ARTT 344 Elements of Printmaking: Lithography (3)** Six hours of laboratory per week. Prerequisite: ARTT 210. Formerly ARTS 344. Basic techniques and processes related to drawing, preparing and printing images on lithograph stones or plates.

**ARTT 404 Experiments in Visual Processes (3)** Six hours of laboratory per week. Prerequisite: ARTT 220 or ARTT 330 or ARTT 340. Formerly ARTS 404. Investigation and execution of process oriented art. Group and individual experimental projects.

**ARTT 418 Drawing (3)** Six hours of laboratory per week. Prerequisite: ARTT 210. Repeatable to 12 credits. Formerly ARTS 418. Original compositions from the figure and nature, supplemented by problems of personal and expressive drawing.

**ARTT 428 Painting (3)** Six hours of laboratory per week. Prerequisite: ARTT 320. Repeatable to 12 credits. Formerly ARTS 428. Original compositions based upon nature, figure, still life and expressive painting emphasizing development of personal directions.

**ARTT 438 Sculpture (3)** Six hours of laboratory per week. Prerequisites: one 300-level sculpture course; and permission of department. Repeatable to 12 credits. Formerly ARTS 438. Continuation of 300-level elements of sculpture courses with emphasis on developing personal directions in chosen media

**ARTT 448 Printmaking (3)** Six hours of laboratory per week. Prerequisites: one 300-level printmaking course, and permission of department. Repeatable to 12 credits. Formerly ARTS 448. Continuation of 300-level elements of printmaking courses with emphasis on developing personal directions in chosen media

**ARTT 468 Advanced Seminar in Studio Art (3)** Three hours of laboratory and three hours of discussion/recitation per week. Prerequisite: permission of department. Repeatable to 6 credits. Formerly ARTS 468. Relationship of student's work to historical and contemporary context

**ARTT 489 Special Problems in Studio Arts (3)** Prerequisite: permission of department. Repeatable to 6 credits. Formerly ARTS 489

**ARTT 498 Directed Studies in Studio Art (2-3)** Prerequisite: permission of department. For advanced students. Repeatable if content differs. Formerly ARTS 498

**ASTR — Astronomy**

**ASTR 100 Introduction to Astronomy (3)** Credit for ASTR 100 cannot be obtained after, or simultaneously with, receiving credit for any astronomy course numbered 150 or higher. An elementary course in descriptive astronomy, especially appropriate for non-science students. Sun, moon, planets, stars and nebulae, galaxies, evolution.

**ASTR 110 Astronomy Laboratory (1)** Two hours of laboratory per week. Pre- or corequisite: ASTR 100. Exercises include use of photographs of moon, stars, nebulae and galaxies and spectra; experiments demonstrating scientific concepts used in astronomy. Daytime and nighttime observations if weather permits. Appropriate for non-science majors.

**ASTR 111 Observational Astronomy Laboratory (1)** Two hours of laboratory per week. Corequisite: ASTR 100. Single evening laboratory projects plus semester-long observing projects involving work both in and out of class. Lunar surface features; the night-time sky; changing positions of sun, moon, and planets; stellar spectra, observation of stars and nebulae in our galaxy.

**ASTR 200 Introductory Astronomy and Astrophysics (3)** Pre- or corequisite: MATH 140. For science, mathematics, computer science and engineering majors only. Credit will be granted for only one of the following: ASTR 100 or ASTR 200. Survey of astronomy, including explorations of the solar system, the kinds of stars and galaxies we observe. Audiovisuals, emphasis on aspects that can be treated in some detail within students' backgrounds.

**ASTR 210 Practical Astronomy (2-3)** One hour of lecture and two hours of laboratory per week. Prerequisites: ASTR 200; and MATH 140. 2-3 credits, according to work done. Designed primarily for astronomy majors to give the student familiarity with techniques used by astronomers and an understanding of how astronomical data are obtained. Students registered for 2 credits will not be required to do all the exercises. Coordinate systems, optics, photometry, binary stars, distance determination, Hertzsprung-Russel diagram, solar observations, moon, galactic structure, and galaxies.

**ASTR 288 Special Projects in Astronomy (1-3)** Prerequisite: permission of department. Repeatable to 6 credits. Independent study, short research projects, tutorial reading, and assisting with faculty research and teaching under special supervision.

**ASTR 300 Stars and Stellar Systems (3)** Prerequisite: ASTR 100 and completion of University Studies requirement in the natural sciences or permission of department. Designed primarily for non-physical-science majors. Study of stars-types, properties, evolution, and distribution in space; supernovae, pulsars, and black holes.

**ASTR 315 Navigation (3)** Prerequisite: plane trigonometry. Theory and practice of navigation without

landmarks, with emphasis on celestial navigation and some discussion of electronic navigation. Spherical trigonometry as necessary. Extensive practical work at times to be arranged

**ASTR 330 Solar-System Astronomy (3)** Prerequisite: ASTR 100 and completion of University Studies requirement in the natural science or permission of department. Designed primarily for non-physical-science majors. The structure of planets and of their atmospheres, the nature of comets, asteroids, and satellites. Comparison of various theories for the origin of the solar system. Emphasis on a description of recent data and interpretation

**ASTR 340 Galaxies and the Universe (3)** Prerequisite: ASTR 100 and completion of University Studies requirement in the natural science or permission of department. Designed primarily for non-physical-science majors. A study of galaxies including our own galaxy, radio galaxies, and quasars. Measurement of distances, recession of galaxies, the microwave background and its relation to cosmology

**ASTR 350 Astronomy and Astrophysics (4)** Prerequisites: PHYS 272 or PHYS 262 or PHYS 142 or permission of department, ASTR 200 or specific reading assignments during course. Corequisite: PHYS 293 or PHYS 263. Topics in astronomy with emphasis on physical concepts. Stellar spectra, stellar evolution and collapsed objects, ionized nebulae, molecular clouds and star formation, stellar dynamics, cosmology

**ASTR 380 Life in the Universe (3)** Prerequisite: ASTR 100 and completion of University Studies requirement in the natural science or permission of department. Designed primarily for non-physical science majors. Study of the astronomical perspective on the conditions for the origin and existence of life. Communication with extraterrestrial life.

**ASTR 398 Special Topics in Astronomy (3)** Prerequisite: junior standing or permission of department. Repeatable to 6 credits if content differs. This course is designed primarily for students not majoring in astronomy and is suitable for non-science students. It will concentrate study in some limited field in astronomy which will vary from semester to semester. Possible subjects for study are the solar system, extragalactic astronomy and cosmology, the inconstant universe.

**ASTR 399 Honors Seminar (1-16)** Enrollment is limited to students admitted to the honors program in astronomy. Credit according to work done.

**ASTR 400 Stellar Astrophysics (3)** Prerequisite: ASTR 350. Corequisite: PHYS 420 or PHYS 421. Radiation processes in stars and interstellar space, stellar atmospheres, stellar structure and evolution.

**ASTR 410 Observational Astronomy I (3)** Prerequisites: PHYS 294 or PHYS 263, and 3 credits in astronomy. An introduction to current methods of obtaining astronomical information. Emphasis on optical and radio techniques, with brief coverage of X-ray, ultraviolet, and infrared techniques. Emphasis on understanding how instruments affect the data.

**ASTR 411 Observational Astronomy II (3)** Prerequisite: ASTR 410. Laboratory work with photographic and photoelectric techniques and with components of radio telescopes. Two longer individual projects involving observations with various instruments. Often requires all-night observing sessions.

**ASTR 420 Introduction to Galactic Research (3)** Prerequisite: PHYS 272 and ASTR 350 or equivalent or permission of department. Methods of galactic research, stellar motions, clusters of stars, evolution of the galaxy, study of our own and nearby galaxies.

**ASTR 430 The Solar System (3)** Prerequisite: MATH 246 and either PHYS 263 or PHYS 273, or permission of department. The structure of planetary atmospheres, radiation transfer in planetary atmospheres, remote sensing of planetary surfaces, interior structure of planets. Structure of comets. Brief discussions of asteroids, satellite systems, and solar system evolution. Intended for students majoring in any of the physical sciences.

**ASTR 440 Introduction to Extra-Galactic Astronomy (3)** Prerequisite: PHYS 272 and ASTR 350 or equivalent, or permission of department. Properties of normal and

peculiar galaxies, including radio galaxies and quasars. expansion of the universe and cosmology

**ASTR 450 Celestial Mechanics (3)** Prerequisite: PHYS 410 or permission of department. Celestial mechanics, orbit theory, equations of motion

**ASTR 498 Special Problems in Astronomy (1-6)** Prerequisite: major in physics or astronomy or permission of department. Research or special study. Credit according to work done.

### BCHM — Biochemistry

**BCHM 264 Elements of Biochemistry (3)** Prerequisite: CHEM 104 or CHEM 233 or CHEM 235. Not open to students who have completed BCHM 461. For undergraduate students who desire a one-semester biochemistry course rather than a two-semester sequence. Basic chemistry and metabolism of most molecules of biological importance

**BCHM 361 Origins of Biochemistry (3)** Prerequisite: any distributive studies course in chemistry or any of the biological sciences. The development of our understanding of life processes. Emphasis on a consideration of ideas and findings that have led to diseases, hormonal mechanisms, photosynthesis and genetic engineering. Intended for non-science majors.

**BCHM 461 Biochemistry I (3)** Prerequisite: CHEM 243 or CHEM 245. A comprehensive introduction to general biochemistry. The chemistry and metabolism of carbohydrates, lipids, nucleic acids, and proteins.

**BCHM 462 Biochemistry II (3)** Prerequisite: BCHM 461. A continuation of BCHM 461.

**BCHM 463 Biochemistry Laboratory I (2)** Six hours of laboratory per week. Pre- or corequisite: BCHM 461.

**BCHM 464 Biochemistry Laboratory II (2)** Six hours of laboratory per week. Prerequisite: CHEM 483 or BCHM 463. Pre- or corequisite: BCHM 462.

### BIOL — Biology

**BIOL 101 Concepts of Biology (3)** An introductory lecture course for the non-science major emphasizing the fundamental processes and interdependence of living organisms and the biological implications associated with human influence in the biological world. This course will not count toward graduation requirements for any student in the College of Life Sciences or the College of Agriculture.

**BIOL 102 Laboratory in Biology (1)** Three hours of laboratory per week. Pre- or corequisite: BIOL 101. A course designed for non-science students to illustrate the concepts underlying the organization and interrelationships of living organisms. This course will not count toward graduation requirements for any student in the College of Life Sciences or the College of Agriculture.

**BIOL 105 Principles of Biology I (4)** Three hours of lecture and three hours of laboratory per week. For science majors. Credit will be granted for only one of the following: BIOL 101, BIOL 100, ZOO 101, BIOL 105. Basic principles of biology with special emphasis on cellular and molecular biology.

**BIOL 106 Principles of Biology II (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: BIOL 105. For science majors. Basic principles of biology with special emphasis on organismic, ecological and evolutionary biology

**BIOL 124 Cosmic Evolution (3)** Appropriate for non-science students. The current scientific thinking on the sequence of events from the origin of the universe to the appearance of humans. Emphasis on chemical and biological evolution.

**BIOL 398 Honors Research Problems in Biology (1-3)** Prerequisite: Participation in the General Honors Program and/or the General Biological Sciences Honors Program. Repeatable to 6 credits. Research in biology under the direction and close supervision of a member of the faculty

**BIOL 399 Honors Seminar in Biology (1)** Prerequisite: Participation in the General Honors Program and/or the General Biological Science Honors Program, and previous or concurrent enrollment in BIOL 398. Repeatable to 2 credits. Discussion and presentation of

special topics, current literature, problems and progress in all areas of biological research.

### BIOM — Biometrics

**BIOM 301 Introduction to Biometrics (3)** Two hours of lecture and one hour of discussion/recitation per week. Prerequisite: MATH 115. Descriptive statistics, introduction to probability, sampling, confidence interval estimation, hypothesis testing, simple regression and correlation. Emphasis on simple applications of statistical techniques and interpretation of statistical results

**BIOM 401 Biostatistics I (4)** Three hours of lecture and one hour of discussion/recitation per week. Prerequisite: BIOM 301. Descriptive statistics, probability models useful in biology, expectations, hypothesis testing, goodness of fit tests, central limit theorem, point and interval estimates, analysis of variance, regression, correlation, sampling, rank tests. Emphasis on the uses and the limitations of these methods in biology

**BIOM 405 Computer Applications in Biometrics (1)** Two hours of laboratory per week. Corequisite: BIOM 401. An introduction to computer usage in statistical analyses. Topics include file manipulation, formatting data, transformations, descriptive statistics, graphical displays of data, and several introductory inferential statistical procedures

**BIOM 420 Sampling Techniques in Biometrics (3)** Prerequisite: BIOM 401. Methods of sampling: probability, random, cluster, stratified, inverse; ratio estimates; methods in field surveys: mark recapture studies, line transect sampling, surveys, design of collection forms; sample size calculations. Emphasis on the use of these methods in biological research

### BMGT — Business and Management

**BMGT 110 Introduction to Business and Management (3)** A survey of the field of business, including its environment, organization, overall and functional management, and current issues and developments.

**BMGT 220 Principles of Accounting I (3)** Sophomore standing. Study of the basic principles of accounting for business enterprises.

**BMGT 221 Principles of Accounting II (3)** Prerequisite: BMGT 220. Continuation of BMGT 220.

**BMGT 230 Business Statistics (3)** Prerequisite: MATH 220. Not open to students who have completed BMGT 231, ENEE 324, or STAT 400. Credit will be granted for only one of the following: AREC 484, BIOM 301, BMGT 230, CNEC 400, ECON 321, EDMS 451, GEOG 305, GVPT 422, PSYC 200, SOCY 201, URBS 350, or TEXT 400. Introductory course in probabilistic and statistical concepts including descriptive statistics, set-theoretic development of probability, the properties of discrete and continuous random variables, sampling theory, estimation, hypothesis testing, regression, decision theory and the application of these concepts to problem solving in business and management. This course does not meet requirements for management science and statistics majors

**BMGT 231 Statistical Models For Business (3)** Prerequisite: MATH 141 or permission of department. For management science and statistics majors. Credit will be granted for only one of the following: BMGT 231, ENEE 324, or STAT 400. An introductory course in statistical concepts including probability from a naive set theory approach, random variables and their properties, and the probability distributions of selected discrete and continuous random variables. The concepts of sampling, sampling distributions, and the application of these concepts to estimation and hypothesis testing are included as are brief surveys of the regression and anova models

**BMGT 301 Introduction to Data Processing (3)** The fundamentals of business data processing. Organizational, environmental and managerial aspects of computer systems. Heavy emphasis on COBOL language. Limited coverage of other business computing languages including the report generator (RPG) language. Several programming projects assigned

**BMGT 302 Information Systems Implementation Techniques (3)** Prerequisite: BMGT 301. Advanced concepts and tools necessary for the construction of computer based information systems. Operating systems, data and storage structures, file processing and advanced features of the COBOL language.

Techniques related to the overall development of software projects including project management, software design, engineering and software documentation. Several programming projects assigned.

**BMGT 310 Intermediate Accounting I (3)** Prerequisite: BMGT 221. Comprehensive analysis of financial accounting topics related to financial statement preparation and external reporting.

**BMGT 311 Intermediate Accounting II (3)** Prerequisite: BMGT 310. Continuation of BMGT 310.

**BMGT 321 Cost Accounting (3)** Prerequisite: BMGT 221. A study of the basic concepts of product costing and cost analysis for management planning and control. Emphasis is placed on the role of the accountant in organizational management, analysis of cost behavior, standard cost, budgeting, responsibility accounting and relevant costs for decision making.

**BMGT 323 Income Tax Accounting (3)** Prerequisite: BMGT 221. Introduction to federal income taxation of individuals. Examination of tax laws by use of illustrative examples and problems.

**BMGT 326 Accounting Systems (3)** Prerequisites: BMGT 301; and BMGT 321. A study of the control aspects of accounting systems. Topics include: standard setting; administrative, operational, and security controls; cost effectiveness of systems; audit implications of a computer-based information environment.

**BMGT 332 Operations Research For Management Decisions (3)** Prerequisite: BMGT 230. Surveys the philosophy, techniques, and applications of operations research to managerial decision making. The course is designed primarily for students not majoring in management science or statistics. Techniques covered include linear programming, transportation and assignment models, Markov processes, inventory and queuing models. Emphasis is placed on formulating and solving decision problems in the functional areas of management.

**BMGT 340 Business Finance (3)** Prerequisites: BMGT 220; and [BMGT 230 or BMGT 231]. The principles and practices involved in the organization, financing, and rehabilitation of business enterprises; the various types of securities and their use in raising funds, apportioning income, risk, and control; intercorporate relations; and new developments. Emphasis on solution of problems of financial policy faced by management.

**BMGT 343 Investments (3)** Prerequisite: BMGT 340. An introduction to financial investments. Topics include securities and securities markets; investment risks, returns, and constraints; portfolio policies; and institutional investment policies.

**BMGT 350 Marketing Principles and Organization (3)** Prerequisite: ECON 203; or ECON 205. An introductory course in the field of marketing. Its purpose is to give a general understanding and appreciation of the forces operating, institutions employed, and methods followed in marketing agricultural products, natural products, services and manufactured goods.

**BMGT 353 Retail Management (3)** Prerequisites: BMGT 220; and BMGT 350. Retail store organization, location, layout and store policy; pricing policies, price lines, brands, credit policies, records as a guide to buying; purchasing methods; supervision of selling; training and supervision of retail sales force; and administrative problems.

**BMGT 354 Promotion Management (3)** Prerequisite: BMGT 350. The use of advertising, personal selling, sales promotions, and other methods in marketing programs. Case studies in the use and coordination of demand stimulation methods, analysis and planning. Research, testing and statistical control of promotional activities.

**BMGT 360 Personnel Management (3)** The basic course in personnel management includes manpower planning, recruitment, selection, development, compensation, and appraisal of employees. Explores the impact of scientific management and unionism on these functions.

**BMGT 362 Labor Relations (3)** A study of the development and methods of organized groups in industry

with reference to the settlement of labor disputes. An economic and legal analysis of labor union and employer association activities, arbitration, mediation, and conciliation; collective bargaining, trade agreements, strikes, boycotts, lockouts, company unions, employee representation, and injunctions.

**BMGT 364 Management and Organization Theory (3)** The development of management and organization theory, nature of the management process and function and its future development. The role of the manager as an organizer and director, the communication process, goals and responsibilities.

**BMGT 370 Principles of Transportation (3)** Prerequisite: ECON 203; or ECON 205. A general course covering the five fields of transportation, their development, service, and regulation.

**BMGT 372 Traffic and Physical Distribution Management (3)** Examines the management aspects of the business firm in moving their raw materials and finished goods through traffic, warehousing, industrial packaging, materials handling, and inventory. A systematic examination of the trade-off possibilities and management alternatives to minimize cost of product flow and maximizing customer service is provided.

**BMGT 380 Business Law I (3)** Legal aspects of business relationships. Examination of torts and business crimes, contracts and agency. The law of personal property and bailment relationships. Survey of public policy issues.

**BMGT 381 Business Law II (3)** Prerequisite: BMGT 380 or permission of department. The Uniform Commercial Code including sales, commercial paper, secured transactions, bulk sales and documents of title. The law of partnerships and corporations. Reorganization and liquidation under the bankruptcy laws. The law of real property, landlord and tenant relationships and decedents' estates.

**BMGT 385 Production Management (3)** Studies the operation of a manufacturing enterprise, concentrating on the economics of production. Introduces analytical method so that the broad problem areas of system design, operation and control can be based upon the analytical method.

**BMGT 392 Introduction to International Business Management (3)** Prerequisite: ECON 203; or ECON 205. A study of the domestic and foreign environmental factors affecting the international operations of U.S. business firms. The course also covers the administrative aspects of international marketing, finance and management.

**BMGT 393 Real Estate Principles (3)** Prerequisite: ECON 203; or ECON 205. The nature and uses of real estate, real estate as a business, basic principles, construction problems and home ownership, city planning, and public control and ownership of real estate.

**BMGT 398 Individual Study in Business and Management (1-3)** Prerequisite: permission of department. Repeatable to 6 credits.

**BMGT 402 Database and Data Communication Systems (3)** Prerequisite: BMGT 302. Introduction to database and data communications systems. Modeling and database construction using the three data models: network, relational and hierarchical. Implementation project using DMS 1100 database system. Data communications protocols and communications support software. Analysis of distributed systems and computer networks. Emphasis on new technologies.

**BMGT 403 Systems Analysis (3)** Prerequisite: BMGT 402. Techniques and tools applicable to the analysis and design of computer based information systems. System life cycle, requirements analysis, logical design of data bases, performance evaluation. Emphasis on case studies. Project required that involves the design, analysis and implementation of an information system.

**BMGT 404 Seminar in Decision Support Systems (3)** Prerequisite: BMGT 301. Design of computer systems to solve business problems and to support decision making. Human and organizational factors are considered. Emphasis on case studies.

**BMGT 410 Fund Accounting (3)** Prerequisite: BMGT 310. An introduction to the fund-based theory and practice

of accounting as applied to governmental entities and not-for-profit associations.

**BMGT 417 Advanced Tax Accounting (3)** Prerequisites: BMGT 311, and BMGT 323. Federal taxation of corporations, partnerships, fiduciaries, and gratuitous transfers. Tools and techniques of tax research for compliance and planning.

**BMGT 420 Undergraduate Accounting Seminar (3)** Prerequisite: senior standing as an accounting major or permission of department. Enrollment limited to upper one-third of senior class. Seminar coverage of outstanding current non-text literature, current problems and case studies in accounting.

**BMGT 421 Undergraduate Accounting Seminar (3)** Prerequisite: senior standing as an accounting major or permission of department. Enrollment limited to upper one-third of senior class. Seminar coverage of outstanding current non-text literature, current problems and case studies in accounting.

**BMGT 422 Auditing Theory and Practice (3)** Prerequisite: BMGT 311. A study of the independent accountant's attest function, generally accepted auditing standards, compliance and substantive tests, and report forms and opinions.

**BMGT 424 Advanced Accounting (3)** Prerequisite: BMGT 311. Advanced accounting theory applied to specialized topics and current problems. Emphasis on consolidated statements and partnership accounting.

**BMGT 426 Advanced Cost Accounting (3)** Prerequisite: BMGT 321. Advanced cost accounting with emphasis on managerial aspects of internal record-keeping and control systems.

**BMGT 427 Advanced Auditing Theory and Practice (3)** Prerequisite: BMGT 422. An examination and in-depth study of special auditing topics such as statistical sampling, professional ethics, EDP auditing, legal liability, and SEC accounting.

**BMGT 430 Linear Statistical Models in Business (3)** Prerequisite: BMGT 230 or BMGT 231 or permission of department. Model building involving an intensive study of the general linear stochastic model and the applications of this model to business problems. The model is derived in matrix form and this form is used to analyze both the regression and ANOVA formulations of the general linear model.

**BMGT 431 Design of Statistical Experiments in Business (3)** Prerequisite: BMGT 230 or BMGT 231. Surveys ANOVA models, basic and advanced experimental design concepts. Non-parametric tests and correlations are emphasized. Applications of these techniques to business problems in primarily the marketing and behavioral sciences are stressed.

**BMGT 432 Sample Survey Design For Business and Economics (3)** Prerequisite: BMGT 230; or BMGT 231. Design of probability samples. Simple random sampling, stratified random sampling, systematic sampling, and cluster sampling designs are developed and compared for efficiency under varying assumptions about the population sampled. Advanced designs such as multistage cluster sampling and replicated sampling are surveyed. Implementing these techniques in estimating parameters of business models is stressed.

**BMGT 434 Introduction to Optimization Theory (3)** Prerequisite: MATH 220; or permission of department. Primarily for students majoring in management science and statistics. Linear programming, postoptimality analysis, network algorithms, dynamic programming, nonlinear programming and single variable minimization.

**BMGT 435 Introduction to Applied Probability Models (3)** Prerequisite: BMGT 231 or permission of department. Statistical models in management. Review of probability theory, Monte Carlo methods, discrete event simulation, Markov chains, queueing analysis, other topics depending upon time. Gauss, a higher-level computer language, will be introduced in the class and the students will carry out various exercises using this language.

**BMGT 440 Financial Management (3)** Prerequisite: BMGT 340. Analysis and discussion of cases and readings relating to financial decisions of the firm. The application of finance concepts to the solution of financial problems is emphasized.

**BMG 443 Security Analysis and Valuation (3)**  
Prerequisite: BMGT 343. Study and application of the concepts, methods, models, and empirical findings to the analysis, valuation, and selection of securities, especially common stock.

**BMG 444 Futures Contracts and Options (3)**  
Prerequisite: BMGT 343. The institutional features and economic rationale underlying markets in futures and options. Hedging, speculation, structure of futures prices, interest rate futures, efficiency in futures markets, and stock and commodity options.

**BMG 445 Commercial Bank Management (3)**  
Prerequisites: BMGT 340, and ECON 430. Analysis and discussion of cases and readings in commercial bank management. The loan function is emphasized; also, the management of liquidity reserves, investments for income, and source of funds. Bank objectives, functions, policies, organization, structure, services, and regulation are considered.

**BMG 451 Consumer Analysis (3)** Prerequisite: BMGT 350. Recommended: PSYC 100, and PSYC 221. Not open to students who have completed CNEC 437. Credit will be granted for only one of the following: BMGT 451 or CNEC 437. American consumers in the marketing system. Underlying consumer behavior such as economic, social, psychological and cultural factors. Analysis of consumers in marketing situations - as a buyer and user of products and services - and in relation to the various individual social and marketing factors affecting their behavior. The influence of marketing communications is also considered.

**BMG 452 Marketing Research Methods (3)**  
Prerequisites: BMGT 230, and BMGT 451. Formerly BMGT 450. Develops skills in the use of scientific methods in the acquisition, analysis and interpretation of marketing data. It covers the specialized fields of marketing research; the planning of survey projects, sample design, tabulation procedure and report preparation.

**BMG 453 Industrial Marketing (3)** Prerequisites: BMGT 350 plus one other marketing course. The industrial and business sector of the marketing system is considered rather than the household or ultimate consumer sector. Industrial products range from raw materials and supplies to the major equipment in a plant, business office, or institution. Topics include product planning and introduction, market analysis and forecasting, channels, pricing, field sales force management, advertising, marketing cost analysis, and government relations. Particular attention is given to industrial, business and institutional buying policies and practice and to the analysis of buyer behavior.

**BMG 454 International Marketing (3)** Prerequisites: BMGT 350 plus one other marketing course. Marketing functions from the international executive's viewpoint, including coverage of international marketing policies relating to product adaptation, data collection and analysis, channels of distribution, pricing, communications, and cost analysis. Consideration is given to the cultural, legal, financial, and organizational aspects of international marketing.

**BMG 455 Sales Management (3)** Prerequisite: BMGT 350. The role of the sales manager, both at headquarters and in the field, in the management of people, resources and marketing functions. An analysis of the problems involved in sales organization, forecasting, planning, communicating, evaluating and controlling. The application of quantitative techniques and pertinent behavioral science concepts in the management of the sales effort and sales force.

**BMG 456 Advertising (3)** Prerequisite: BMGT 350. The role of advertising in the American economy; the impact of advertising on our economic and social life, the methods and techniques currently applied by advertising practitioners; the role of the newspaper, magazine, and other media in the development of an advertising campaign; modern research methods to improve the effectiveness of advertising and the organization of the advertising business.

**BMG 457 Marketing Policies and Strategies (3)**  
Prerequisite: BMGT 452. Integrative decision making in marketing. Emphasis on consumer and market analysis and the appropriate decision models. Case studies are included.

**BMG 460 Personnel Management: Analysis and Problems (3)** Prerequisite: BMGT 360 Recommended: BMGT 230. Research findings, special readings, case analysis, simulation, and field investigations are used to develop a better understanding of personnel problems, alternative solutions and their practical ramifications.

**BMG 461 Entrepreneurship (3)** Process of creating new ventures, including evaluating the entrepreneurial team, the opportunity and the financing requirements. Skills, concepts, mental attitudes and knowledge relevant for starting a new business.

**BMG 462 Labor Legislation (3)** Case method analysis of the modern law of industrial relations. Cases include the decisions of administrative agencies, courts and arbitration tribunals.

**BMG 463 Public Sector Labor Relations (3)**  
Prerequisite: BMGT 362; or permission of department. Development and structure of labor relations in public sector employment, federal, state, and local government responses to unionization and collective bargaining.

**BMG 464 Organizational Behavior (3)** Prerequisite: BMGT 364. An examination of research and theory concerning the forces which contribute to the behavior of organizational members. Topics covered include: work group behavior, supervisory behavior, intergroup relations, employee goals and attitudes, communication problems, organizational change, and organizational goals and design.

**BMG 467 Undergraduate Seminar in Personnel Management (3)** Prerequisite: permission of department. This course is open only to the top one-third of undergraduate majors in personnel and labor relations and is offered during the fall semester of each year. Highlights major developments. Guest lecturers make periodic presentations.

**BMG 470 Carrier Management (3)** Prerequisites: BMGT 370; and BMGT 372. Integration of the functions available to managers in transportation companies including planning, directing and implementation of policies. Emphasis on the changing environment in which managers of transportation carriers function.

**BMG 473 Advanced Transportation Problems (3)**  
Prerequisite: BMGT 370. A critical examination of current government transportation policy and proposed solutions. Urban and intercity managerial transport problems are also considered.

**BMG 474 Urban Transport and Urban Development (3)**  
Prerequisite: ECON 203; or ECON 205. An analysis of the role of urban transportation in present and future urban development. The interaction of transport pricing and service, urban planning, institutional restraints, and public land uses is studied.

**BMG 475 Advanced Logistics Management (3)**  
Prerequisites: BMGT 370; and BMGT 372. Application of the concepts of BMGT 372 to problem solving and special projects in logistics management. Case analysis is stressed.

**BMG 476 Applied Computer Models in Transportation and Logistics (3)** Prerequisites: BMGT 370; and BMGT 372. Introduction to the expanding base of computer software in the transportation and logistics fields. Applications of particular relevance to carrier and shipper issues in a deregulated environment.

**BMG 477 International Transportation and Logistics (3)** Prerequisites: BMGT 370; and BMGT 372. Analysis of the structure, service, pricing and competitive relationship of U.S. international carriers and transport intermediaries. Examination of the role of foreign competitors, managerial and economic factors and politically imposed restrictions. Business and public policy implications of transportation in developing countries and their interface with international trade and development.

**BMG 480 Legal Environment of Business (3)** Junior standing. Principal ideas in law stressing those relevant for the modern business executive with focus on legal reasoning as it has evolved in this country. Leading antitrust cases illustrating the reasoning process as well as the interplay of business, philosophy, and the various conceptions of the nature of law which give direction to the process. Examination of contemporary legal problems

and proposed solutions, especially those most likely to affect the business community.

**BMG 481 Public Utilities (3)** Prerequisite: ECON 203, or ECON 205. Using the regulated industries as specific examples, attention is focused on broad and general problems in such diverse fields as constitutional law, administrative law, public administration, government control of business, advanced economic theory, accounting, valuation and depreciation, taxation, finance, engineering, and management.

**BMG 482 Business and Government (3)** Prerequisite: ECON 203; or ECON 205. A study of the role of government in modern economic life. Social control of business as a remedy for the abuses of business enterprise arising from the decline of competition. Criteria of limitations on government regulation of private enterprise.

**BMG 485 Advanced Production Management (3)**  
Prerequisite: BMGT 385. A study of typical problems encountered by the factory manager. The objective is to develop the ability to analyze and solve problems in management control of production and in the formulation of production policies. Among the topics covered are plant location, production planning and control, methods analysis, and time study.

**BMG 490 Urban Land Management (3)** Covers the managerial and decision making aspects of urban land and property. Included are such subjects as land use and valuation matters.

**BMG 493 Honors Study (3)** Prerequisite: permission of department. First semester of the senior year. The course is designed for honors students who have elected to conduct intensive study (independent or group). The student will work under the direct guidance of a faculty advisor and the Director of Undergraduate Studies. They shall determine that the area of study is of a scope and intensity deserving of a candidate's attention. Formal written and/or oral reports on the study may be required by the faculty advisor.

**BMG 494 Honors Study (3)** Prerequisite: BMGT 493, and continued candidacy for honors in Business and Management. Second semester of the senior year. The student shall continue and complete the research initiated in BMGT 493, additional reports may be required at the discretion of the faculty advisor and Director of Undergraduate Studies.

**BMG 495 Business Policies (3)** Prerequisites: BMGT 340, and BMGT 350; and BMGT 364. A case study course where students apply what they have learned of general management principles and their specialized functional applications to the overall management function in the enterprise.

**BMG 496 Business and Society (3)** Prerequisite: one course in BMGT, or permission of department. Normative role of business in society; consideration of the sometimes conflicting interests and claims on the firm and its objectives.

**BMG 498 Special Topics in Business and Management (3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Special topics in business and management designed to meet the changing needs and interests of students and faculty.

## BOTN — Botany

**BOTN 100 General Botany For Non-Science Students (4)** Two hours of lecture and four hours of laboratory per week. This course will not count toward graduation requirements for any student in the College of Life Science or the College of Agriculture. Credit will be granted for only one of the following: BOTN 100, BOTN 101 or BOTN 105. A basic course in plant biology specifically designed to meet the educational needs of the general or non-science student. Emphasis is placed on an ecological approach to studying fundamental concepts and processes of plants, and stressing the importance of plant life to human welfare. This course will not count toward graduation requirements for any student in the College of Life Sciences or the College of Agriculture.

**BOTN 103 Human Aspects of Plant Biology (3)** An introduction to botany for non-science students; nature of botany; form and process in plants; plants in the environment; plants used by humans; plants, history



and culture, exploring for plants. This course will not count towards graduation requirements for any student in the College of Life Sciences or the College of Agriculture.

**BOTN 202 Plant Kingdom (4)** Two hours of lecture and four hours of laboratory per week. Prerequisite: BIOL 105 or permission of department. A brief evolutionary study of algae, fungi, liverworts, mosses, ferns and their relatives, and the seed plants, emphasizing their structure, reproduction, habitats, and economic importance.

**BOTN 211 Ecology and Mankind (3)** Basic ecological principles as they relate to the ecological dilemmas of overpopulation, pollution, increasing consumption of natural resources, and deteriorating land use ethics facing mankind today.

**BOTN 212 Plant Taxonomy (4)** Two hours of lecture and two hours of laboratory per week. Prerequisite: BIOL 105 or permission of department. An introductory study of plant identification, naming, and classification. Laboratory emphasis on the collection and identification of local vascular plants.

**BOTN 221 Introductory Plant Pathology (4)** Two hours of lecture and four hours of laboratory per week. Prerequisite: BIOL 105 or permission of department. An introductory study of the causal agents, nature, and management of plant diseases.

**BOTN 379 Honors Research Problems in Botany (1-3)** Prerequisite: BOTN 378 and twenty credits in botany courses. Open only to honors students in botany. Repeatable to 6 credits. Research in botany under the direction and close supervision of a member of the faculty.

**BOTN 398 Seminar (1)** Prerequisite: major in botany; with permission of department, major in biological science. Repeatable to 2 credits. Discussion and reading on special topics, current literature, or problems and progress in all phases of botany.

**BOTN 399 Research Problems in Botany (1-3)** Prerequisite: twenty hours of botany courses and permission of department. Repeatable to 6 credits. Research and/or integrated reading in botany under the direction and close supervision of a member of the faculty.

**BOTN 401 Origins of Modern Botany (1)** Prerequisite: 20 credit hours in biological science including BIOL 105 or permission of department. History of botany as a science, from ancient Greece through the 18th century; emphasis on botany as an intellectual and cultural pursuit.

**BOTN 403 Medicinal and Poisonous Plants (2)** Prerequisite: BIOL 105 and CHEM 104. A study of plants important to humans that have medicinal or poisonous properties. Emphasis on plant source, plant description, the active agent and its beneficial or detrimental physiological action and effects.

**BOTN 405 Advanced Plant Taxonomy (3)** Two lectures and one laboratory per week. Prerequisite: BOTN 202; and BOTN 212, or equivalent. A review of the history and principles of plant taxonomy with emphasis on monographic and floristic research. A detailed laboratory review of the families of flowering plants.

**BOTN 407 Teaching Methods in Botany (2)** Four two-hour laboratory demonstration periods per week, for eight weeks. Prerequisite: BIOL 105 or permission of department. A study of the biological principles of common plants, and demonstrations, projects, and visual aids suitable for teaching in primary and secondary schools.

**BOTN 411 Evolutionary Biology of Plants (3)** Prerequisite: BOTN 202 or equivalent. Evolution of basic plant biological systems, major structural adaptations of plant organs, and origins of vascular plant groups. The pace, patterns and mechanisms of evolution, discussed within a genetic, systematic and paleontological framework.

**BOTN 413 Plant Geography (2)** Prerequisite: BIOL 105. A study of plant distribution throughout the world and the factors generally associated with such distribution.

**BOTN 414 Plant Genetics (3)** Prerequisite: BIOL 105. Credit will be granted for only one of the following: ZOO 213, ANSC 201, BOTN 414, HORT 274. The basic principles of plant genetics are presented, the mechanics of transmission of the hereditary factors in relation to the life cycle of seed plants, the genetics of specialized organs and tissues, spontaneous and induced mutations of basic and economic significance gene action, genetic maps, the fundamentals of polyploidy, and genetics in relation to methods of plant breeding.

**BOTN 416 Plant Structure (4)** Two hours of lecture and four hours of laboratory per week. Prerequisite: BIOL 105. A survey of the basic structural features of vascular plants, including subcellular organelles, cells, tissues, and organs. Emphasis on structural phenomena as they relate to physiological processes of agricultural importance.

**BOTN 420 Plant Cell Biology (3)** Prerequisite: organic chemistry and two years of botany. A study of eucaryotic cell organization, integrating structure with function and concentrating on subcellular organelles and the mechanisms of physiological regulation at the cellular level.

**BOTN 421 Principles of Plant Disease Management (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: BOTN 221 or equivalent. A logical, holistic approach to understanding and planning disease control using multiple strategies and tactics to prevent crop losses from exceeding economic damage levels.

**BOTN 426 Mycology (4)** Two hours of lecture and six hours of laboratory per week. Prerequisite: BIOL 105. An introductory course in the biology, morphology and taxonomy of the fungi.

**BOTN 441 Plant Physiology (4)** Two hours of lecture and four hours of laboratory per week. Prerequisites: BIOL 105; and CHEM 113. Recommended: Organic chemistry. A survey of the general physiological activities of plants.

**BOTN 456 Principles of Microscopy (2)** Prerequisite: BOTN 420 or equivalent. An introduction to optical principles that underlie light and electron microscopic image formation. Brightfield, darkfield, phase contrast, differential interference contrast, fluorescence and polarized light microscopy. Comparison of light and electron microscopy. The application of these techniques to problems in biological research.

**BOTN 462 Plant Ecology (2)** Prerequisite: BIOL 105. The dynamics of populations as affected by environmental factors with special emphasis on the structure and composition of natural plant communities, both terrestrial and aquatic.

**BOTN 463 Ecology of Marsh and Dune Vegetation (2)** Prerequisite: BIOL 105. An examination of the biology of higher plants in dune and marsh ecosystems.

**BOTN 464 Plant Ecology Laboratory (2)** Three hours of laboratory per week. Pre- or corequisite: BOTN 462 or equivalent. Two or three field trips per semester. The application of field and experimental methods to the qualitative and quantitative study of vegetation and ecosystems.

**BOTN 476 Biology of Phytoplankton (4)** Two hours of lecture and four hours of laboratory per week. Prerequisites: BIOL 105 and an introductory course in ecology (ZOO 212 or equivalent). Collection, identification, culture, physical and chemical requirements, life cycles, community structure, specialized environments, blooms of phytoplankton.

**BOTN 484 Plant Biochemistry (3)** Prerequisite: BOTN 441; and CHEM 233. Biochemical processes characteristic of plants, including photosynthesis, nitrogen fixation and biosynthesis of plant macromolecules.

**BSOS — Behavioral and Social Sciences**  
**BSOS 200 Introduction to Applied Behavioral and Social Sciences (3)** Two hours of lecture and two hours of laboratory per week. The generation and utilization of behavioral-social science knowledge. The theoretical approaches of the behavioral-social disciplines and the application of their methods of research. Differences and similarities among the disciplines and their interrelationships in the solution of problems.

**BSOS 300 Ethical Issues in Social Science Research (3)** Prerequisite: BSOS 200 or three credits in one of the social sciences. Moral and ethical issues in social science research and its uses. Case studies and discussions to develop both an awareness of issues and a level of sophistication to deal with the ethical dilemmas implicit in research on people.

**BSOS 306 Contemporary Issues: Interdisciplinary Approaches (3)** Repeatable to 6 credits if content differs. An interdisciplinary analysis of current public policy issue of international, national and community import. Senior standing recommended.

**CHEM — Chemistry**  
**CHEM 001 Introduction to College Chemistry (2)** Two hours of lecture and one hour of laboratory per week. This course is recommended for students who do not qualify for MATH 110 or higher and who must take CHEM 103. Special fee. This course does not carry credit towards any degree at the University. An introduction to the study of matter.

**CHEM 102 Chemistry of Man's Environment (4)** Three hours of lecture and three hours of laboratory per week. This course is for the general student and does not satisfy the requirements of the professional schools. Credit will be granted for only one of the following: CHEM 102, CHEM 103, CHEM 105, CHEM 107, CHEM 111. Non mathematical presentation of basic chemical principles and applications in cosmochemistry, geochemistry, biochemistry, and nuclear chemistry. Emphasis on the development of the environment and man's effect.

**CHEM 103 General Chemistry I (4)** Three hours of lecture, three hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: a satisfactory math SAT score or an adequate knowledge of high school chemistry or satisfactory performance in CHEM 001. Credit will be granted for only one of the following: CHEM 102, CHEM 103, CHEM 105, CHEM 107, CHEM 111. The first semester of a chemistry sequence intended for students whose curricula require a year or more of chemistry. The nature and composition of matter, chemical calculations, elements and inorganic compounds.

**CHEM 104 Fundamentals of Organic and Biochemistry (4)** Three hours of lecture, three hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: CHEM 103 or CHEM 105. Credit will be granted for only one of the following: CHEM 104 and CHEM 233 (or CHEM 235). Intended for students whose curricula require one year of chemistry. Students requiring two or more years of chemistry should register for CHEM 233 or CHEM 235. The chemistry of carbon: aliphatic compounds, aromatic compounds, stereochemistry, halides, amines, and amides, and esters, carbohydrates, and natural products.

**CHEM 105 Principles of General Chemistry I (4)** Three hours of lecture, three hours of laboratory, and one hour of discussion/recitation per week. Credit will be granted for only one of the following: CHEM 102, CHEM 103, CHEM 105, CHEM 107, CHEM 111. A more rigorous treatment of the material of CHEM 103. Admission by invitation of the Chemistry Department based on performance on a qualifying test.

**CHEM 107 Chemistry and Man (3)** Credit will be granted for only one of the following: CHEM 102, CHEM 103, CHEM 105, CHEM 107, CHEM 111. Lecture course intended for non-chemistry majors. The impact of chemistry on human life. The chemistry of the universe, of life, of the body, of the mind, of food and drugs, of consumer goods, and of everyday life.

**CHEM 109 College Chemistry Laboratory (1-2)** Prerequisite: permission of department. Laboratory work as required for transfer students whose lower division work at other universities has not included laboratory work.

**CHEM 111 Chemistry in Modern Life (3)** Two hours of lecture and two hours of laboratory per week. Credit will be granted for only one of the following: CHEM 102, CHEM 103, CHEM 105, CHEM 107, CHEM 111. An introduction to the fundamental principles of chemistry and chemical terminology; atoms, bonding, energy, and functional groups. The course assumes no previous college science. This course fulfills the laboratory course required in the University Studies Program.

**CHEM 113 General Chemistry II (4)** Three hours of lecture, three hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: CHEM 103 or CHEM 105. Credit will be granted for only one of the following: CHEM 113 or CHEM 115. Kinetics; homogeneous, heterogeneous, and ionic equilibria; oxidation-reduction; electrochemistry; chemistry of the elements.

**CHEM 115 Principles of General Chemistry II (4)** Three hours of lecture, three hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: CHEM 103 or CHEM 105 and permission of department. Credit will be granted for only one of the following: CHEM 113 or CHEM 115. A more rigorous treatment of the material in CHEM 113.

**CHEM 233 Organic Chemistry I (4)** Three hours of lecture, three hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: CHEM 113 or CHEM 115. Credit will be granted for only one of the following: CHEM 104, CHEM 233, CHEM 235. This course is the first of a two-semester sequence in organic chemistry and is intended to be followed by CHEM 243 or CHEM 245. The chemistry of carbon: aliphatic compounds, aromatic compounds, stereochemistry, arenes, halides, alcohols, esters, and spectroscopy.

**CHEM 235 Principles of Organic Chemistry I (4)** Three hours of lecture, three hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: CHEM 113 or CHEM 115 and permission of department. Credit will be granted for only one of the following: CHEM 104, CHEM 233, CHEM 235. A more rigorous treatment of the material of CHEM 233. This course is the first of a two-semester sequence in organic chemistry.

**CHEM 243 Organic Chemistry II (4)** Three hours of lecture, three hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: CHEM 243 or CHEM 235. Credit will be granted for only one of the following: CHEM 243 or CHEM 245. A continuation of CHEM 233 with emphasis on molecular structure; substitution reactions; carbonium ions; aromaticity; synthetic processes; macro-molecules.

**CHEM 245 Principles of Organic Chemistry II (4)** Three hours of lecture, three hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: CHEM 233 or CHEM 235 and permission of department. Credit will be granted for only one of the following: CHEM 243 or CHEM 245. A more rigorous treatment of the material in CHEM 243.

**CHEM 287 Computer Programming for the Biological and Chemical Sciences (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: one year of college chemistry or biological science. Introduction to a structured programming language (PASCAL), with examples and applications chosen from the biological and chemical sciences.

**CHEM 302 Radiochemical Safety Procedures (1)** One hour of lecture per week. A lecture and demonstration course. Radiation hazards, principles and practices of radiation safety, federal (AEC, ICC) codes and state public health.

**CHEM 321 Quantitative Analysis (4)** Two hours of lecture and six hours of laboratory per week. Prerequisite: CHEM 113 or CHEM 115. Volumetric, gravimetric, electrometric, and colorimetric methods in analytical inorganic chemistry.

**CHEM 374 Technology, Energy and Risk (3)** Prerequisite: completion of USP Distributive Studies Area B. Decision-making in a technological, democratic society. Current issues such as acid rain, nuclear power, synthetic organic chemicals.

**CHEM 398 Special Projects (2)** Honors projects for undergraduate students.

**CHEM 399 Introduction to Chemical Research (1-2)** Prerequisite: registration only upon consent of the course coordinator. Junior standing. Repeatable to 4 credits. The course will allow students to conduct basic research under the supervision of a member of the department.

**CHEM 401 Inorganic Chemistry (3)** Prerequisite: CHEM 481.

**CHEM 403 Radiochemistry (3)** Prerequisite: one year of college chemistry and one year of college physics.

Radioactive decay; introduction to properties of atomic nuclei; nuclear processes in cosmology; chemical, biomedical and environmental applications of radioactivity; nuclear processes as chemical tools; interaction of radiation with matter.

**CHEM 421 Advanced Quantitative Analysis (3)** Pre- or corequisite: CHEM 482 and CHEM 483. An examination of some advanced topics in quantitative analysis including nonaqueous titrations, precipitation, phenomena, complex equilibria, and the analytical chemistry of the less familiar elements.

**CHEM 425 Instrumental Methods of Analysis (3)** One hour of lecture and six hours of laboratory per week. Prerequisite: CHEM 321. An introduction to modern instrumentation in analytical chemistry. Electronics, spectroscopy, chromatography and electrochemistry.

**CHEM 433 Chemical Synthesis (3)** One hour of lecture and six hours of laboratory per week. Prerequisite: CHEM 113 or CHEM 115; and CHEM 243 or CHEM 245.

**CHEM 441 Advanced Organic Chemistry (3)** Prerequisite: CHEM 481. An advanced study of the compounds of carbon, with special emphasis on molecular orbital theory and organic reaction mechanisms.

**CHEM 443 Qualitative Organic Analysis (3)** One hour of lecture and six hours of laboratory per week. Prerequisite: CHEM 113 or CHEM 115, and CHEM 243 or CHEM 245. The systematic identification of organic compounds.

**CHEM 473 Geochemistry of Solids (3)** Prerequisite: CHEM 482 or GEOL 422. Principles of crystal chemistry applied to structures, properties and reactions of minerals and non-metallic solids. Emphasis is placed on the relation of structural stability to bonding, ionic size, charge, order-disorder, polymorphism, and isomorphism.

**CHEM 474 Environmental Chemistry (3)** Prerequisite: CHEM 481 or equivalent. The sources of various elements and chemical reactions between them in the atmosphere and hydrosphere are treated. Causes and biological effects of air and water pollution by certain elements are discussed.

**CHEM 481 Physical Chemistry I (3)** Prerequisite: CHEM 113 or CHEM 115; CHEM 243 or CHEM 245; MATH 141; and PHYS 142 or PHYS 263 (PHYS 263 may be taken concurrently). A course primarily for chemists and chemical engineers.

**CHEM 482 Physical Chemistry II (3)** Prerequisite: CHEM 481. A course primarily for chemists and chemical engineers.

**CHEM 483 Physical Chemistry Laboratory I (2)** One hour lecture-recitation and one three-hour laboratory period per week. Corequisite: CHEM 481. An introduction to the principles and application of quantitative techniques in physical chemical measurements. Experiments will be coordinated with topics in CHEM 481.

**CHEM 484 Physical Chemistry Laboratory II (2)** One hour lecture-recitation and one three-hour laboratory period per week. Prerequisite: CHEM 481 and CHEM 483. Corequisite: CHEM 482. A continuation of CHEM 483. Advanced quantitative techniques necessary in physical chemical measurements. Experiments will be coordinated with topics in CHEM 482.

**CHEM 485 Advanced Physical Chemistry (2)** Prerequisite: CHEM 482. Quantum chemistry and other selected topics.

**CHEM 486 Advanced Physical Chemistry Laboratory (2)** Six hours of laboratory per week. Prerequisites: CHEM 482 and permission of instructor.

**CHEM 487 Computer Applications in the Biological and Chemical Sciences (4)** Three hours of lecture, three hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: CHEM 113 and CHEM 287 or equivalent; and knowledge of a scientific programming language (PASCAL, FORTRAN or "C"). The utilization of computers to solve chemical and biological problems, with emphasis on the utilization of available software rather than "de novo" programming.

**CHEM 498 Special Topics in Chemistry (3)** Three lectures or two lectures and one three-hour laboratory

per week. Prerequisite varies with the nature of the topic being considered. Course may be repeated for credit if the subject matter is substantially different, but not more than three credits may be accepted in satisfaction of major supporting area requirements for chemistry majors.

## CHIN — Chinese

**CHIN 101 Intensive Elementary Chinese I (6)** Non-majors admitted only after a placement interview. Introduction to speaking, reading, and writing Chinese with an emphasis on mastering the essentials of pronunciation, basic characters and structural patterns.

**CHIN 102 Elementary Spoken Chinese (3)** Prerequisite: CHIN 101 or equivalent. Non-majors admitted only after a placement interview. Continued study of grammatical patterns and vocabulary buildup with particular emphasis on conversation. May be taken in conjunction with CHIN 103.

**CHIN 103 Elementary Written Chinese (3)** Prerequisite: CHIN 101 or equivalent. Non-majors admitted only after a placement interview. Continued study of grammatical patterns and buildup of vocabulary with particular emphasis on reading and writing. May be taken in conjunction with CHIN 102.

**CHIN 201 Intermediate Spoken Chinese I (3)** Prerequisite: CHIN 102 or equivalent. Non-majors admitted only after a placement interview. Emphasis on development of conversational skills with vocabulary build-up and controlled conversation.

**CHIN 202 Intermediate Written Chinese I (3)** Prerequisite: CHIN 103 or equivalent. Non-majors admitted only after a placement interview. Reading and writing skills with emphasis on grammar and Chinese characters.

**CHIN 301 Intermediate Spoken Chinese II (3)** Prerequisite: CHIN 201 or equivalent. Non-majors admitted only after a placement interview. Continuation of CHIN 201.

**CHIN 302 Intermediate Written Chinese II (3)** Prerequisite: CHIN 202 or equivalent. Non-majors admitted only after a placement interview. Continuation of CHIN 202.

**CHIN 213 Chinese Poetry into English: An Introduction (3)** Issues in the intercultural and interlingual interpretation of foreign literature through the study of Western translations of and scholarship on selected Chinese poets. No knowledge of Chinese required.

**CHIN 301 Advanced Chinese I (3)** Prerequisite: CHIN 202 or equivalent. Non-majors admitted only after a placement interview. Readings in expository and fictional writing with conversation and composition.

**CHIN 302 Advanced Chinese II (3)** Prerequisite: CHIN 301 or equivalent. Non-majors admitted only after a placement interview. Continuation of CHIN 301.

**CHIN 303 Business Chinese I (3)** Prerequisites: CHIN 203; and CHIN 204 or equivalent. Non-majors admitted only after a placement interview. Conversation, reading, and writing applicable to Chinese business transactions, social meetings, and meetings with government organizations, plus background material in English on professional business practices and social customs associated with business.

**CHIN 304 Business Chinese II (3)** Prerequisite: CHIN 303 or equivalent. Non-majors admitted only after a placement interview. Continuation of CHIN 303.

**CHIN 313 Chinese Poetry and Prose in Translation (3)** Writing of the major poets, essayists, and historians from the 10th century B.C. to the 12th century A.D. No knowledge of Chinese is required.

**CHIN 314 Chinese Fiction and Drama in Translation (3)** Representative short stories, novels, and plays from the third through the nineteenth centuries. No knowledge of Chinese is required.

**CHIN 315 Modern Chinese Literature in Translation (3)** Major works of fiction and drama from 1920 to the present read in the context of social and literary change. Emphasis on western and traditional Chinese influences on the writers and their works. No knowledge of Chinese required.

**CHIN 388 Topics in Chinese Literature in Translation**

(3) Repeatable to 6 credits if content differs. Analysis of significant themes and structures in Chinese literature. No knowledge of Chinese required.

**CHIN 401 Readings in Modern Chinese I (3)**

Prerequisite: CHIN 302 or equivalent. Non-majors admitted only after a placement interview. Readings in history, politics, economics, sociology, and literature. Emphasis on wide-ranging, rapid reading, reinforced by conversations and compositions.

**CHIN 402 Readings in Modern Chinese II (3)**

Prerequisite: CHIN 401 or equivalent. Non-majors admitted only after a placement interview. Continuation of CHIN401.

**CHIN 403 Classical Chinese I (3)**

Prerequisite: CHIN 302. Introductory classical Chinese using literary and historical sources in the original language.

**CHIN 404 Classical Chinese II (3)**

Prerequisite: CHIN 302. Further classical studies by various writers from famous ancient philosophers to prominent scholars before the new culture movement.

**CHIN 405 Advanced Conversation and Composition (3)**

Prerequisite: CHIN 302 or permission of instructor. Non-majors admitted only after a placement interview. Practice in writing essays, letters, and reports on selected topics. Conversation directed toward everyday situations and topics related to life in China. Conducted in Chinese.

**CHIN 415 Readings in Current Newspapers and Periodicals (3)**

Prerequisite: CHIN 402 or equivalent. Non-majors admitted only after a placement interview. Reading of periodical literature on selected topics with discussions and essays in Chinese.

**CHIN 421 Sounds and Transcriptions of Mandarin Chinese (3)**

Production and recognition of Mandarin speech sounds and tones, their phonological patterns, comparison with English, and representation by the various Romanization systems.

**CHIN 422 Advanced Chinese Grammar (3)**

Chinese sentence patterns studied contrasted with English and in terms of current pedagogical as well as linguistic theories.

**CHIN 431 Translation and Interpretation I (3)**

Prerequisite: CHIN 202 or equivalent. Introduction to the history and theories of translation/interpretation; contrasts the structures of English and Chinese.

**CHIN 432 Translation and Interpretation II (3)**

Prerequisite: CHIN 431 or equivalent.

**CHIN 441 Traditional Chinese Fiction (3)**

Prerequisite: CHIN 314 or permission of instructor. Major works of fiction from the 4th century tales of the marvelous through the 19th century Ching novel. Taught in Chinese.

**CHIN 442 Modern Chinese Fiction (3)**

Prerequisite: CHIN 315 or permission of instructor. Examination, through selected texts, of the writer's role as shaper and reflector of the Republican and Communist revolutions. Taught in Chinese.

**CHIN 499 Directed Study in Chinese (1-3)**

Prerequisite: permission of instructor. Repeatable to 6 credits if content differs. Readings in Chinese under faculty supervision.

**CJUS — Institute of Criminal Justice and Criminology**

**CJUS 100 Introduction to Law Enforcement (3)** Introduction to the administration of criminal justice in a democratic society with emphasis on the theoretical and historical development of law enforcement. The principles of organization and administration for law enforcement; functions and specific activities; planning and research; public relations; personnel and training; inspection and control; direction; policy formulation.

**CJUS 230 Criminal Law in Action (3)** Law as one of the methods of social control. Criminal law's nature, sources and types; theories and historical developments. Behavioral and legal aspects of criminal acts. Classification and analysis of selected criminal offenses.

**CJUS 234 Law of Criminal Investigation (3)** Prerequisite: CJUS230. General principles and theories of criminal procedure. Due process. Arrest, search and

seizure. Recent developments. Study and evaluation of evidence and proof.

**CJUS 300 Criminological and Criminal Justice Research Methods (3)** Prerequisite: CJUS 100, and CRIM 220; and one of the following: SOCY 201, PSYC 200, ECON 321, BMGT 230, EDMS 451, or GVPT 422. Introduction to the formulation of research questions covering crime and justice, research designs, data collection, and interpretation and reporting in criminological and justice-system settings.

**CJUS 320 Introduction to Criminalistics (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: CJUS 220. An introduction to modern methods used in the detection, investigation and solution of crimes. Practical analysis of evidence in a criminal investigation laboratory, including photography, fingerprints and other impressions, ballistics, glass, hair, handwriting and document examination, drug analysis, and lie detection.

**CJUS 330 Contemporary Legal Policy Issues (3)** Prerequisite: CJUS 230; and CJUS 234 or equivalent. In-depth examination of selected topics. Criminal responsibility. Socio-legal policy alternatives with regard to deviance. Law enforcement procedures for civil law and similar legal problems. Admissibility of evidence. Representation. Indigent's right to counsel.

**CJUS 340 Concepts of Law Enforcement Administration (3)** Prerequisite: CJUS 100 or equivalent. An introduction to concepts of organization and management as these relate to law enforcement. Principles of structure, process, policy and procedure, communication and authority, division of work and organizational controls. Human element in the organization. Informal interaction and bureaucracy.

**CJUS 352 Drugs and Crime (3)** Prerequisite: CJUS 100. An analysis of the role of criminal justice in the control of drug use and abuse.

**CJUS 360 Industrial and Retail Security Administration (3)** Prerequisite: CJUS 100, or CJUS 220 or permission of department. The origins of contemporary private security systems. Organization and management of industrial and retail protective units.

**CJUS 388 Independent Reading in Law Enforcement (3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. H - Honors. Supervised study of selected topic in criminal justice.

**CJUS 389 Independent Research in Law Enforcement (3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. H - Honors. Supervised study of selected topic in criminal justice.

**CJUS 398 Law Enforcement Field Training (1-6)** Prerequisite: 6 credits of law enforcement; and permission of department. Repeatable to 6 credits. Supervised, structured and focused field training in law enforcement agencies.

**CJUS 399 Directed Independent Research (1-3)** Prerequisite: 12 credits hours in law enforcement or criminology; and permission of department. Repeatable to 6 credits if content differs. Supervised individual research and study: library and field research, surveys, special local problems.

**CJUS 400 Criminal Courts (3)** Prerequisite: CJUS 100 or permission of department. Criminal courts in the United States at all levels; judges, prosecutors, defenders, clerks, court administrators, and the nature of their jobs; problems facing courts and prosecutors today and problems of administration; reforms.

**CJUS 444 Advanced Law Enforcement Administration (3)** Prerequisite: CJUS 340 or permission of department. The structuring of manpower, material, and systems to accomplish the major goals of social control. Personnel and systems management. Political controls and limitations on authority and jurisdiction.

**CJUS 455 Dynamics of Planned Change in Criminal Justice I (3)** Prerequisite: permission of department. An examination of conceptual and practical issues related to planned change in criminal justice. Emphasis on the development of innovative ideas using a research and development approach to change.

**CJUS 456 Dynamics of Planned Change in Criminal Justice II (3)** Prerequisite: CJUS 455 or permission of department. An examination of conceptual and practical issues related to planned change in criminal justice. Emphasis on change strategies and tactics which are appropriate for criminal justice personnel in entry level positions.

**CJUS 462 Special Problems in Security Administration (3)** Prerequisite: CJUS 360. An advanced course for students desiring to focus on specific concerns in the study of private security organizations; business intelligence and espionage; vulnerability and criticality analyses in physical security; transportation, banking, hospital and military security problems; uniformed security forces; national defense information; and others.

**CJUS 498 Selected Topics in Criminal Justice (1-6)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Supervised study of a selected topic to be announced in the field of criminal justice.

**CLAS — Classics**

**CLAS 100 Classical Foundations (3)** Aspects of the ancient world taught through the medium of influential classical texts.

**CLAS 170 Greek and Roman Mythology (3)** Taught in English, no prerequisite; cannot be taken for language credit. This course is particularly recommended for students planning to major in foreign languages, English, history, the fine arts, or journalism.

**CLAS 270 Greek Literature in Translation (3)** Selections in translation of Greek literature from Homer to Lucian, with special emphasis on epic and dramatic poetry. No knowledge of Greek or Latin is required.

**CLAS 271 Roman Literature in Translation (3)** Selections in translation of Latin literature to the time of Apuleius. Special emphasis will be placed on poetry of the Augustan Age. No knowledge of Latin is required.

**CLAS 280 English Word Building From Latin and Greek (3)** General English vocabulary through the study of Latin and Greek roots, prefixes, suffixes, etymologies, and principles of linguistic change.

**CLAS 290 Greek and Latin Medical Terminology (3)** Basic medical vocabulary through the study of Greek and Latin roots, prefixes and suffixes. No previous knowledge of Greek or Latin required.

**CLAS 305 Special Topics in Classical Literature (3)** Repeatable to 9 credits if content differs. Readings in translation.

**CLAS 320 Women in Classical Antiquity (3)** A study of women's image and reality in ancient Greek and Roman societies through an examination of literary, linguistic, historical, legal and artistic evidence; special emphasis in women's role in the family, views of female sexuality, and the place of women in creative art. Readings in primary sources in translation and modern critical writings.

**CLAS 330 Greek and Roman Religion (3)** Survey of Greek and Roman religious beliefs and practices from Minoan-Mycenaean period to rise of Christianity.

**CLAS 372 Classical Epic (3)** Introduction to major classical epic poems in translation.

**CLAS 374 Greek Tragedy in Translation (3)** Study and analysis of the tragedies of Aeschylus, Sophocles and Euripides with special attention to the concepts of character and of thought as conceived by Aristotle in The Poetics.

**CLAS 375 Ancient Comedy (3)** Representative plays by Aristophanes, Menander, Plautus and Terence in translation; examination of Greek tradition in Roman and postclassical periods.

**CLAS 380 Ancient Biography (3)** Analysis of ancient biographies as literature in translation.

**CLAS 411 Greek Drama (3)** Also offered as CMLT 411. Credit will be granted for only one of the following: CLAS 411 or CMLT 411. The chief works of Aeschylus, Sophocles, Euripides, and Aristophanes in English translations.

**CLAS 470 Advanced Greek and Roman Mythology (3)** Prerequisite: CLAS 170 or permission of department. Selected themes and characters of Greek and Roman myth. History of the study of myth and research methods in mythology

**CLAS 488 Independent Study in Classical Civilization (3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs.

**CLAS 494 Senior Seminar In Classics (3)** Limited to graduating classics majors. To be taken in the last year and preferably the last semester of the undergraduate program. Topics will vary each semester, most will be interdisciplinary or will cross historical periods. The course will provide a seminar experience in material or methodologies not otherwise available to the major

**CLAS 495 Senior Thesis in Classics (3)** Prerequisite: permission of department. Prior departmental approval of research topic is required. Available to all students who wish to pursue a specific research topic

**CLAS 499 Independent Study in Classical Languages and Literatures (1-3)** Prerequisite: permission of department

**CMLT — Comparative Literature**  
**CMLT 402 Introductory Survey of Comparative Literature (3)** Study of the medieval and modern continental literature.

**CMLT 411 The Greek Drama (3)** Also offered as CLAS 411. Credit will be granted for only one of the following CMLT 411 or CLAS 411. The chief works of Aeschylus, Sophocles, Euripides, and Aristophanes in English translations. Emphasis on the historic background, on dramatic structure, and on the effect of the Attic drama upon the mind of the civilized world

**CMLT 415 The Old Testament As Literature (3)** A study of sources, development and literary types.

**CMLT 416 New Testament As Literature (3)** A knowledge of Greek is helpful, but not essential. A study of the books of the New Testament, with attention to the relevant historical background and to the transmission of the text.

**CMLT 421 The Classical Tradition and Its Influence in the Middle Ages and the Renaissance (3)** Reading knowledge of Greek or Latin required. Emphasis on major writers.

**CMLT 422 The Classical Tradition and Its Influence in the Middle Ages and the Renaissance (3)** Reading knowledge of Greek and Latin required. Emphasis on major writers.

**CMLT 430 Literature of the Middle Ages (3)** Narrative, dramatic and lyric literature of the middle ages studied in translation.

**CMLT 433 Dante and the Romance Tradition (3)** A reading of the divine comedy to enlighten the discovery of reality in western literature.

**CMLT 461 Romanticism: Early Stages (3)** Reading knowledge of French or German required. Emphasis on England, France and Germany

**CMLT 462 Romanticism: Flowering and Influence (3)** Reading knowledge of French and German required. Emphasis on England, France and Germany

**CMLT 469 The Continental Novel (3)** The novel in translation from Stendhal through the existentialists, selected from literatures of France, Germany, Italy, Russia, and Spain.

**CMLT 470 Ibsen and the Continental Drama (3)** Emphasis on the major work of Ibsen, with some attention given to selected predecessors, contemporaries and successors.

**CMLT 479 Major Contemporary Authors (3)**

**CMLT 488 Genres (3)** Repeatable to 6 credits if content differs. A study of a recognized literary form, such as tragedy, epic, satire, literary criticism, comedy, tragicomedy, etc.

**CMLT 489 Major Writers (3)** Each semester two major writers from different cultures and languages will be

studied. Authors will be chosen on the basis of significant relationships of cultural and aesthetic contexts, analogies between their respective works, and the importance of each writer to his literary tradition

**CMLT 498 Selected Topics in Comparative Literature (3)**

### CMSC — Computer Science

**CMSC 103 Introduction to Computing (3)** An introduction to computing for non-computer science majors. Basic terminology and concepts of computing. Hands-on experience on personal computer with applications software such as word processor, spreadsheet, and database management system. Social issues of computing. (Not applicable to the major requirements in computer science.)

**CMSC 110 Introduction to Fortran Programming (4)** Three hours of lecture and two hours of laboratory per week. Construction of algorithms for the efficient solution of computational problems. Conducted in FORTRAN. Intended for scientists, engineers, and business majors. Not applicable to the major requirements in computer science.

**CMSC 112 Computer Science I (4)** Three hours of lecture and two hours of laboratory per week. Pre- or corequisite: MATH 140. With CMSC 113, this course forms a one-year sequence for computer science majors. Design and analysis of programs using structured programming and data abstraction. Formal syntax and semantics, and program verification. Conducted in Pascal.

**CMSC 113 Computer Science II (4)** Three hours of lecture and two hours of laboratory per week. Prerequisites: a grade of C or better in CMSC 150; and (a grade of C or better in CMSC 112 or permission of department based on satisfactory performance on the computer science placement exam). Corequisite: MATH 141. Credit will be granted for only one of the following CMSC 113 and CMSC 120. A continuation of CMSC 112. Intended for computer science majors.

**CMSC 120 Introduction to Pascal Programming (4)** Three hours of lecture and two hours of laboratory per week. Credit will be granted for only one of the following. CMSC 113 and CMSC 120. Design and analysis of programs in Pascal. An introduction to computing, using structured programming concepts. Not applicable to the major requirements in computer science.

**CMSC 150 Introduction to Discrete Structures (3)** Pre- or corequisite: MATH 140. Formerly CMSC 250. Fundamental mathematical concepts related to computer science, including finite and infinite sets, relations, functions, and propositional logic. Introduction to other techniques: modeling and solving problems in computer science. Introduction to permutations, combinations, graphs, and trees with selected applications

**CMSC 211 Assembly Language Programming (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: CMSC 113 or CMSC 120. Assembly language programming, assemblers, loaders, linkage editors, and macros

**CMSC 220 Introduction to File Processing (3)** Prerequisite: CMSC 113 or CMSC 120. Characteristics and use of peripheral memory devices for sequential and direct access file processing. Techniques such as sorting and searching, hash coding, and table look-up

**CMSC 251 Algorithms (3)** Prerequisite: CMSC 112, and CMSC 150, and MATH 140; a grade of C or better in CMSC 150 and CMSC 112. A systematic study of correctness and complexity of some elementary algorithms related to sorting, graphs and trees, and combinatorics

**CMSC 280 Computer Science III (3)** Prerequisite: CMSC 113 with a grade of "C" or better. Corequisite: CMSC 251. Introduction to the subdisciplines of computer science through practical problem solving. Formal programming methodology and data structures in algorithm development

**CMSC 311 Computer Organization (3)** Prerequisite: CMSC 280 with a grade of C or better. Introduction to assembly language. Design of digital logic circuits. Organization of central processors, including instruction sets, register transfer operations, control micro-

programming, data representation, and arithmetic algorithms. Memory and input/output organization

**CMSC 330 Organization of Programming Languages (3)** Prerequisite: CMSC 113 with grade of "C" or better. The run-time organization of programming languages. Algebraic languages (e.g. Algol, PL/1, Pascal). Dynamic versus static scope rules. Storage for strings, arrays, and records

**CMSC 388 Special Computational Laboratory (1-2)** Two hours laboratory per week for each credit hour. Prerequisite: CMSC 103 or equivalent. Arranged for special groups of students to give experience in developing algorithmic solutions of problems or using particular computational systems. May be taken for cumulative credit up to a maximum of six hours where different material is covered

**CMSC 390 Honors Paper (3)** Prerequisite: admission to CMSC Honors Program. Special study or research directed toward preparation of honors paper.

**CMSC 411 Computer Systems Architecture (3)** Prerequisite: CMSC 311 or CMSC 400. Input/output processors and techniques. Intra-system communication, buses, caches. Addressing and memory hierarchies. Microprogramming, parallelism, and pipelining.

**CMSC 412 Operating Systems (4)** Three hours of lecture and two hours of laboratory per week. Prerequisite: (CMSC 311 and CMSC 330) or CMSC 400. Recommended CMSC 411. An introduction to batch systems, spooling systems, and third-generation multiprogramming systems. Description of the parts of an operating system in terms of function, structure, and implementation. Basic resource allocation policies.

**CMSC 415 Systems Programming (3)** Prerequisite: CMSC 412. Basic algorithms of operating system software. Memory management using linkage editors and loaders, dynamic relocation with base registers, paging. File systems and input/output control. Processor allocation for multiprogramming, timesharing. Emphasis on practical systems programming, including projects such as a simple linkage editor, a stand-alone executive, a file system, etc.

**CMSC 420 Data Structures (3)** Prerequisite: CMSC 251 or CMSC 400. Description, properties, and storage allocation of data structures including lists and trees. Algorithms for manipulating structures. Applications from areas such as data processing, information retrieval, symbol manipulation, and operating systems.

**CMSC 421 Introduction to Artificial Intelligence (3)** Prerequisite: CMSC 251; and CMSC 330. Recommended CMSC 420. Areas and issues of artificial intelligence, including search, inference, knowledge representation, learning, vision, natural languages, expert systems, robotics. Implementation and application of programming languages (e.g. LISP, PROLOG, SMALLTALK), programming techniques (e.g. pattern matching, disjunction networks) and control structures (e.g. agendas, data dependencies)

**CMSC 424 Database Design (3)** Prerequisite: CMSC 420. Recommended CMSC 450. Motivation for the database approach as a mechanism for modeling the real world. Review of the three popular data models: relational, network, and hierarchical. Comparison of permissible structures; integrity constraints, storage strategies, and query facilities. Theory of database design logic

**CMSC 426 Image Processing (3)** Prerequisite: CMSC 420. An introduction to basic techniques of analysis and manipulation of pictorial data by computer. Image input/output devices, image processing software, enhancement, segmentation, property measurement, Fourier analysis. Computer encoding, processing, and analysis of curves

**CMSC 430 Theory of Language Translation (3)** Prerequisite: CMSC 330 or CMSC 400. Formal translation of programming languages, program syntax and semantics. Finite state recognizers and regular grammars. Context-free parsing techniques such as recursive descent, precedence, LR(k) and LR(k) Code generation, improvement, syntax-directed translation schema

**CMSC 434 Human Factors in Computer and Information Systems (3)** Prerequisite: CMSC 330; and

PSYC 100, and STAT 400. Human factors issues in the development of software, the use of database systems, and the design of interactive computer systems. Experimentation on programming language control and data structures, programming style issues, documentation, program development strategies, debugging, and readability interactive system design issues such as response time, display rates, graphics, on-line assistance, command language, menu selection, or speech input output.

**CMSC 435 Software Design and Development (3)** Prerequisite: CMSC 420 and CMSC 430 or equivalent. State-of-the-art techniques in software design and development. Laboratory experience in applying the techniques covered. Structured design, structured programming, top down design and development, segmentation and modularization techniques, iterative enhancement, design and code inspection techniques, correctness, and chief-programmer teams. The development of a large software project.

**CMSC 450 Elementary Logic and Algorithms (3)** Prerequisite: MATH 240 or CMSC 250 or CMSC 150. Also offered as MATH 444. Credit will be granted for only one of the following: MATH 444 or CMSC 450. An elementary development of propositional logic, predicate logic, with an introductory treatment of Turing machines, recursive functions, unavoidable problems, and applications of logic in artificial intelligence.

**CMSC 451 Design and Analysis of Computer Algorithms (3)** Prerequisites: CMSC 113; and CMSC 251. Fundamental techniques for designing and analyzing computer algorithms. Greedy methods, divide-and-conquer techniques, search and traversal techniques, dynamic programming, backtracking methods, branch-and-bound methods, and algebraic transformations.

**CMSC 452 Elementary Theory of Computation (3)** Prerequisites: CMSC 113; and CMSC 251. Alternative theoretical models of computation, types of automata, and their relations to formal grammars and languages.

**CMSC 456 Data Encryption and Security (3)** Prerequisites: CMSC 420. Recommended: CMSC 451. Methods of protecting computer data from unauthorized use and users by data encryption and by access and information controls. Classical cryptographic systems. Introduction to several modern systems such as Data Encryption Standard and public-key cryptosystems.

**CMSC 460 Computational Methods (3)** Prerequisite: MATH 240 and MATH 241; and (CMSC 110 or CMSC 113). Also offered as MAPL 460. Credit will be granted for only one of the following: CMSC/MAPL 460 or CMSC/MAPL 466. Basic computational methods for interpolation, least squares, approximation, numerical quadrature, numerical solution of polynomial and transcendental equations, systems of linear equations and initial value problems for ordinary differential equations. Emphasis is on methods and their computational properties rather than their analytic aspects. Intended primarily for students in the physical and engineering sciences.

**CMSC 466 Introduction to Numerical Analysis I (3)** Prerequisite: MATH 240; and MATH 241; and (CMSC 110 or equivalent). Also offered as MAPL 466. Credit will be granted for only one of the following: CMSC/MAPL 460 or CMSC/MAPL 466. Floating point computations, direct methods for linear systems, interpolation, solution of nonlinear equations.

**CMSC 467 Introduction to Numerical Analysis II (3)** Prerequisite: MAPL/CMSC 466. Also offered as MAPL 467. Advanced interpolation, linear least squares, eigenvalue problems, ordinary differential equations, Fast Fourier Transforms.

**CMSC 475 Combinatorics and Graph Theory (3)** Prerequisites: MATH 240 and MATH 241. Also offered as MATH 475. General enumeration methods, difference equations, generating functions. Elements of graph theory, matrix representations of graphs, applications of graph theory to transport networks, matching theory and graphical algorithms.

**CMSC 477 Optimization (3)** Prerequisite: CMSC/MAPL 460, or CMSC/MAPL 466, or CMSC/MAPL 467. Also offered as MAPL 477. Credit will be granted for only one of the following: CMSC 477 or MAPL 477. Linear programming including the simplex algorithm and dual

linear programs, convex sets and elements of convex programming, combinatorial optimization, integer programming.

**CMSC 498 Special Problems in Computer Science (1-3)** Prerequisite: permission of department. An individualized course designed to allow a student or students to pursue a specialized topic or project under the supervision of the senior staff. Credit according to work done.

## CMSC — Consumer Economics

**CMSC 100 Introduction to Consumer Economics (3)** The role of the consumer in modern society. Topics include the consumer in the market, the impact of market failures on the quality of life and the impact of government and business decisions on consumer welfare.

**CMSC 298 Special Topics (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Topics of special interest to lower division students under the guidance of department faculty.

**CMSC 300 Professional Development (1)** A series of lectures focused on career options, career preparation and professional development for majors in textiles and consumer economics.

**CMSC 310 Consumer Economics and Public Policy (3)** Prerequisites: ECON 201; and ECON 203. The application of economic theory, including benefit-cost analysis, to an evaluation of policy decisions in the private and public sectors which affect the consumer. The economic, social, and political framework within which policy decisions are made.

**CMSC 385 Junior Honors Seminar (1)** Limited to juniors in the departmental honors program. Spring semester. Readings, reports and discussion of selected topics.

**CMSC 388 Field Work and Analysis in Consumer Economics (3-6)** Prerequisite: permission of department. Senior standing. For CMSC and TEXT majors only. Repeatable to 6 credits if content differs. Also offered as TEXT 388. Supervised professional field work experience in business industry, government or education. A seminar and written critique of the field work experience will be required to relate formal academic study to student work experiences. Students must apply a semester in advance.

**CMSC 400 Research Methods (3)** Prerequisite: MATH 110 or MATH 115. Not open to students who have completed TEXT 400 or BMGT 230. Research methodology in textiles and consumer economics, with particular emphasis on the application of statistical concepts and techniques to the analysis of data from the areas of textiles and consumer economics.

**CMSC 410 Consumer Finance (3)** Prerequisites: ECON 201; and ECON 203. Not open to students who have completed FMCD 441. An economic approach to the problems of income allocation and consumer financial planning, including income maximization, principles of asset choice, financial management and risk management. The effects of fiscal and monetary policies on lifetime economic planning.

**CMSC 431 The Consumer and the Law (3)** A study of legislation affecting consumer goods and services. Topics covered include product safety and liability, packaging and labeling, deceptive advertising, and consumer credit. The implications of such legislation for consumer welfare with particular emphasis on the disadvantaged groups in our society will be examined.

**CMSC 433 Consumer Law: Advertising and Solicitation (3)** Prerequisite: CMSC 431 or permission of department. An advanced study of the legal consequences of inducing consumers to enter into commercial transactions. Individual consumer remedies, collective consumer remedies and government regulation.

**CMSC 435 Economics of Consumption (3)** Prerequisites: ECON 201; and ECON 203 or [ECON 205 for non-majors]. The application of economic theory to a study of consumer decision-making and its role in a market economy at both the individual and aggregate levels. Topics covered include empirical studies of consumer spending and saving, the consumer in the market and collective consumption.

**CMSC 437 Consumer Behavior (3)** Prerequisites: PSYC 100, and SOCY 100. An application of the behavioral sciences to a study of consumer behavior. Current theories, models and empirical research findings are explored.

**CMSC 455 Product Standards (3)** Prerequisite: permission of department. The process of product standard development, and the significance of such standards to the consumer. History, procedures and uses of standards by industry and government, including both voluntary and regulatory standardization, the impact of product standards, and mechanisms for obtaining consumer input in the standardization process.

**CMSC 456 Product Liability and Government Regulation (3)** Prerequisite: CMSC 431 or permission of department. Legal concepts involved in society's determination of consumer's rights to product safety. Litigation determining the obligation of manufacturers and sellers to injured consumers. Government regulations defining the obligations of manufacturers to design and construct products in accordance with government standards.

**CMSC 457 Product Safety (3)** Prerequisite: permission of department. An interdisciplinary investigation of consumer product safety. Major statutes and agencies regulating safety. Alternative means of promoting consumer product safety. The application of product liability and cost benefit analysis to the economics of product safety. Consumer response to safety labeling, advertising and educational efforts.

**CMSC 488 Senior Honors Thesis (1-4)** Limited to undergraduate students in the departmental honors program. An independent literary, laboratory or field study, conducted throughout the student's senior year. Student should register in both fall and spring.

**CMSC 498 Special Studies (2-4)** Independent study by an individual student or by a group of students in advanced work not otherwise provided in the department. Students must prepare a description of the study they wish to undertake. The plan must be approved by the faculty directing the study and the department chairman.

## COOP — Cooperative Education Program

**COOP 098 Co-Op Work Experience I (0)** Prerequisites: satisfactory completion of 36 credits; and consent of the Director of the Cooperative Education Program. Practical, full-time work experience in either private or government agencies which supplements and enhances the theories, principles, and practices in the normal education program. The student must register for COOP 098 for each summer work experience and for both COOP 098 and 099 for each semester work experience.

**COOP 099 Co-Op Work Experience II (0)** Prerequisites: satisfactory completion of 36 credits; and consent of the Director of the Cooperative Education Program. Practical, full-time work experience in either private or government agencies which supplements and enhances the theories, principles, and practices in the normal education program. The student must register for COOP 098 for each summer work experience and for both COOP 098 and 099 for each semester work experience.

## CRIM — Criminology

**CRIM 220 Criminology (3)** Criminal behavior and the methods of its study; causation; typologies of criminal acts and offenders; punishment, correction and incapacitation; prevention of crime.

**CRIM 330 Contemporary Criminological Issues (3)** Prerequisite: CRIM 220. Career criminals, prison overcrowding, prediction, ecological studies of crime, family and delinquency and similar criminological problems.

**CRIM 359 Field Training in Criminology and Corrections (1-6)** Prerequisite: six credits in criminology and permission of department. Repeatable to 6 credits. Supervised field training in public or private social agencies. Group meetings, individual conferences and written program reports.

**CRIM 360 Victimology (3)** Prerequisite: CRIM 220 or permission of department. Overview of the history and theory of victimology. Analysis of victimization patterns with special emphasis on types of victims and crimes. The interaction between victims of crime and the criminal

justice system with respect to the role of the victim and the services offered to the victim

**CRIM 388 Independent Reading Course in Criminology (3)** Prerequisite: CRIM 220 For honor students only. This course is designed for the needs of honors students in criminology

**CRIM 399 Independent Research in Criminology (3)** Prerequisite: CRIM 220. For honor students only. This course is designed for the needs of the honors students in criminology

**CRIM 399 Independent Study in Criminology (1-3)** Prerequisite: 12 credits in criminology or law enforcement; and permission of department. Repeatable to 6 credits. Integrated reading or research under direction and supervision of a faculty member.

**CRIM 432 Law of Corrections (3)** Prerequisite: CJUS 230 or CJUS 234; and CRIM 220. A review of the law of criminal corrections from sentencing to final release or release on parole. Probation, punishments, special treatments for special offenders, parole and pardon, and the prisoner's civil rights are also examined.

**CRIM 450 Juvenile Delinquency (3)** Prerequisite: CRIM 220. Juvenile delinquency in relation to the general problem of crime; analysis of factors underlying juvenile delinquency; treatment and prevention.

**CRIM 451 Crime and Delinquency Prevention (3)** Prerequisite: CRIM 220 or CRIM 450 or permission of department. Methods and programs in prevention of crime and delinquency

**CRIM 452 Treatment of Criminals and Delinquents (3)** Prerequisite: CRIM 220 or CRIM 450 or permission of department. Processes and methods used to modify criminal and delinquent behavior.

**CRIM 454 Contemporary Criminological Theory (3)** Prerequisite: [CRIM 220; and CRIM 450; and CRIM 451] or [CRIM 452 or CRIM 453]. Brief historical overview of criminological theory up to the 50's. Deviance. Labeling Typologies. Most recent research in criminalistic subcultures and middle class delinquency. Recent proposals for "<decriminalization">.

**CRIM 455 Psychology of Criminal Behavior (3)** Prerequisite: CRIM 220 or equivalent; and PSYC 331 or equivalent. Biological, environmental, and personality factors which influence criminal behaviors. Biopsychology and crime, stress and crime, maladjustment patterns, psychoses, personality disorders, aggression and violent crime, sex-motivated crime and sexual deviations, alcohol and drug abuse, and criminal behavior.

**CRIM 456 White Collar and Organized Crime (3)** Prerequisite: CRIM 220 or CRIM 450. Definition, detection, prosecution, sentencing and impact of white collar and organized crime. Special consideration given to the role of federal law and enforcement practices.

**CRIM 457 Comparative Criminology (3)** Prerequisite: CRIM 220 or CRIM 450. Comparison of law and criminal justice systems in different countries. Special emphasis on the methods of comparative legal analysis, international cooperation in criminal justice, and crime and development.

**CRIM 498 Selected Topics in Criminology (3)** Repeatable to 6 credits if content differs. Topics of special interest to advanced undergraduates in criminology. Such courses will be offered in response to student request and faculty interest

## DANC — Dance

**DANC 100 Modern Dance I for Non-Majors (2)** Basic principles of modern dance, emphasizing fundamentals of movement.

**DANC 102 Rhythmic Training For Dance (2)** Basic approaches to rhythmic principles related to dance

**DANC 104 Modern Dance II for Non-Majors (2)** Prerequisite: DANC 100. A continuation of the principles introduced in DANC 100

**DANC 109 Improvisation I (2)** Repeatable to 4 credits. An introduction into the process of spontaneous movement discovery involving solo and group movement experiences.

**DANC 124 Ballet I for Non-Majors (2)** Barre and center work for alignment, strength, flexibility and coordination. Introduction to ballet terminology

**DANC 127 Ballet II for Non-Majors (2)** Prerequisite: DANC 124 or audition. Continuation of DANC 124

**DANC 138 Introduction to Ethnic Dance (2)** Repeatable to 4 credits with permission of department. Traditional dances and music of selected cultures.

**DANC 154 Jazz I for Non-Majors (2)** Introduction to the jazz style in dance for the beginning student.

**DANC 158 Jazz I for Majors Only (2)** Repeatable to 4 credits. Introduction to the jazz style in dance for the beginning student.

**DANC 171 Movement Integration (2)** One hour of lecture and two hours of laboratory per week. Techniques for reducing tension and achieving integrated muscular control and coordination.

**DANC 199 Practicum in Choreography, Production and Performance I (1-3)** Prerequisite: permission of department. Repeatable to 6 credits. Choreography production, and performance of student works, both on and off campus.

**DANC 200 Introduction to Dance (3)** A study of dance as a form of communication and as an art form; a survey of the theories and styles of dance, and their relationships to other art forms.

**DANC 204 Modern Dance III For Non-majors (2)** Prerequisite: DANC 104 or audition. Continuation of DANC 104

**DANC 208 Choreography I (3)** Prerequisites: DANC 102 and DANC 109. Repeatable to 6 credits. Basic principles of dance composition: space, time dynamics, and movement invention. The development of critical awareness.

**DANC 210 Dance Production (3)** A survey of the theatre crafts and techniques involved in dance production, including lighting, sound, set and costume design and construction, stage-management and videotaping.

**DANC 228 Ballet 1 for Majors (2)** Repeatable to 4 credits. Barre and center work for alignment, strength, flexibility and coordination. Introduction to ballet terminology.

**DANC 229 Ballet II for Majors (2)** Prerequisite: DANC 228 or audition. Repeatable to 4 credits. Continuation of DANC 228.

**DANC 248 Modern Dance I for Majors (3)** Prerequisite: permission of department. Repeatable to 6 credits. Dance movement placement, rhythm, dynamics, space and dance phrases.

**DANC 249 Modern Dance II for Majors (3)** Prerequisite: DANC 248 or audition. Repeatable to 6 credits. Continuation of DANC 248.

**DANC 258 Jazz II (2)** Prerequisite: DANC 158 or audition. Repeatable to 4 credits. Continuation of the principles of Jazz I. Emphasis on style and execution of movement.

**DANC 266 Dance Notation I (3)** Prerequisites: DANC 102 and DANC 146. Movement analysis for purposes of recording dance; notation fundamentals. Elementary writing of technique; reading of simple modern, ballet and ethnic studies.

**DANC 299 Practicum in Choreography, Production and Performance II (1-3)** Prerequisite: DANC 199 or permission of department. Repeatable to 6 credits. Continuation of DANC 199.

**DANC 302 Music Sources for Dance (3)** Prerequisite: DANC 102 or permission of department. Study of musical literature, improvisation and composition as they relate to dance. Techniques of instrumental accompaniment.

**DANC 305 Principles of Teaching Dance (3)** Prerequisites: DANC 102, DANC 208, and DANC 248. Theory and practice of dance instruction including methods, lesson plans and practice teaching.

**DANC 306 Creative Dance for Children (3)** Prerequisite: DANC 305 or equivalent. Communication of the essential

elements of dance to children. The development of movement into simple forms to serve as a symbol of creative individual expression.

**DANC 308 Choreography II (3)** Prerequisite: DANC 208. Repeatable to 6 credits. Exploration of the formal elements of choreography; theme, development, repetition, contrast, transition, continuity and structure.

**DANC 309 Improvisation II (2)** Prerequisite: DANC 109 or audition. Repeatable to 4 credits. Continuation of DANC 109

**DANC 310 Dance Lighting (3)** Prerequisite: DANC 210. Two lectures and two laboratory periods per week. Theory and practice of stage lighting with specific reference to designing for dance.

**DANC 328 Ballet III (2)** Prerequisite: DANC 229 or audition. Repeatable to 4 credits. Execution of the vocabulary of ballet movement with technical accuracy

**DANC 329 Ballet IV (2)** Prerequisite: DANC 328 or audition. Repeatable to 4 credits. Continuation of DANC 328.

**DANC 348 Modern Dance III for Majors (3)** Prerequisite: DANC 249 or audition. Repeatable to 6 credits. The body as an instrument of expression; techniques for increasing kinesthetic sensitivity.

**DANC 349 Modern Dance IV for Majors (3)** Prerequisite: DANC 348 or audition. Repeatable to 6 credits. Continuation of DANC 348.

**DANC 366 Dance Notation II (3)** Prerequisite: DANC 266 or equivalent. Reading, writing, and performing movement scores.

**DANC 370 Kinesiology for Dancers (4)** A study of the biological and physical principles of movement and the effects of dancing upon the structure and function of the human body

**DANC 379 Practicum In Dance (1-3)** Repeatable to 12 credits. Performing experience for the student dancer who has developed a professional level of competence.

**DANC 388 Choreography III (3)** Prerequisite: DANC 308 or equivalent. Repeatable to 6 credits. Theoretical and creative aspects of choreography for small groups. Emphasis on individual projects

**DANC 398 Directed Studies In Dance (1-6)** Prerequisite: permission of department. Repeatable to 6 credits.

**DANC 399 Practicum in Choreography, Production and Performance III (1-3)** Prerequisite: DANC 299 or permission of department. Repeatable to 6 credits. Continuation of DANC 299.

**DANC 410 Technical Theater Production for Dance (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: DANC 210 or equivalent (or permission of department). A study of the theoretical principles of production and the practical application of those principles to the presentation of dance works.

**DANC 411 Dance Management and Administration (3)** Principles of dance management and administration, including organization of touring, bookings, budgets, public relations, grantsmanship and audience development.

**DANC 428 Advanced Ballet Technique I (1)** Two hours of laboratory per week. Prerequisite: DANC 329 or audition. Repeatable to 3 credits. Advanced ballet technique with emphasis on physical and expressive skills.

**DANC 429 Advanced Ballet Technique II (1)** Two hours of laboratory per week. Prerequisite: DANC 428. Repeatable to 3 credits. Intensive work in ballet technique for the professionally-oriented dancer.

**DANC 448 Modern Dance V for Majors (3)** Prerequisite: DANC 349 or audition. Repeatable to 6 credits. Complex phrases of modern dance movement with emphasis on articulation and expression

**DANC 449 Modern Dance VI for Majors (3)** Prerequisite: DANC 448 or audition. Repeatable to 6 credits. Continuation of DANC 448.

**DANC 466 Laban Movement Analysis (3)** Introduction to Rudolf Laban's system of qualitative movement analysis in relation to understanding personal movement style. Application to dance performance, teaching, composition and research.

**DANC 468 Modern Repertory (3)** Prerequisite: DANC 349 or permission of department. Repeatable to 6 credits if content differs. Form, content, music, design and performance of modern dance works. **DANC 471 Movement Behavior (3)** The social psychology of movement, reciprocity of physical and emotional behavior.

**DANC 479 Advanced Practicum in Dance (1-3)** Repeatable to 6 credits. Advanced level performing experience for the student dancer who has developed an advanced professional level of competence.

**DANC 482 History of Dance I (3)** Prerequisite: DANC 200. The development of dance from primitive times to the Middle Ages and the relationship of dance forms to patterns of culture.

**DANC 483 History of Dance II (3)** Prerequisite: DANC 200. The development of dance from the Renaissance period to the present time and the relationship of dance forms to patterns of culture.

**DANC 484 Philosophy of Dance (3)** Prerequisite: DANC 200 or permission of department. Critical analysis of dance as a creative experience and the role of professional, educational and recreational dance in our society. Selected approaches to current developments in dance.

**DANC 489 Special Topics in Dance (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Theoretical, choreographic, pedagogic, or performance study.

**DANC 499 Practicum in Choreography, Production and Performance IV (1-6)** Prerequisite: permission of permission of department. Repeatable to 6 credits. Advanced workshop in dance presentation, including performing, production and planned field experiences.

## ECON — Economics

**ECON 105 Economics of Social Problems (3)** Not open to students who have completed two of the following courses: ECON 201, or ECON 203, or ECON 205. An introduction to modern economic and social problems; their nature, causes, and policy implications.

**ECON 201 Principles of Economics I (3)** Credit will be granted for only one of the following: ECON 201 or ECON 205. An introduction to the problems of unemployment, inflation, and economic growth. Emphasis on roles of monetary and fiscal policy in the conduct of macroeconomic policy. The efficacy of wage and price controls is analyzed.

**ECON 203 Principles of Economics II (3)** Recommended: ECON 201. This course emphasizes the behavior of individual consumers and business firms, problems of international trade and finance, the distribution of income, policies for eliminating poverty and discrimination, the problems of environmental pollution, and the impact of different market structures upon economic activity.

**ECON 205 Fundamentals of Economics (3)** Students in the College of Business and Management are required to take ECON 201 and should not take ECON 205. Not open to students who have completed ECON 201. Credit will be granted for only one of the following: ECON 201 or ECON 205. A one-semester introduction, for non-majors, to the principles of economics and their applications to the leading economic problems of society, including inflation, unemployment, poverty, urban renewal, income inequality, monopoly and market performance, environmental protection, and international trade.

**ECON 301 Current Issues in American Economic Policy (3)** Prerequisites: [ECON 201; and ECON 203] or ECON 205. Analysis of current economic problems and public policies. Inflation, unemployment, market power, government regulation, poverty and distribution of income, federal budget and tax policy, environment.

**ECON 305 Intermediate Macroeconomic Theory and Policy (3)** Prerequisites: ECON 201; and ECON 203; and MATH 220. Credit will be granted for only one of the

following: ECON 305 or ECON 405. Formerly ECON 401. Analysis of the determination of national income, employment, and price levels. Discussion of consumption, investment, inflation, and governmental fiscal and monetary policy.

**ECON 306 Intermediate Microeconomic Theory (3)** Prerequisites: ECON 201, and ECON 203, and MATH 220. Formerly ECON 403. Analysis of the theories of consumer behavior and of the firm, market systems, distribution theory and the role of externalities.

**ECON 307 Development of Economic Ideas: Social Issues and Political Applications (3)** Prerequisite: ECON 201 or ECON 205. The development of economic ideas with particular reference to their relationship with social history, contemporary politico-economic problems, underlying philosophies, view of the human prospect, methods of analysis, and the role of values. Marx, Marshall, Veblen, Schumpeter, Keynes, Samuelson, Friedman, Galbraith, Myrdal, J. Robinson, and others.

**ECON 310 Evolution of Modern Capitalism in Western Europe and the United States (3)** The evolution of the capitalist system from its medieval origins to the present. Emphasis on dynamic forces of cumulative change in capitalism, including capital accumulation, technology, expansion of markets, the corporate form of private property in the means of production, and the relation of capitalism to war and revolution.

**ECON 311 American Economic Development (3)** Prerequisites: [ECON 201; and ECON 203] or ECON 205. An analysis of the major issues in the growth and development of the American economy. Basic economic theory related to such topics as agriculture, banking, industrialization, slavery, transportation, and the depression of the 1930's.

**ECON 315 Economic Development of Underdeveloped Areas (3)** Prerequisites: [ECON 201; and ECON 203] or ECON 205. Credit will be granted for only one of the following: ECON 315 or ECON 416. Formerly ECON 415. Analysis of the economic and social characteristics of underdeveloped areas. Recent theories of economic development, obstacles to development, policies and planning for development.

**ECON 316 Economic Development of Latin America (3)** Prerequisites: [ECON 201; and ECON 203] or ECON 205. Institutional characteristics of Latin America and an analysis of alternative strategies and policies for development.

**ECON 321 Economic Statistics (3)** Prerequisite: MATH 220 or equivalent. Not open to students who have completed BMGT 230 or BMGT 231. Formerly ECON 421. Introduction to the use of statistics in economics. Topics include: Probability, random variables and their distributions, sampling theory, estimation, hypothesis testing, analysis of variance, regression analysis and correlation.

**ECON 355 Economics of Crime and Law Enforcement (3)** Prerequisite: [ECON 201; and ECON 203] or ECON 205. Economic analysis of crime and the criminal justice system, including such topics as the measurement of crime, economic models of crime, cost and benefits of police and prisons, private protection, gambling and other victimless crimes, and organized crime.

**ECON 361 Economics of American Industries (3)** Prerequisites: [ECON 201; and ECON 203] or ECON 205. A survey of industrial organization theory. Analysis of the structure, conduct, performance, and public policies in selected American industries.

**ECON 370 Labor Markets, Human Resources, and Trade Unions (3)** Prerequisites: [ECON 201; and ECON 203] or ECON 205. Credit will be granted for only one of the following: ECON 370 or ECON 470. A survey of labor markets and the American labor movement. Analysis of labor force growth and composition, problems of unemployment and labor market operations, theories of wage determination, the wage-price spiral, collective bargaining, and governmental regulation of employment and labor relations.

**ECON 374 Sex Roles in Economic Life (3)** Prerequisites: ECON 201; and [ECON 203 or ECON 205]. Discrimination against women in the labor market; the division of labor in the home and the workplace by sex; the child care industry; women in poverty.

**ECON 375 Economics of Poverty and Discrimination (3)** Prerequisites: [ECON 201; and ECON 203] or ECON 205. The causes of the persistence of low income groups, the relationship of poverty to technological change, to economic growth, and to education and training, economic results of discrimination, proposed remedies for poverty and discrimination.

**ECON 380 Comparative Economic Systems (3)** Prerequisites: [ECON 201; and ECON 203] or ECON 205. A comparative analysis of the theory and practice of various types of economic systems, with special attention given to the economic systems of the United States, the Soviet Union, Mainland China, Western and Eastern Europe, and lesser developed countries.

**ECON 381 Environmental Economics (3)** Prerequisite: ECON 201 or ECON 205 or permission of department. Application of economic theory to problems of environmental quality and management. Theory of economic externalities, common property resources, alternative pollution control measures, and limits to economic growth.

**ECON 385 Economics of Natural Resources (3)** Prerequisite: ECON 203 or ECON 205. Economic analysis of natural resource problems, with special emphasis on the rate of use of exhaustible resources and the problems posed for the maintenance of growth.

**ECON 396 Independent Honors Study (3)** Prerequisite: candidacy for honors in economics or by permission of instructor. Normally taken in senior year. Course will explore selected topics in economic theory and its application in depth. Analysis of methodologies in economic research and the development of student skills in research methods. Students will prepare workshop papers.

**ECON 397 Honors Thesis (3)** Prerequisites: ECON 396 and candidacy for honors in economics. General supervision will be provided through assembled meetings with the professor in charge of the course.

**ECON 398 Topics in Economics (3)** Repeatable to 6 credits if content differs. This course is designed to meet the changing interests of students and staff. Topics vary in response to these interests. Students are advised to seek information about the coverage and prerequisites during the registration period.

**ECON 399 Individual Reading and Research For Undergraduates (3)** Prerequisite: six hours of upper-division economics courses. Repeatable to 6 credits if content differs. By arrangement with individual faculty members. This course is designed for students desiring specialized instruction and guidance in subjects not covered in the course offerings. Before enrollment, the students must secure agreement from an individual faculty member to act as their supervisor. A program of reading, research and evaluation will be worked out between the student and the faculty member.

**ECON 402 Macroeconomic Models and Forecasting (3)** Prerequisite: ECON 305 or ECON 405. Analysis of the fluctuations in economic activity and the formulation and use of forecasting models of the economy. Illustrations of computer macro models and forecasting problems.

**ECON 405 Advanced Intermediate Macroeconomic Theory (3)** Prerequisite: ECON 201; and ECON 203; and MATH 220 or equivalent. Credit will be granted for only one of the following: ECON 305 or ECON 405. Advanced treatment of the theory of national income determination, employment, prices and growth. Models of the role of money and expectations, the impact of fiscal and monetary policies, and exchange rates.

**ECON 406 Advanced Intermediate Microeconomic Theory (3)** Prerequisite: ECON 201; and ECON 203; and MATH 220 or equivalent. Credit will be granted for only one of the following: ECON 306 or ECON 406. Advanced treatment of the theory of prices and markets. Analysis of the theory of the household and of the firm, concepts of general equilibrium and welfare economics and principles of efficient and equitable allocations.

**ECON 416 Theory of Economic Development (3)** Prerequisite: ECON 305 or ECON 405. Credit will be granted for only one of the following: ECON 315 or ECON 416. Economic theory of the developing nations; role of innovation, capital formation, resources,

institutions, trade and exchange rates, and governmental policies.

**ECON 418 Economic Development of Selected Areas (3)** Prerequisite: ECON 315 or ECON 416. Institutional characteristics of a specific area are discussed and alternate strategies and policies for development are analyzed.

**ECON 422 Quantitative Methods In Economics I (3)** Prerequisite: ECON 201; and ECON 203; and [ECON 321 or BMGT 230] or permission of department. Emphasizes the interaction between economic problems and the assumptions employed in statistical theory. Formulation, estimation, and testing of economic models, including single variable and multiple variable regression techniques, theory of identification, and issues relating to inference. Independent work relating the material in the course to an economic problem chosen by the student is required.

**ECON 423 Quantitative Methods in Economics II (3)** Prerequisite: ECON 422. Interaction between economic problems and specification and estimation of econometric models. Topics include issues of autocorrelation, heteroscedasticity, functional form, simultaneous equation models, and qualitative choice models.

**ECON 424 Computer Methods in Economics (3)** Prerequisites: ECON 201; and ECON 203; and [ECON 321 or BMGT 230]. Computer modeling of economic problems, including household and firm behavior, macroeconomic relationships, statistical models of economy, and simulation models.

**ECON 425 Mathematical Economics (3)** Prerequisites: ECON 305 or ECON 405; and [ECON 306 or ECON 406, and MATH 220 or equivalent]. Mathematical developments of theory of household and firm, general equilibrium and welfare economics, market imperfections, and role of information.

**ECON 430 Money and Banking (3)** Prerequisites: ECON 201 and ECON 203. Credit will be granted for only one of the following: ECON 430 or ECON 431. The structure of financial institutions and their role in the provision of money and near money. Analysis of the Federal Reserve System, the techniques of central banks, and the control of supply of financial assets in stabilization policy. Relationship of money and credit to economic activity and the price level.

**ECON 431 Theory of Money, Prices and Economic Activity (3)** Prerequisite: ECON 305 or ECON 405. Credit will be granted for only one of the following: ECON 430 or ECON 431. Monetary theory and the role of money, financial institutions and interest rates in macro models. Analysis of money demand and supply and of the Monetarist-Keynesian debate as they affect inflation and stabilization policy.

**ECON 440 International Economics (3)** Prerequisites: ECON 201 and ECON 203. Credit will be granted for only one of the following: ECON 440 or ECON 441. A description of international trade and the analysis of international transactions, exchange rates, and balance of payments. Analysis of policies of protection, devaluation, and exchange rate stabilization and their consequences.

**ECON 441 Theory of International Economics (3)** Prerequisite: [ECON 305 or ECON 405; and ECON 306 or ECON 406]. Credit will be granted for only one of the following: ECON 440 or ECON 441. Theoretical treatment of international trade and international finance. Includes Ricardian and Heckscher-Ohlin theories of comparative advantage, analysis of tariffs and other trade barriers, international factor mobility, balance of payments adjustments, exchange rate determination, and fiscal and monetary policy in an open economy.

**ECON 450 Introduction to Public Sector Economics (3)** Prerequisite: [ECON 201; and ECON 203] or ECON 205. Credit will be granted for only one of the following: ECON 450 or ECON 454. The role of federal, state, and local governments in meeting public wants. Analysis of theories of taxation, public expenditures, government budgeting, benefit-cost analysis and income redistribution, and their policy applications.

**ECON 451 Public Choice and Public Policy (3)** Prerequisite: [ECON 201; and ECON 203]; or ECON 205. Analysis of collective decision making, economic models of government, program budgeting, and policy

implementation, emphasis on models of public choice and institutions which affect decision making.

**ECON 454 Theory of Public Finance and Fiscal Federalism (3)** Prerequisite: ECON 306 or ECON 406. Credit will be granted for only one of the following: ECON 450 or ECON 454. Study of welfare economics and the theory of public goods, taxation, public expenditures, benefit-cost analysis, and state and local finance. Applications of theory to current policy issues.

**ECON 460 Industrial Organization (3)** Prerequisite: ECON 306 or ECON 406. Changing structure of the American economy; price policies in different industrial classifications of monopoly and competition in relation to problems of public policy.

**ECON 465 Health Care Economics (3)** Prerequisite: ECON 203 or ECON 205. Analysis of health care, the organization of its delivery and financing. Access to care; the role of insurance; regulation of hospitals, physicians, and the drug industry; role of technology; and limits on health care spending.

**ECON 470 Theory of Labor Economics (3)** Prerequisite: ECON 306 or ECON 406. Credit will be granted for only one of the following: ECON 370 or ECON 470. An analytical treatment of theories of labor markets. The theory of human capital and allocation of time in household labor supply models; marginal productivity theory of labor demand; market structure and the efficiency of labor markets; information theory and screening; discrimination, distribution of income; and unemployment.

**ECON 471 Current Problems in Labor Economics (3)** Prerequisite: ECON 470. For students who wish to pursue, in depth, selected topics in the labor field. Issues and topics selected for detailed examination may include: manpower training and development, unemployment compensation and social security, race and sex discrimination in employment, wage theory, productivity analysis, the problems of collective bargaining in public employment, wage-price controls and incomes policy.

**ECON 482 Economics of the Soviet Union (3)** Prerequisite: [ECON 201 and ECON 203] or ECON 205. An analysis of the organization, operating principles and performance of the Soviet economy with attention to the historical and ideological background, planning, resources, industry, agriculture, domestic and foreign trade, finance, labor, and the structure and growth of national income.

**ECON 484 The Economy of China (3)** Prerequisite: [ECON 201; and ECON 203] or ECON 205. Policies and performances of the Chinese economy since 1949. A survey of modern China's economic history. Emphasizes the strategies and institutional innovations that the Chinese have adopted to overcome the problems of economic development. Some economic controversies raised during the "Cultural Revolution" will be covered in review of the problems and prospects of the present Chinese economy.

**ECON 486 The Economics of National Planning (3)** Prerequisite: [ECON 201; and ECON 203]; or ECON 205. An analysis of the principles and practice of economic planning with special reference to the planning problems of West European countries and the United States.

**ECON 490 Survey of Urban Economic Problems and Policies (3)** Prerequisites: [ECON 201 and ECON 203] or ECON 205. An introduction to the study of urban economics through the examination of current policy issues. Topics may include suburbanization of jobs and residences, housing and urban renewal, urban transportation, development of new towns, ghetto economic development, problems in services such as education and police.

**ECON 492 Economics of Location and Regional Growth (3)** Prerequisite: ECON 306 or ECON 406 or permission of department. Study of the theories, problems, and policies of regional economic development and the location of economic activity for both rural and metropolitan regions. Methods of regional analysis.

**EDCI — Curriculum and Instruction**  
**EDCI 280 School Service Semester (3)** Development of conceptual understanding of the teaching-learning process. Seminar to coordinate on- and off-campus experiences. One hour each week on campus with an arranged six hours each week in schools.

**EDCI 288 Special Topics in Teacher Education (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs.

**EDCI 298 Special Problems in Teacher Education (1-6)** Prerequisite: permission of department. Repeatable to 6 credits if content differs.

**EDCI300 Curriculum and Instruction in Art Education (3)** Prerequisite: admission to Teacher Education Program. Objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks and other instructional materials, measurement, and other topics pertinent to art education.

**EDCI 301 Teaching Art in the Elementary School (3)** Fore elementary education and pre-elementary education majors only. Art methods and materials for elementary schools. Includes laboratory experiences with materials appropriate for elementary schools. Emphasis on emerging areas of art education for the elementary classroom teacher.

**EDCI312 Professional Development Seminar in Early Childhood Education (3)** Prerequisite: EDCI 280 or permission of department. For ECE majors only. Affective and integrative functions of teaching young children; planning daily programs; organizing the learning environment, developing the curriculum; clarifying values; guiding behavior, diagnosing and evaluating, and working with parents and other adults.

**EDCI 313 Creative Activities and Materials for the Young Child (3)** Prerequisite: EDCI 280. Corequisites: EDHD 300; and MUED 450; and EDCI 318, and EDCI 314. Techniques and resources for art, music, play and creative dramatics.

**EDCI 314 Teaching Language, Reading, Drama and Literature with Young Children (3)** Prerequisite: EDCI 280. Introduction to the teaching of reading in the context of the language arts; beginning reading instruction and utilization of literature, drama, and writing.

**EDCI315 The Young Child in the Social Environment (3)** Corequisites: EDCI 317; and EDCI 318. The child's understanding of people, social roles, society and various cultures; communicative skills and ability to develop satisfying relationships with peers and adults. Related techniques, materials and resources included.

**EDCI316 The Teaching of Reading: Early Childhood (3)** The fundamentals of developmental reading instruction, including reading readiness, use of experience records, procedures in using basal readers, the improvement of comprehension, teaching reading in all areas of the curriculum, uses of children's literature, the program in word analysis, and diagnostic techniques.

**EDCI 317 The Young Child and the Physical Environment (3)** Teaching skills and background knowledge important in guiding the child to learn about the physical environment. The skills of quantification, observation, inference, space-time relationships, and classification.

**EDCI 320 Curriculum and Instruction in Secondary Education: Social Studies: History (3)** Prerequisites: EDHD 300; and EDCI 390. Objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks and other instructional materials, measurement and topics pertinent to social studies education. Includes emphasis on multi-cultural education.

**EDCI 321 Curriculum and Instruction in Secondary Education: Social Studies/ Geography (3)** Prerequisites: EDHD 300; and EDCI 390. Objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks and other instructional materials, measurement, and topics pertinent to geography education.

**EDCI 322 Curriculum and Instruction in Elementary Education: Social Studies (3)** Prerequisites: EDCI 397; and EDHD 300. Curriculum, organization and methods of teaching, evaluation of materials, and utilization of environmental resources. Emphasis on multicultural education. Includes laboratory/field experiences.

**EDCI 330 Curriculum and Instruction in Secondary Education: Foreign Language (3)** Prerequisites: EDHD 300; and EDCI 390. Objectives, selection and organization of subject matter, appropriate methods,



lesson plans, textbooks, and other instructional materials, measurement and other topics pertinent to foreign language education

**EDCI 340 Curriculum and Instruction in Secondary Education: English Speech/Theatre (3)** Prerequisites: EDHD 300, and EDCI 390. Objectives, selection, and organization of subject matter, appropriate methods, lesson plans, textbooks and other instructional materials, measurement, and other topics.

**EDCI 342 Curriculum and Instruction in Elementary Education: Language Arts (3)** Prerequisites: EDCI 397; and EDHD 300. Listening, oral communication, functional writing, creative writing, spelling, handwriting, and creative expression. Includes laboratory field experiences.

**EDCI 350 Curriculum and Instruction in Secondary Education: Mathematics (3)** Prerequisites: EDHD 300, and EDCI 390. Six semester hours of 400-level mathematics courses required. Objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks and other instructional materials, measurement and topics. For pre-service mathematics teachers.

**EDCI 352 Curriculum and Instruction in Elementary Education: Mathematics (3)** Prerequisites: MATH 210; and MATH 211; and EDCI 397; and EDHD 300. Materials and procedures to help children sense arithmetical meanings and relationships. Development of an understanding of the number system and arithmetical processes. Includes laboratory field experiences.

**EDCI 362 Curriculum and Instruction in Elementary Education: Reading (3)** Prerequisites: EDCI 397; and EDHD 300. Fundamentals of developmental reading instruction, including reading readiness, use of experience stories, procedures in using basal readers, the improvement of comprehension, word analysis, and procedures for determining individual needs. Includes laboratory field experiences.

**EDCI 370 Curriculum and Instruction in Secondary Education: Science (3)** Prerequisites: EDHD 300; and EDCI 390. For pre-service science teachers. Preparing objectives, planning lessons, selecting and organizing for classroom and laboratory instruction, determining appropriate teaching methods, selecting textbooks and other instructional materials, and measuring and evaluating student achievement. Includes laboratory field experiences.

**EDCI 374 Curriculum and Instruction in Elementary Education: Science (3)** Prerequisites: EDCI 397; and EDHD 300. Objectives, methods, materials and activities for teaching science in the elementary school; emphasis on teaching strategies which help children learn the processes and concepts of science. Includes laboratory field experiences.

**EDCI 380 Curriculum and Instruction: Elementary (3)** Focuses on developmental needs at various age levels, with emphasis upon the activities, materials and methods by which educational objectives are attained.

**EDCI 381 Schools and Children (3)** Role examination of parents and other community members as consumers and participants in schools. Not open for credit to students in teacher preparation programs.

**EDCI 385 Computers for Teachers (3)** For early childhood and elementary education majors only. A first-level survey of instructional uses of computers, software, and related technology for preservice teachers.

**EDCI 390 Principles and Methods of Secondary Education (3)** Pre- or corequisite: EDHD 300; or permission of department. Principles and methods of teaching in junior and senior high schools. Instructional problems common to all of the subject fields, considered in relation to the needs and interests of youth, social problems and the central values of society.

**EDCI 397 Principles and Methods of Teaching in Elementary Schools (3)** Prerequisite: EDCI 280. Pre- or corequisite: EDHD 300. Teaching strategies, classroom interactive techniques, and procedures for planning and evaluating instruction in elementary schools. Emphasis on principles of effective instruction, classroom management, and adaptation of instruction for various student populations.

**EDCI 401 Student Teaching in Elementary School: Art (4-8)** Prerequisite: EDCI 300. Limited to art education majors who have previously applied. Fulfills elementary teaching requirements in K-12 art education program.

**EDCI 402 Student Teaching in Secondary Schools: Art (2-8)** Prerequisite: EDCI 300.

**EDCI 403 Teaching of Art Criticism in Public Schools (3)** Introduction to theories of art criticism. Trips to galleries and museums. Open to fine arts majors and students from other disciplines.

**EDCI 406 Practicum in Art Education: Two-Dimensional (3)** Prerequisite: permission of department. Theory and practical experience in two-dimensional design in various art media; development of teaching procedures and presentation of materials in school settings.

**EDCI 407 Practicum in Art Education: Three-Dimensional (3)** For pre-art education and art education majors only. A lecture-studio course to develop skills, material resources, and educational strategies for three-dimensional projects in school settings.

**EDCI 410 The Child and the Curriculum: Early Childhood (3)** Relationship of the nursery school curriculum to child growth and development. Recent trends in curriculum organization; the effect of environment on learning; readiness to learn; and adapting curriculum content and methods to maturity levels of children. Primarily for in-service teachers, nursery school through grade 3.

**EDCI 411 Student Teaching: Preschool (4)** For EDCI majors only.

**EDCI 412 Student Teaching: Kindergarten (4)** For EDCI majors only.

**EDCI 413 Student Teaching: Primary Grades (8)** For EDCI majors only.

**EDCI 416 Mainstreaming in Early Childhood Educational Settings (3)** Theoretical bases and applied practices for integrating handicapped children into regular early childhood programs.

**EDCI 420 Student Teaching Seminar in Secondary Education: Social Studies (3)** Corequisite: EDCI 421 or EDCI 422. An analysis of teaching theory, strategies, and techniques in the student teaching experience.

**EDCI 421 Student Teaching in Secondary Schools: Social Studies/History (12)** Prerequisite: EDCI 320. Corequisite: EDCI 420.

**EDCI 422 Student Teaching in Secondary Schools: Social Studies/Geography (12)** Prerequisite: EDCI 321. Corequisite: EDCI 420.

**EDCI 423 Social Studies in Early Childhood Education (3)** Curriculum, organization and methods of teaching, evaluation of materials and utilization of environmental resources. Emphasis on multicultural education. Primarily for in-service teachers, nursery school through grade 3.

**EDCI 424 Social Studies in the Elementary School (3)** Curriculum, organization and methods of teaching, evaluation of materials and utilization of environmental resources. Emphasis on multicultural education. Primarily for in-service teachers, grades 1-6.

**EDCI 425 Social Studies and Multicultural Education (3)** Seminar in general social science principles applicable to multicultural education. Cultural experiences arranged for each participant.

**EDCI 426 Methods of Teaching Social Studies in Secondary Schools (3)** Prerequisites: EDHD 300; and EDCI 390. Objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks and other instructional materials, measurement and topics pertinent to social studies education. Includes emphasis on multicultural education. For in-service teachers.

**EDCI 430 Student Teaching Seminar in Secondary Education: Foreign Language (3)** Prerequisite: EDCI 330. Corequisite: EDCI 431. An analysis of teaching theory, strategies and techniques in the student teaching experience.

**EDCI 431 Student Teaching in Secondary Schools: Foreign Language (12)** Prerequisite: EDCI 330. Corequisite: EDCI 430.

**EDCI 432 Foreign Language Methods in the Elementary School (3)** Prerequisite: permission of department. Methods and techniques for developmental approach to the teaching of modern foreign languages in elementary schools. Development of oral-aural skills in language development.

**EDCI 433 Introduction to Foreign Language Methods (3)** Prerequisites: EDHD 300; and EDCI 390, or permission of department. Objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks and other instructional materials, measurement and topics pertinent to foreign language education. For in-service teachers.

**EDCI 434 Methods of Teaching English to Speakers of Other Languages (3)** Methods for teaching listening, speaking, reading and writing techniques and a review of research findings.

**EDCI 435 Teaching Reading in a Second Language (3)** Prerequisite: permission of department. Analysis of selected theories and practices in first language reading applied to second language teaching/learning; diagnostic and prescriptive techniques and analysis of the student's cultural background as a factor in evaluating reading achievement in the second language.

**EDCI 436 Teaching for Multicultural Understanding (3)** Prerequisite: permission of department. The techniques and content for teaching culture in foreign language classes and English as a Second Language (ESL) classes. Research and evaluation of selected aspects of a culture as basis for creating teaching materials.

**EDCI 437 Bilingual-Bicultural Education (3)** Prerequisite: permission of department. Analysis of bilingual-bicultural education in the U.S. and abroad with emphasis on TESOL. Methods of teaching, goals, instructional materials and mainstreaming of bilingual students.

**EDCI 438 Field Experience in TESOL (3)** Prerequisites: EDCI 434 or equivalent; and permission of department. Systematic observations, tutoring and teaching in a TESOL field setting.

**EDCI 440 Student Teaching Seminar in Secondary Education: English, Speech, Theatre (1)** Prerequisite: EDCI 340. Corequisite: EDCI 441. An analysis of teaching theory, strategies and techniques in relation to the student teaching experience.

**EDCI 441 Student Teaching in Secondary Schools: English (6-12)** Prerequisite: EDCI 340 or EDCI 442 or EDCI 448. Corequisite: EDCI 440.

**EDCI 442 Student Teaching in Secondary Schools: Speech (6-12)** Prerequisite: EDCI 340. Corequisite: EDCI 440.

**EDCI 443 Literature for Children and Youth (3)** For elementary education and pre-elementary education majors only. Analysis of literary materials for children and youth. Timeless and ageless books, and outstanding examples of contemporary publishing. Evaluation of the contributions of individual authors, illustrators and children's book awards.

**EDCI 444 Language Arts in Early Childhood Education (3)** Teaching of spelling, handwriting, oral and written expression and creative expression. Primarily for in-service teachers, nursery school through grade 3.

**EDCI 445 Language Arts in the Elementary School (3)** Teaching of spelling, handwriting, oral and written expression and creative expression. Primarily for in-service teachers, grades 1-6.

**EDCI 446 Methods of Teaching English, Speech, Theatre in Secondary Schools (3)** Prerequisites: EDHD 300; and EDCI 390; or permission of department. Objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks and other instructional materials, measurement and topics pertinent to English, speech, and drama education. For in-service teachers.

**EDCI 447 Field Experience in English, Speech, Theatre Teaching (1)** Corequisite: EDCI 340. Practical experience as an aide to a regular English, Speech or Drama teacher; assigned responsibilities and participation in a variety of teaching/learning activities.

**EDCI 448 Student Teaching in Secondary Schools: Theatre (6-12)** Prerequisite: EDCI 340. Persons student teaching in theatre only should register for 12 credits. Persons in the Theatre and English Education Program should register for 6 credits of EDCI 441 and 6 credits of EDCI 448.

**EDCI 450 Student Teaching Seminar in Secondary Education: Mathematics (3)** Corequisite: EDCI 451. An analysis of teaching theory, strategies and techniques in the student teaching experience.

**EDCI 451 Student Teaching in Secondary Schools: Mathematics (12)** Prerequisite: EDCI 350.

**EDCI 452 Mathematics in Early Childhood Education (3)** Prerequisite: MATH 210 or equivalent. Emphasis on materials and procedures which help pupils sense arithmetic meanings and relationships. Primarily for in-service teachers, nursery school through grade 3.

**EDCI 453 Mathematics in the Elementary School (3)** Prerequisite: MATH 210 or equivalent. Emphasis on materials and procedures which help pupils sense arithmetic meanings and relationships. Primarily for in-service teachers, grades 1-6.

**EDCI 455 Methods of Teaching Mathematics in Secondary Schools (3)** Prerequisites: EDHD 300; and EDCI 390; and 2 semesters of calculus. Objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks and other instructional materials, measurement, and topics pertinent to mathematics education.

**EDCI 456 Teaching Mathematics to the Educationally Handicapped (3)** Prerequisites: (EDSP 331; and EDSP 332; and EDSP 333; and EDSP 443; and MATH 210) or permission of department. Development of skills in diagnosing and identifying learning disabilities in mathematics and planning for individualized instruction. Clinic participation required.

**EDCI 457 Teaching Secondary Students with Difficulties in Learning Mathematics (3)** Corequisite: EDCI 390 or permission of department. Diagnosis, prescription and implementation of instruction for less able secondary school mathematics students. Participation in a clinical experience.

**EDCI 461 Reading in Early Childhood Education (3)** Fundamentals of developmental reading instruction, including reading readiness, use of experience stories, procedures in using basal readers, the improvement of comprehension, word analysis, and procedures for determining individual needs. Primarily for in-service teachers, nursery school through grade 3.

**EDCI 462 Reading in the Elementary School (3)** Fundamentals of developmental reading instruction, including reading readiness, use of experience stories, procedures in using basal readers, the improvement of comprehension, word analysis, and procedures for determining individual needs. Primarily for in-service teachers, grades 1-8.

**EDCI 463 The Teaching of Reading in the Secondary School (3)** The fundamentals of secondary reading instruction, including emphasis on content reading instruction.

**EDCI 464 Clinical Practices in Reading Diagnosis and Instruction (3)** Prerequisite: EDCI 362 or EDCI 463. A laboratory course in which each student has one or more pupils for analysis and instruction. At least one class meeting per week to diagnose individual cases and to plan instruction.

**EDCI 465 Language, Culture, and Education (3)** Prerequisite: LING 200 or permission of department. Survey of sociolinguistic and psycholinguistic perspectives for the study of language and education; examines pragmatics, speech act theory, and dimensions of language variation (dialects, codes, and registers); implications for educational research and instructional practice.

**EDCI 466 Literature for Adolescents (3)** Reading and analysis of fiction and nonfiction; methods for critically assessing quality and appeal; current theory and methods of instruction; research on response to literature; curriculum design and selection of books.

**EDCI 467 Teaching Writing (3)** Sources and procedures for developing curriculum objectives and materials for teaching written composition; prewriting, composing, and revision procedures; contemporary directions in rhetorical theory; survey of research on composition instruction.

**EDCI 471 Student Teaching in Secondary Schools: Science (12)** Prerequisite: EDCI 352

**EDCI 472 Methods of Teaching Science in Secondary Schools (3)** Prerequisites: EDHD 300; and EDCI 390; and permission of department. Methods for classroom and laboratory instruction, determining appropriate teaching methods, selecting instructional materials, evaluating student achievement. Includes lab and field experience. For in-service teachers.

**EDCI 473 Environmental Education (3)** Two hours of lecture and three hours of laboratory per week. An interdisciplinary course covering the literature, techniques and strategies of environmental education.

**EDCI 474 Science in Early Childhood Education (3)** Objectives, methods, materials and activities for teaching science in the elementary school. Primarily for in-service teachers, nursery school through grade 3.

**EDCI 475 Science in the Elementary School (3)** Objectives, methods, materials, and activities for teaching science in the elementary school. Primarily for in-service teachers, grades 1-6.

**EDCI 476 Teaching Ecology and Natural History (3)** An introduction to the teaching of natural history in the classroom and in the field. Ecological principles; resources and instructional materials; curricular materials. Primarily for teachers, park naturalists, and outdoor educators.

**EDCI 480 The Child and the Curriculum: Elementary (3)** Relationship of the school curriculum, grades 1-6, to child growth and development. Recent trends in curriculum organization, the effect of environment on learning, readiness to learn; and adapting curriculum content and methods to maturity levels of children. Primarily for in-service teachers, grades 1-6.

**EDCI 481 Student Teaching: Elementary (12)** For EDCI majors only.

**EDCI 484 Student Teaching in Elementary School: Music (4-6)** For EDCI majors only. Fulfills elementary teaching requirements in K-12 music education programs.

**EDCI 485 Student Teaching in Elementary School: Physical Education (4-8)** For EDCI majors only. Fulfills elementary teaching requirements in K-12 physical education programs.

**EDCI 487 Introduction to Computers in Instructional Settings (3)** Prerequisite: six hours of education or permission of department. A first-level survey of instructional uses of computers, software, and related technology especially for in-service teachers.

**EDCI 488 Selected Topics in Teacher Education (1-3)** Prerequisite: EDCI major or permission of department. Repeatable to 6 credits if content differs.

**EDCI 489 Field Experiences in Education (1-4)** Prerequisite: permission of department. Corequisite: EDCI 497. Repeatable to 4 credits.

**EDCI 491 Student Teaching in Secondary Schools: Health (12)** For EDCI majors only.

**EDCI 494 Student Teaching in Secondary Schools: Music (2-8)** For EDCI majors only.

**EDCI 495 Student Teaching in Secondary Schools: Physical Education (2-8)** For EDCI majors only.

**EDCI 497 The Study of Teaching (3)** Prerequisite: EDCI 481. Corequisite: EDCI 489. Identification and examination of learner and teacher outcome variables

related to teaching systems, methods, and processes. Methods of conducting classroom research.

**EDCI 498 Special Problems in Teacher Education (1-6)** Prerequisite: permission of department. For EDCI majors only. Repeatable to 6 credits. Individual study of approved problems.

**EDCI 499 Workshops, Clinics, and Institutes (1-6)** Repeatable to 6 credits. The following types of educational enterprise may be scheduled under this course heading: workshops conducted by the College of Education (or developed cooperatively with other colleges and universities) and not otherwise covered in the present course listing; clinical experiences in pupil testing centers, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups such as school superintendents, principals and supervisors.

## EDCP — Education Counseling and Personnel Services

**EDCP 108 College and Career Advancement: Concepts and Skills (1)** Repeatable to 3 credits if content differs. Knowledge and skills designed to enhance college as a learning experience or preparation for life.

**EDCP 310 Peer Counseling Theory and Skills (3)** The theories and skills of peer helping relationships. Counseling theories and skills at a level appropriate for students seeking basic level training for use in peer counseling settings.

**EDCP 325 Substance Use and Abuse in American Society (3)** Incidence, etiology, effects and management of substance use and abuse from perspective of the individual, the family, and society.

**EDCP 410 Introduction to Counseling and Personnel Services (3)** Overview of counselor functions and skills that lead to effective helping.

**EDCP 411 Principles of Mental Health (3)** Prerequisite: nine semester hours in the behavioral sciences or permission of department. Mechanisms involved with personal adjustment, coping skills, and the behaviors that lead to maladjustment.

**EDCP 413 Behavior Modification (3)** Knowledge and techniques of intervention in a variety of social situations, including contingency contracting and time out will be acquired.

**EDCP 416 Theories of Counseling (3)** An overview and comparison of the major theories of counseling, including an appraisal of their utility and empirical support.

**EDCP 417 Group Dynamics and Leadership (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: permission of department. The nature and property of groups, interaction analysis, developmental phases, leadership dynamics and styles, roles of members and interpersonal communications. Laboratory involves experimental based learning.

**EDCP 420 Education and Racism (3)** Strategy development for counselors and educators to deal with problems of racism.

**EDCP 460 Introduction to Rehabilitation Counseling (3)** Survey of principles and practices involved in the vocational rehabilitation of persons with disabilities.

**EDCP 461 Psycho-Social Aspects of Disability (3)** Theory and research concerning disability, with emphasis on crisis theory, loss and mourning, handicapped as a deviant group, sexuality and functional loss, attitude formation, dying process and coping. Implications for counseling and the rehabilitation process.

**EDCP 462 The Disabled Person in American Society (3)** Critical examination of the history of legislation and analysis of current policies toward severely physically and mentally disabled persons.

**EDCP 470 Introduction to Student Personnel (3)** Prerequisite: permission of department. A systematic analysis of research and theoretical literature on a variety of major problems in the organization and administration of student personnel services in higher education. Included will be discussion of such topics as

the student personnel philosophy in education, counseling services, discipline, housing, student activities, financial aid, health, remedial services, etc.

**EDCP 489 Field Experiences in Counseling and Personnel Services (1-4)** Prerequisite: permission of department. Planned field experience in education-related activities. Credit not to be granted for experiences accrued prior to registration

**EDCP 498 Special Problems in Counseling and Personnel Services (1-3)** Prerequisite: permission of department. Available only to major students who have formal plans for individual study of approved problems.

**EDCP 499 Workshops, Clinics, Institutes (1-6)** Repeatable to 6 credits. The following type of educational enterprise may be scheduled under this course heading: workshops conducted by the Department of Counseling and Personnel Services (or developed cooperatively with other departments, colleges and universities) and not otherwise covered in the present course listing; clinical experiences in counseling and testing centers, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups.

**EDHD — Education, Human Development**

**EDHD 300 Human Development and Learning (6)** Open only to students admitted to teacher education programs. Major concepts and theories of human development and learning and their implications for the educational process. One half day a week in school to observe student behavior, participate in classroom activities, and attend seminars on school topics. (Separate sections for early childhood, elementary, and secondary teacher candidates.)

**EDHD 306 Study of Human Behavior (3)** The scientific principles of human behavior, development, and adjustment. Field work: observation, recording, and analysis of the behavior of an individual. Does not satisfy requirements of professional teacher education program.

**EDHD 319 Selected Topics in Human Development (3)** Repeatable to 6 credits if content differs. Selected topics in human development in relation to contemporary culture.

**EDHD 320 Human Development Through the Lifespan (3)** Central concepts related to parameters of human development, individual and social, which arise throughout the various stages of the lifespan. Continuity and change within the developing individual.

**EDHD 330 Human Development and Societal Institutions (3)** Development of the individual in the context of relationships with formal and informal institutions of society. An examination of various aspects of development, from the broad perspective of the social sciences.

**EDHD 340 Human Development Aspects of the Helping Relationship (3)** Development of skills and theoretical knowledge relevant to the human services. Relating, communicating, and problem-solving with others. In-class training activities and field experiences for acquiring interpersonal competence.

**EDHD 350 Human Development Factors in Personal Development (3)** Personality dynamics including self-study and group experiences which contribute to individual development and insight. Emphasis on factors which enhance optimal personal growth.

**EDHD 400 Introduction to Gerontology (3)** Multidisciplinary survey of the processes of aging. Physiological changes, cultural forces, and self-processes that bear on quality of life in later years. Field study of programs, institutions for elderly, individual elders, their families and care providers.

**EDHD 411 Child Growth and Development (3)** Theoretical approaches to and empirical studies of physical, psychological and social development from conception to puberty. Implications for home, school and community.

**EDHD 413 Adolescent Development (3)** Adolescent development, including special problems encountered in contemporary culture. Observational component and

individual case study. Does not satisfy requirement for professional teacher education program.

**EDHD 416 Scientific Concepts in Human Development (3)** Guided reading and observation of students through the school year. Impact of family, school, society, and peer group on individual. Analysis of field data in terms of behavioral patterns.

**EDHD 417 Laboratory in Behavior Analysis (3)** Prerequisite: EDHD 416. Continuation of analysis of field observations; emphasis on cognitive processes, motivation, self-concept, attitudes and values

**EDHD 419 Human Development and Learning in School Settings (3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Advanced study of human development and learning in different phases of school program over a period of time.

**EDHD 420 Cognitive Development and Learning (3)** Prerequisite: EDHD 300 or EDHD 320 or EDHD 411 or PSYC 355 or PSYC 341 or permission of department. Current developmental theories of cognitive processes such as language, memory, and intelligence and how differences in cognitive level (infancy through adolescence) mediate learning of educational subject matters.

**EDHD 445 Guidance of Young Children (3)** Prerequisite: PSYC 100 or EDHD 306 or permission of department. Practical aspects for helping and working with children, drawing on research, clinical studies, and observation. Implications for day care and other public issues.

**EDHD 460 Educational Psychology (3)** Prerequisite: PSYC 100 or EDHD 306 or permission of department. Application of psychology to learning processes and theories. Individual differences, measurement, motivation, emotions, intelligence, attitudes, problem solving, thinking and communicating in educational settings. (May not be substituted for EDHD 300 by students in professional teacher education programs.)

**EDHD 489 Field Experiences in Education (1-4)** Prerequisite: permission of department. Repeatable to 4 credits. Planned field experience in education-related activities. Credit not to be granted for experiences accrued prior to registration.

**EDHD 498 Special Problems in Education (1-3)** Prerequisite: permission of department. Available only to students who have definite plans for individual study of approved problems.

**EDHD 499 Workshops, Clinics, and Institutes (1-6)** Repeatable to 6 credits. The following type of educational enterprise may be scheduled under this course heading: workshops conducted by the College of Education (or developed cooperatively with other colleges and universities) and not otherwise covered in the present course listing; clinical experiences in pupil-testing centers, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups such as school superintendents, principals and supervisors.

**EDIT — Industrial, Technological and Occupational Education**

**EDIT 101 Mechanical Drawing I (2)** Four hours of laboratory per week. An introduction to orthographic multi-view and isometric projection. The visualization and making of a multi-view drawing. Auxiliary views, sectional views, dimensioning, conventional representation and single stroke letters.

**EDIT 102 Fundamentals of Woodworking (3)** Two hours of lecture and four hours of laboratory per week. An orientation into the woodworking industry, materials, products and processes; provides skill development in the care and use of hand and power tools.

**EDIT 106 Teaching Creative Construction Activities (3)** Two hours of lecture and four hours of laboratory per week. Introduction to ceramics, graphics, metals and woods as construction activity materials utilized by multiple groups in a variety of settings.

**EDIT 110 Teaching Creative Construction Activities II (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: EDIT 106. A continuation of

EDIT 106. Study of basic phenomena of industry, particularly those which apply to the manufacture of common products, housing, transportation and communication.

**EDIT 112 Technical Calculations (3)** Developing an understanding and applied knowledge of the mathematical concepts related to the various aspects of industrial education: algebra, geometry, trigonometry, and general mathematics

**EDIT 114 Principles of Typewriting (2)** Four hours of laboratory per week. The attainment of the ability to operate the typewriter and keyboard continuously with reasonable speed and accuracy by the "touch".

**EDIT 115 Intermediate Typewriting (2)** Four hours of laboratory per week. Prerequisite: minimum grade of C in EDIT 114 or permission of department. Theory and practice for improving speed and accuracy and an introduction to office production typewriting

**EDIT 116 Principles of Shorthand I (3)** Six hours of laboratory per week. Prerequisite: EDIT 114. Development of the theory and principles of shorthand

**EDIT 117 Principles of Shorthand II (3)** Six hours of laboratory per week. Theory and practice for improving mastery of dictation and transcription

**EDIT 121 Mechanical Drawing II (2)** Four hours of laboratory per week. Prerequisite: EDIT 101. Working drawings, machine design, pattern layouts, tracing and reproduction; detailings and assemblies.

**EDIT 127 Fundamentals of Electricity Electronics (3)** Two hours of lecture and four hours of laboratory per week. Introduction to electricity-electronics with emphasis on electrical circuits and wiring, the measurement of electrical energy, the theory of motors and generators and an introduction to transistors and power supplies.

**EDIT 160 Design Illustrating I (3)** Two hours of lecture and four hours of laboratory per week. Intended for advertising, interior, landscape design and horticulture majors. The use of instruments, equipment, and materials; lettering; line technique; geometric construction; and projection theory. Pictorial representation, particularly isometric, oblique, and one and two point perspective.

**EDIT 202 Machine Woodworking (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: EDIT 102 or equivalent. The development of comprehensive knowledge of machine woodworking with emphasis on mass production practices, specialty cuts, laminating, maintenance, and consumer understanding.

**EDIT 207 Bases For Curriculum Decision in Home Economics (3)** Exploration of decisions about priorities in home economics curricula based on the needs of society, the individual, and the structure of the home economics program. The roles of the secondary home economics teacher. Includes observations in area schools.

**EDIT 210 Foundry (1)** Two hours of laboratory per week. Bench and floor molding and elementary core making. Theory and principles covering foundry materials, tools and appliances.

**EDIT 214 Office Typewriting Problems (2)** Four hours of laboratory per week. Prerequisite: minimum grade of C in EDIT 115. Development of a higher degree of accuracy and speed. The advanced techniques of typewriting with a special emphasis on production.

**EDIT 215 Survey of Office Machines (3)** Development of skill through actual use and demonstration of various types of office business machines, their capacities and special functions.

**EDIT 216 Advanced Shorthand and Transcription (3)** Six hours of laboratory per week. Prerequisite: minimum grade of C in EDIT 115. Emphasis on vocabulary development and new matter dictation for sustained speed at the highest level possible under varying conditions. Transcription under timed conditions with emphasis on production involving quantity and quality.

**EDIT 223 Arc and Gas Welding (1)** Two hours of laboratory per week. The development of functional knowledge of the principles and use of electric and

acetylene welding. Practical work in the construction of various projects using welded joints. The use and care of equipment, types of joints, methods, importance of processes in industry and safety consideration.

**EDIT 224 Organized and Supervised Work Experiences I (3)** A work experience for students enrolled in the industrial technology program. Opportunities for first-hand experiences with business and industry. Students are responsible for obtaining their own employment, with the coordinator advising them about job opportunities with optimum learning value. The nature of the work experience desired is outlined at the outset of employment and then evaluations made by the student and the coordinator are based upon the planned experiences. The minimum time is 240 work hours. The work experience must be served through continuous employment in a single establishment.

**EDIT 226 Fundamental Metalworking Processes (3)** Two hours of lecture and four hours of laboratory per week. Introduction to the technology of metalworking. Experience operating metals laboratory equipment including an intensive study of the processes of manufacture.

**EDIT 227 Applications of Electronics (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: EDIT 127 or equivalent. An intermediate course providing more extensive knowledge in electricity, electronics including principles of the transmission and reception of radio waves, applications of transistors and other semiconductors and an introduction to industrial electronics.

**EDIT 231 Mechanical Drawing III (2)** Four hours of laboratory per week. Prerequisite: EDIT 121. A continuation of EDIT 121. The reading of prints representative of a variety of industries. Advanced working drawings, machine design, pattern layouts and utilization of computer assisted drawing.

**EDIT 232 Fundamentals of Automotive Technology (3)** Two hours of lecture and four hours of laboratory per week. Designed for non-industrial education majors interested in learning the theory and practical operation of the automobile. Mechanical, lubrication, cooling, fuel and electrical systems.

**EDIT 233 Fundamentals of Power Technology (3)** Two hours of lecture and four hours of laboratory per week. Introduction to power generation, control, and transmission. Emphasis on efficiency of energy converters and use of new and future energy sources, e.g., solar, fuel cell. Laboratory experience in testing and evaluating various energy converters.

**EDIT 234 Graphic Communications (3)** Two hours of lecture and four hours of laboratory per week. Graphic reproduction processes and related areas used to communicate. Offset, letterpress, screen, gravure, engraving, flexographic, and electrostatic duplication; and relevant history, safety, layout and design, composition, photo conversion, image carriers, image transfer, finishing, binding, paper and ink.

**EDIT 241 Architectural Drawing (2)** Four hours of laboratory per week. Prerequisite: EDIT 101 or equivalent. Practical experience in the design and planning of houses and other buildings. Working drawings, specifications, blue-prints, and duplication. Includes computer-assisted design and drawing.

**EDIT 242 Operational Drawing (2)** Four hours of laboratory per week. Prerequisite: EDIT 101 or equivalent. A comprehensive course designed to give students practice in the modern drafting methods of industry.

**EDIT 262 Basic Metal Machining (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: EDIT 101 or equivalent. Applications of basic metal cutting operations in mass production including work planning, properties of metals and tool materials, conventional metal machining processes and precision measurements.

**EDIT 270 Field Experiences (3)** Two-hour seminar and field placement for one-half day per week. Introduction to the teaching and learning processes. Career decision information and activities.

**EDIT 273 Practicum In Ceramics (3)** A lecture-studio course designed to introduce the use of clay and ceramics in a wide variety of educational settings.

**EDIT 288 Special Topics in Education (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs.

**EDIT 291 Introduction to Plastics Technology (3)** Two hours of lecture and four hours of laboratory per week. An overview of the plastics industry including properties of plastics, major polymers of the plastics industry and basic molding processes.

**EDIT 298 Special Problems in Education (1-6)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Available only to freshmen and sophomore majors who have definite plans for individual study of approved problems relative to their preparation for teaching. Credit according to extent of work.

**EDIT 302 Woodworking Technology (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: EDIT 102 or equivalent. A working knowledge of contemporary woodworking technology, including testing and macroscopic identification of wood. Opportunity for specialized research of the woodworking industry.

**EDIT 304 Administrative Secretarial Procedures (3)** The nature of office work, the secretary's function in communication, inter-company and public relations, handling records, supplies and equipment, and direction of office forms and procedures in relation to correspondence, mailing, receiving callers, telephoning, handling conferences, and securing business information. Business etiquette and ethics.

**EDIT 305 Secretarial Office Practice (3)** Seven hours of laboratory per week. Laboratory and office experience. A minimum of 90 hours experience under supervision is required. In addition, each student will prepare a written report on an original problem previously approved.

**EDIT 306 General Shop (3)** Organization and administration of a secondary school technical laboratory. Skill and knowledge-developing activities for a variety of laboratories.

**EDIT 311 Laboratory Practicum in Industrial Arts Education (3)** Six hours of laboratory per week. Prerequisite: permission of department. 18 semester hours of laboratory work and drawing required. The development of instructional materials and the refinement of instructional methods pertinent to the teaching of industrial arts at the secondary school level.

**EDIT 324 Organized and Supervised Work Experiences II (3)** A work experience for students enrolled in the industrial technology program. Continuation of EDIT 224.

**EDIT 326 Science and Technology of Metals (3)** Three hours of lecture and three hours of laboratory per week. Prerequisite: EDIT 226 or equivalent. Investigation of the physical properties of metals. Emphasis on identification, examination, and analysis of metals, operation of metallurgical laboratory equipment; study of iron-carbon diagrams, heat and surface treatments, and plastics deformation.

**EDIT 327 Electronic Semi-Conductor Applications (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: EDIT 127 or equivalent. An advanced course providing more extensive knowledge in electricity or electronics including the advanced theory and applications of semi-conductors and the principles of the storage and transmission of electronically coded information.

**EDIT 332 Advanced Procedures In Automotive Technology (3)** Two hours of lecture and six hours of laboratory per week. Prerequisite: EDIT 232 or equivalent. Designed for students who have a background in engine systems and wish to broaden their knowledge. Emission control, electrical systems, and diagnostic problem solving.

**EDIT 334 Photographic and Electronic Graphic Communications (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: EDIT 234 or equivalent. An intermediate course on contemporary processes relevant to graphic reproduction. Photographic, electronic and computer assisted composition techniques, contact photolithography, line and halftone process photography, microphotography, photo screen printing and photo offset lithography.

**EDIT 335 Continuous Tone Photographic Technology (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: EDIT 234 or permission of department. Theory and techniques pertaining to black-and-white and color light sensitive materials. Emphasis on history, cameras, exposure techniques, composition, illumination film processing, contact printing, enlarging, darkroom controls and finishing as related to graphic communications.

**EDIT 340 Methods of Teaching Office Skills (3)** An examination and evaluation of the aims, methods, and course contents of each of the office skill subjects offered in the high school curriculum. **EDIT 341—344 curriculum, instruction and observation courses.** Offered in separate courses for the various subject matter areas. The objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks and other instructional materials, measurement, and other topics pertinent to the particular subject matter area are treated. Students must reserve day for observation in public schools.

**EDIT 341 Curriculum, Instruction, and Observation: Business Education (3)**

**EDIT 342 Curriculum, Instruction, and Observation: Home Economics Education (3)**

**EDIT 344 Curriculum, Instruction, and Observation: Industrial Arts Education (3)**

**EDIT 350 Methods of Teaching: Trades and Industrial Education (3)** Intended for vocational and occupational teachers. The identification and analysis of factors essential to helping others learn, types of teaching situations and techniques, measuring results and grading student progress in laboratory and related technical subjects.

**EDIT 353 Fire Safety Codes and Standards (3)** The legal response to the problems of fire safety. Legal issues surrounding the implementation and enforcement of codes with application to industry.

**EDIT 360 Industrial Production Technology (3)** Prerequisite: EDIT 262 or permission of department. Principles of industrial and laboratory organization. Economics of production, capital equipment, labor costs, cost of materials. Industrial plant siting, environmental considerations, plant layout and design. Engineering decisions for production, methods analysis, value analysis, quality control. Industrial relations.

**EDIT 362 Advanced Metal Machining Processes (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: EDIT 262 or equivalent. Experience in complex metal cutting operations, special heat treating processes, super precision measurements; electrical, chemical and ultrasonic metal removal, and high energy rate forming with experimentation in specialized machining operations.

**EDIT 381 Inorganic Nonmetallic Materials (3)** Two hours of lecture and four hours of laboratory per week. Introduction to inorganic, nonmetallic materials which are applied in the manufacturing and construction industries.

**EDIT 391 Plastics Processing Fundamentals (3)** Prerequisite: EDIT 231 or permission of department. Lecture and laboratory experience with plastics production equipment including an intensive study of the thermoplastic and thermosetting resins and their fabrication processes.

**EDIT 399 Trade Competence (1-20)** An examination to determine and evaluate the trade competence of students pursuing a degree in the field of vocational-technical education.

**EDIT 400 Technology Activities For the Elementary School (3)** Experience in the development and use of technology and career education instructional materials for construction activities in an interdisciplinary approach to elementary school education.

**EDIT 401 Essentials of Design (2)** Four hours of laboratory per week. Prerequisite: EDIT 101. A study of the basic principles of design and practice with application to the construction of laboratory projects.

**EDIT 402 Methods and Materials In Teaching Bookkeeping and Related Subjects (3)** Problems and

procedures in the mastery of bookkeeping and related office knowledge and skills. Consideration of materials and teaching procedures.

**EDIT 403 Problems in Teaching Office Skills (3)** Problems in development of occupational competency, achievement tests, standards of achievement, instructional materials, transcription, and the integration of office skills

**EDIT 404 Basic Business Education in the Secondary Schools (3)** Subject matter selection; methods of organization; and presenting business principles, knowledge and practices.

**EDIT 405 Business Communications (3)** The fundamental principles of effective written communication. Word usage, grammar, punctuation, principles and procedures for writing business letters, and formal research reports.

**EDIT 406 Word Processing (3)** An introduction to the word processing field with emphasis on word processing theory and concepts including hands on equipment training. Management of office personnel, procedures, and equipment; the incorporation of word processing into the school curriculum, the automated office of the future and career opportunities.

**EDIT 410 Administration and Program Development for Industrial Arts and Vocational Education (3)** Principles and practices of program development and supervision with reference to the role of the departmental chairperson in vocational, technical, and industrial arts programs at the secondary and post-secondary levels.

**EDIT 412 Management of Physical Facilities in Industrial Arts and Vocational Education (3)** Principles, practices, and theory related to the role of the departmental chairperson charged with the management of the physical facilities in vocational, technical, and industrial arts laboratories.

**EDIT 414 Organization and Coordination of Cooperative Education Programs (3)** The organization of a cooperative distributive education program; the development of an effective cooperative relationship between coordinator and training sponsor; the selection, orientation, and training of sponsors; analysis of training opportunities, reports and records; the evaluation and selection of students for part-time cooperative work assignments; and the evaluation of the program.

**EDIT 415 Financial and Economic Education I (3)** Problems of teaching courses in personal finance and economics in the public schools, including materials and resources.

**EDIT 416 Financial and Economic Education II (3)** Continuation of EDIT 415.

**EDIT 421 Industrial Arts in Special Education (3)** One hour of lecture and four hours of laboratory per week. Prerequisites: [EDSP 470; and EDSP 471] or permission of department. Experiences of a technical and theoretical nature in industrial processes applicable for classroom use. Emphasis on individual research in the specific area of major interest in special education.

**EDIT 422 Student Teaching: Industrial Arts Education (2-12)**

**EDIT 425 Analysis of Industrial Training Programs I (3)** An overview of the function of industrial training, including methods of instruction, types of programs and their organization, objectives, and evaluation.

**EDIT 426 Analysis of Industrial Training Programs II (3)** Prerequisite: EDIT 425. Continuation of EDIT 425. Studies of training programs in a variety of industries, including plant program visitation, training program development, and analysis of industrial training research.

**EDIT 427 Experimental Electronics (2)** Six hours of laboratory per week. Student investigation of an area of electronics of particular interest or usefulness at a depth appropriate for student-based objectives relating to one or more of the following: digital circuitry, communication, energy conversion, test equipment utilization, analog circuitry.

**EDIT 432 Student Teaching: Business Education (2-12)**

**EDIT 433 Advanced Topics in Power Technology (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: EDIT 233 or equivalent. The development of a competency in building and evaluating the performance of energy transmission, control and converter systems. Methane digesters, solar collectors, electric motors, steam turbines, and fluid power systems.

**EDIT 434 Color Reproduction in Graphic Communications (3)** Two hours of lecture and four hours of laboratory per week. Prerequisites: [EDIT 234, and EDIT 334; and EDIT 335] or equivalent. An advanced course in the theory and processes of color graphic reproduction. Continuous tone color photography, flat color preparation, process color separations and the reproduction of a multi-color product on a semi-automatic or automatic printing press.

**EDIT 435 Curriculum Development in Home Economics (3)** An analysis of curriculum development including the tools for planning, managing, and evaluating the teaching/learning environment of conceptual curriculum design.

**EDIT 436 Analysis of Child Development Laboratory Practices (3)** Prerequisite: FMCD 332 or EDHD 411. Integration of child development theories with laboratory practices; observation and participation in a secondary school child development laboratory arranged to alternate with class meetings.

**EDIT 440 Industrial Hygiene (3)** Introduction to the concept of industrial hygiene and environmental health. Evaluation techniques, instrumentation for identification of problems; design parameters for achieving control over environmental epidemiological and toxicological hazards.

**EDIT 442 Student Teaching: Home Economics Education (2-12)**

**EDIT 443 Industrial Safety I (3)** The history and development of effective safety programs in modern industry including causes, effects and values of industrial safety education including fire prevention and hazard controls.

**EDIT 444 Industrial Safety II (3)** Study of exemplary safety practices through conference discussions, group demonstration, and organized plant visits to selected industrial situations. Methods of fire precautions and safety practices. Evaluative criteria in safety programs.

**EDIT 445 Systems Safety Analysis (3)** The development of systems safety, a review of probability concepts and the application of systems technique to industrial safety problems. Hazard mode and effect, fault free analysis and human factors considerations.

**EDIT 450 Training Aids Development (3)** Study of instructional materials, sources and applications; emphasis on principles for making aids useful to laboratory teachers. Actual construction and application of materials will be required.

**EDIT 451 Research and Experimentation in Industrial Arts (3)** Laboratory-seminar course designed to develop persons capable of planning, directing and evaluating effective research and experimentation procedures with the materials, products and processes of industry.

**EDIT 453 Fire Safety Research and Transfer (3)** The technological transfer of scientific findings to private sector fire safety. Review of research applicable to the adequacy and reliability of fire safety in industry.

**EDIT 454 Private Fire Protection Analysis I (3)** Risk analysis, life safety and property conservation from fire in industrial properties and complexes. Emphasis on a systems approach for implementing private fire protection.

**EDIT 455 Private Fire Protection Analysis II (3)** Prerequisite: EDIT 448. Internal property detection and fire suppression systems that can mitigate a fire in the incipient stage. Review of systems, with emphasis on the performance objectives of preventing, controlling, and extinguishing fires.

**EDIT 457 Tests and Measurements (3)** The construction of objective tests for occupational and vocational subjects. Use of measures in domains of learning and examination of test analysis techniques.

**EDIT 460 Design Illustrating II (2)** Four hours of laboratory per week. Prerequisite: EDIT 160. Advanced drawing rendering, shadow construction, lettering techniques and advanced pictorial representation techniques.

**EDIT 461 Principles of Vocational Guidance (3)** The underlying principles of guidance and their application to the students of educational and occupational adjustment of problems of all ages.

**EDIT 462 Occupational Analysis and Course Construction (3)** Application of the techniques of occupational and job analysis concepts to instructional development and the design of occupational programs.

**EDIT 464 Laboratory Organization and Management (3)** The basic elements of organizing and managing an industrial education program, the selection of equipment, facility development, legal responsibilities of laboratory instructors, inventory, storage control and safety.

**EDIT 465 Modern Industry (3)** The manufacturing, service, and extractive industries in American social, economic, and cultural patterns. Representative basic industries studied from the viewpoints of personnel and management organization, industrial relations, production procedures, distribution of products, etc.

**EDIT 466 Educational Foundations of Industrial Arts (3)** A study of the factors which place industrial arts education in a well-rounded program of general education.

**EDIT 467 Problems in Occupational Education (3)** The procurement, assembly, organization, and interpretation of data relative to the scope, character and effectiveness of occupational education.

**EDIT 470 Numerical Control in Manufacturing (3)** The historical development of numerical control (N/C) in manufacturing, recent industrial trends in N/C, and a variety of N/C equipment and support services. N/C machine operations; machine motions, positioning control systems, N/C tapes and their preparation, manual and computer assisted (APT III) part programming. Experience in product design, part programming, and product machining.

**EDIT 471 History and Principles of Vocational Education (3)** The development of vocational education from primitive times to the present with special emphasis given to the vocational education movement with the American program of public education.

**EDIT 472 Quality Control and Assurance in Industrial Settings (3)** Principles and theory of quality control and assurance, with focus on "quality of conformance." Organizational aspects of QC/QA, data collection and analysis, quality control in input, process and output functions, and human and cultural dimensions of quality control.

**EDIT 474 Organization and Administration of Youth Groups (3)** Principles, practices, and theoretical considerations related to youth organizations as a co-curricular function of the subject areas of industrial arts, business and marketing education, home economics, health occupations and trades and industry.

**EDIT 475 Recent Technological Developments in Products and Processes (3)** Recent technological developments as they pertain to the products and processes of industry. The nature of newer products and processes and their effect upon modern industry and/or society.

**EDIT 476 Application of Technology to Societal Problems (3)** A study of alternative solutions of a technological nature with respect to such areas as housing, transportation, energy, communications, production, trash and waste disposal, water development, and pollution control.

**EDIT 477 Microcomputer Applications in Technology and Industry (3)** Prerequisite: EDCI 487 or CMSC 103 or permission of department. Manufacturing, safety, and training applications in industrial settings included in programming and software utilization.

**EDIT 481 Manufacture and Use of Inorganic Nonmetallic Materials (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: EDIT 381 or equivalent. Fabrication of products from calculated

compositions; application of forming process; utilization of compositions; experiences with property analysis and product design.

**EDIT 482 Student Teaching: Trade and Industrial Education (2-12)**

**EDIT 484—486 Field Experiences in Vocational Areas.** Supervised work experience in an occupation related to vocational education. Application of theory to work situations as a basis for teaching in vocational education programs. By individual arrangement with advisor.

**EDIT 485 Field Experiences in Business Education (3)**

**EDIT 488 Selected Topics in Education (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs.

**EDIT 489 Field Experiences in Education (1-4)** Prerequisite: permission of department. Planned field experience in education-related activities. Credit not to be granted for experiences accrued prior to registration.

**EDIT 491 Plastics Design and Equipment Selection (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: EDIT 391 or permission of department. Experience with material selection, product design, mold design, auxiliary equipment and fixtures.

**EDIT 492 Issues Encountered in Daily Living in the Home (3)** Junior standing. Addresses issues such as differing values, orientations, communication styles and the integration of family living, work, and parenting.

**EDIT 493 Home Economics for Special Need Learners (3)** Mental, emotional, social and physical handicaps affecting learners in home economics education settings. The unique needs and abilities of special learners and methods of teaching daily living skills.

**EDIT 498 Special Problems in Education (1-6)** Prerequisite: permission of department. Available only to majors who have definite plans for individual study of approved problems. Credit according to extent of work.

**EDIT 499 Workshops, Clinics, and Institutes (1-6)** Repeatable to 6 credits. The following type of educational enterprise may be scheduled under this course heading: Workshops conducted by the College of Education (or developed cooperatively with other colleges and universities) and not otherwise covered in the present course listing; clinical experiences in pupil-testing centers, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups such as school superintendents, principals and supervisors.

**EDMS — Measurement, Statistics, and Evaluation**

**EDMS 410 Principles of Testing and Evaluation (3)** Basic principles including the steps in the specification of instructional objectives and subsequent development of teacher-made tests; problems in the use and interpretation of achievement and aptitude tests; introduction to the development and use of non-testing evaluation procedures; basic consideration in the assignment of marks and grades; introduction to computer technology as applied to measurement.

**EDMS 451 Introduction to Educational Statistics (3)** Designed as a first course in statistics for students in education. Emphasis is upon educational applications of descriptive statistics, including measures of central tendency, variability and association. Also included are inferential statistics through one-way ANOVA.

**EDMS 465 Algorithmic Methods in Educational Research (3)** Introduction to the use of the computer as a tool in educational research. Instruction in a basic scientific computer source language as well as practical experience in program writing for solving statistical and educational research problems.

**EDMS 489 Field Experiences in Measurement and Statistics (1-4)** Prerequisite: permission of department. Repeatable to 4 credits. Planned field experience in education-related activities. Credit not to be granted for experiences accrued prior to registration.

**EDMS 498 Special Problems in Measurement and Statistics (1-3)** Prerequisite: permission of department Repeatable to 6 credits. Available only to education majors who have formal plans for individual study of approved problems.

**EDPA — Education Policy, Planning and Administration**

**EDPA 201 Education in Contemporary American Society (3)** An examination of the relationship between education and the social environment in contemporary American society. Issues of equality or equal opportunity, individual and cultural differences, education outside of schools, the control of education, and the future of education.

**EDPA 210 Historical and Philosophical Perspectives on Education (3)** An examination of illustrative historical and philosophical examples of the interplay of ideas and events in the shaping of educational aims and practices from ancient cultures to modern technological societies.

**EDPA 288 Special Problems in Education (1-6)** Prerequisite: permission of department. Available only to freshmen and sophomore students who have definite plans for individual study of approved problems relative to their preparation for teaching.

**EDPA 301 Foundations of Education (3)** Historical social, cultural, and philosophical foundations of American education. Considers education as a profession, and the organizational structure, operation and function of modern school systems. Comparative education and contemporary issues are included.

**EDPA 400 The Future of the Human Community (3)** Examination of the future of our social and cultural institutions for education and child rearing, social and family relationships, health and leisure, information exchange, and the provision of food, clothing, and shelter.

**EDPA 401 Educational Technology, Policy, and Social Change (3)** Junior standing. Examines technology as a complex force which influences social change and the educational development of individuals.

**EDPA 412 Logic of Teaching (3)** An analysis of the structure of basic subject matters in the curriculum and of the standard logical moves in teaching.

**EDPA 440 Educational Media (3)** Survey of classroom uses of instructional media. Techniques for integrating media into instruction. Includes preparation of a unit of instruction utilizing professional and teacher produced media.

**EDPA 471 The Legal Rights and Obligations of Teachers and Students (3)** Selected state and federal court decisions, legislation, and executive guidelines regulating public education: speech and other forms of expression, privacy, suspensions, expulsions, search and seizure, tort liability for negligence (including education malpractice), hiring, promotion, dismissal and non-renewal of teachers. No prior legal training required.

**EDPA 488 Special Topics in Education Policy and Administration (1-3)** Prerequisite: permission of department. Repeatable to 6 credits. Special and intensive treatment of current topics and issues in education policy and administration.

**EDPA 489 Field Experiences in Education (1-4)** Prerequisite: permission of department. Planned field experience in education-related activities. Credit not to be granted for experiences accrued prior to registration.

**EDPA 498 Special Problems in Education (1-3)** Prerequisite: permission of department. Available only to students who have definite plans for individual study of approved problems.

**EDPA 499 Workshops, Clinics, and Institutes (1-6)** Repeatable to 6 credits. The following type of educational enterprise may be scheduled under this course heading: Workshops conducted by the College of Education (or developed cooperatively with other colleges and universities) and not otherwise covered in the present course listing; clinical experiences in pupil-testing centers, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups

such as school superintendents, principals and supervisors.

**EDSP — Education, Special**

**EDSP 210 Introduction to Special Education (3)** Characteristics and needs of children with handicaps. Current issues in special education.

**EDSP 288 Special Topics in Teacher Education (1-3)** Prerequisite: major in education or permission of department. Repeatable to 6 credits if content differs.

**EDSP 298 Special Problems in Teacher Education (1-6)** Prerequisite: permission of department. Available only to freshmen and sophomore education majors who have definite plans for individual study of approved problems relative to their preparation for teaching. Credit according to extent of work.

**EDSP 320 Introduction to Assessment in Special Education (3)** Prerequisite: EDSP 210. Pre- or corequisite: EDSP 321, and EDSP 322. Recommended: STAT 100 or SOCY 201. For EDSP majors only. Assessment instruments and procedures and specific criterion-referenced and norm-referenced measures used in special education.

**EDSP 321 Comparative Approaches to Behavior and Classroom Management in Special Education (3)** Prerequisite: EDSP 210. Pre- or corequisite: EDSP 320, and EDSP 322. The development of behavior and classroom management techniques used in special education.

**EDSP 322 Field Placement in Special Education (1-2-3)** Pre- or corequisites: EDSP 320; and EDSP 321. For EDSP majors only. Practicum experience in special education setting. The application of assessment and classroom management procedures. Field placement for two or three half-days per week.

**EDSP 330 Families and the Education of Handicapped Children (3)** Prerequisite: EDSP 321. Corequisites: [EDSP 405, and EDSP 424, and EDSP 445 or EDSP 463] or permission of department. For EDSP majors only. Emphasis on the impact of handicapped children on families and strategies for communicating and working with families.

**EDSP 331 Introduction to Curriculum and Instructional Methods in Special Education (3)** Prerequisites: EDSP 320, and EDSP 321. Pre- or corequisites: EDSP 332; and EDSP 333, and EDSP 443. For EDSP majors only. Instructional principles and programs in special education.

**EDSP 332 Interdisciplinary Communication in Special Education (3)** Prerequisites: EDSP 320; and EDSP 321. Pre- or corequisites: EDSP 331; and EDSP 333; and EDSP 443. For EDSP majors only. Terminology, procedures and professional roles specific to persons providing services to handicapped children.

**EDSP 333 Field Placement in Special Education II (2-3)** Prerequisite: EDSP 332. Pre- or corequisites: EDSP 331; and EDSP 332, and EDSP 443. For EDSP majors only. Practicum experience in special education setting. Opportunities to apply curriculum methods and materials. Two or three half-days per week.

**EDSP 349 Student Teaching of Exceptional Children (8)** For EDSP majors only. Student teaching full-time for eight weeks with exceptional children.

**EDSP 376 Fundamentals of Sign Language (3)** Receptive and expressive skills in American Sign Language. Examination of the causes of deafness, characteristics of deaf education, and aspects of the culture of the deaf community.

**EDSP 400 Assessment, Curriculum and Instructional Methods For Students with Severe Handicaps (3)** Corequisites: [EDSP 402; and EDSP 431] or permission of department. Examination of functional assessment procedures, curriculum development and analysis, and instructional techniques for students with severe handicaps.

**EDSP 401 Environmental Adaptations for Severely Handicapped Students (3)** Pre- or corequisites: [EDSP 411, and EDSP 412] or [EDSP 430; and EDSP 431]. Management problems of and alternatives for severely handicapped individuals.

**EDSP 402 Field Placement: Severely Handicapped II (2-5)** Pre- or corequisites: [EDSP 400, and EDSP 401] or permission of department. Practicum experience in settings serving severely handicapped individuals. Enrollment limited to those admitted to severely handicapped specialty area. Field placement for two to five half days per week.

**EDSP 403 Physical and Communication Adaptations for Students with Severe Handicaps (3)** Prerequisites: [EDSP 400; and EDSP 404] or permission of department. Corequisites: [EDSP 330; and EDSP 405; and EDSP 410] or permission of department. Development, assessment, and instruction of mobility, feeding, grooming, and communication techniques to increase independent functioning for students with severe handicaps.

**EDSP 404 Education of Students with Autism (3)** Pre- or corequisites: [EDSP 400 and EDSP 402] or permission of department. Characteristics, needs, assessment, and educational methods for students diagnosed as autistic.

**EDSP 405 Field Placement: Severely Handicapped II (2-5)** Prerequisite: EDSP 402 or permission of department. Pre- or corequisites: EDSP 330; and EDSP 403; and EDSP 410 or permission of department. Practicum experience in settings serving severely handicapped individuals. Field placement for two to five half-days per week.

**EDSP 410 Community Functioning Skills for Students with Severe Handicaps (3)** Prerequisites: [EDSP 400; and EDSP 404] or permission of department. Corequisites: EDSP 330; and EDSP 403; and EDSP 405. Assessment, instructional techniques, and curriculum development related to community functioning skills for students with severe handicaps.

**EDSP 411 Field Placement: Severely Handicapped III (2-5)** Prerequisite: EDSP 405. Pre- or corequisites: [EDSP 412; and [EDSP 420 or EDSP 460]] or permission of department. Practicum experience in settings serving severely handicapped individuals. Field placement for two to five half-days per week.

**EDSP 412 Vocational and Transitional Instruction For Students with Severe Handicaps (3)** Corequisites: [EDSP 411; and EDSP 465] or permission of department. Assessment and instructional strategies for developing the vocational and transitional skills of students with severe handicaps.

**EDSP 417 Student Teaching: Severely Handicapped (4-11)** Student teaching, full-time for twelve weeks, with severely handicapped individuals. Limited to special education majors admitted to severely handicapped specialty area.

**EDSP 418 Seminar: Issues and Research Related to the Instruction of Severely Handicapped Students (1-3)** For EDSP majors only. Repeatable to 6 credits if content differs. Examines the current research related to the instruction of severely handicapped individuals.

**EDSP 420 Developmental and Behavioral Characteristics of Nonhandicapped and Handicapped Infants and Young Children (3)** Corequisites: [EDSP 421; and EDSP 411] or permission of department. Study of the developmental, behavioral, and learning characteristics of nonhandicapped and handicapped infants and young preschool children.

**EDSP 421 Field Placement: Early Childhood Special Education I (2-3)** Pre- or corequisite: [EDSP 410 and EDSP 420] or permission of department. Practicum experience in settings serving preschool handicapped children. Opportunities for studying the patterns of development and learning among nonhandicapped and handicapped infants and older preschoolers. Enrollment limited to students admitted to early childhood specialty. Field placement for two or three half-days per week.

**EDSP 422 Curriculum and Instruction in Early Childhood Special Education (Moderate to Mild: 3-8 Years) (3)** Prerequisites: EDSP 410; and EDSP 420 or permission of department. Corequisites: EDSP 330; and EDSP 424. Characteristics, methods and materials for the instruction of young children (ages 3-8) traditionally labeled mild to moderately handicapped.

**EDSP 423 Assessment of Preschool Handicapped Children and Infants (3)** Prerequisites: EDSP 330; and

EDSP 422. Corequisites: EDSP 430; and EDSP 431, and EDSP 400 or EDSP 441. Current psychoeducational assessment and evaluation procedures used with profoundly to moderately handicapped infants and young preschool children. Psychometric, criterion-referenced, developmental checklists, and automated and ecological assessment procedures. Administration of selected assessment instruments.

**EDSP 424 Field Placement: Early Childhood Special Education II (Moderate to Mild) (2-4)** Prerequisite: EDSP 421 or permission of department. Pre- or corequisites: EDSP 350; and EDSP 422. Practicum experience in settings serving young (ages 3 to 8) mild to moderately handicapped children in self-contained and integrated early childhood programs. Opportunities to apply educational methods and materials. Field placement for two to four half-days per week.

**EDSP 430 Intervention Techniques and Strategies For Preschool Handicapped Children and Infants (Severe to Moderate, Birth-6 Years) (3)** Prerequisites: EDSP 330; and EDSP 422. Corequisites: EDSP 423; and EDSP 431, and [EDSP 440 or EDSP 441]. Current approaches to the treatment of preschool severely to moderately handicapped children.

**EDSP 431 Field Placement: Early Childhood Special Education III (Severe to Moderate) (2-4)** Prerequisite: EDSP 424 or permission of department. Pre- or corequisites: EDSP 430; and EDSP 423; and [EDSP 400 or EDSP 441]. Opportunities to apply techniques, strategies, methods and materials for educating severely to moderately handicapped infants and young children. Field placement for two to four half-days per week.

**EDSP 437 Student Teaching: Early Childhood Special Education (4-11)** Student teaching, full-time for twelve weeks, with handicapped infants and preschool children. Limited to special education majors in early childhood special education specialty area.

**EDSP 438 Seminar: Special Issues in Early Childhood Special Education (1-3)** Prerequisite: permission of department. For EDSP majors only. Repeatable to 6 credits if content differs. Study of current issues and research concerning education of preschool handicapped children.

**EDSP 440 Assessment and Instructional Design for the Educationally Handicapped: Cognitive and Psychosocial Development (3)** Prerequisites: [EDSP 441; and EDCI 456] or permission of department. Pre- or corequisites: EDSP 330; and EDSP 445; and EDHD 413. Learning style, cognitive, and problem-solving strategies, and psychosocial behavior of educationally handicapped individuals at elementary to secondary levels. Characteristics, assessment and instruction. Enrollment limited to Special Education majors accepted into educationally handicapped area of specialization.

**EDSP 441 Assessment and Instructional Design for the Educationally Handicapped: Oral Language and Communication Disorders (3)** Corequisites: [EDSP 442; and EDSP 431] or permission of department. Characteristics of individuals with oral language and communication disorders, assessment of such disorders and instructional strategies, curricula and materials.

**EDSP 442 Field Placement: Educationally Handicapped (2-3)** Pre- or corequisite: [EDSP 441 and EDCI 456] or permission of department. Practicum experience in settings serving educationally handicapped individuals. Demonstration of the content of EDSP 441. Enrollment limited to students admitted to educationally handicapped specialty. Field placement for two or three half-days per week.

**EDSP 443 Assessment and Instructional Design for the Handicapped: Reading and Written Communication Disorders (3)** Prerequisites: [EDSP 320; and EDSP 321] or permission of department. Pre- or corequisites: EDSP 331; and EDSP 332; and EDSP 333. Characteristics and assessments of individuals with reading and written communication disorders at elementary to secondary levels, and methods of teaching reading and written language skills to such individuals. Adapting of regular instructional methods and curricula.

**EDSP 445 Field Placement: Educationally Handicapped II (2-4)** Prerequisite: EDSP 442 or permission of department. Pre- or corequisites: EDSP 330; and EDSP 440; and EDSP 443; and EDHD 413. Practicum experience in settings serving educationally

handicapped. The application of instructional design and assessment in cognitive development. Field placement for 2-4 half days per week.

**EDSP 446 Instructional Design for the Educationally Handicapped: Functional Living Skills (3)** Pre- or corequisites: [EDSP 447; and EDSP 465] or permission of department. Instructional methods, curricula and materials designed to teach functional living skills to educationally handicapped individuals at elementary to secondary levels. Curricula and teaching strategies in science and social studies used in general education and adaptations for educationally handicapped individuals.

**EDSP 447 Field Placement: Educationally Handicapped II (2-4)** Prerequisite: EDSP 445 or permission of department. Pre- or corequisites: EDSP 446; and EDSP 450; and EDSP 460. Practicum experience in settings serving educationally handicapped individuals. The application of the content of EDSP 446. EDSP 450 and EDSP 460. Field placement for two to four half-days per week.

**EDSP 450 Program Management for the Educationally Handicapped (3)** Corequisites: [EDSP 411; and EDSP 447; and EDSP 465] or permission of department. Emphasis on skills in managing programs for educationally handicapped individuals. Service delivery models, scheduling, establishing referral, assessment and follow through procedures; methods for mainstreaming, training aides and volunteers.

**EDSP 457 Student Teaching: Educationally Handicapped (4-11)** For EDSP majors only. Student teaching, full-time for twelve weeks, with educationally handicapped individuals.

**EDSP 458 Seminar: Special Issues and Research Related to the Educationally Handicapped (1-3)** Repeatable to 6 credits if content differs. Current issues and research concerning the education of educationally handicapped individuals.

**EDSP 460 Career/Vocational Education For the Handicapped (3)** Corequisites: [EDSP 461; and EDSP 411; and EDSP 447] or permission of department. Introduction to career/vocational education for the handicapped. Historical and current issues and trends, characteristics and training needs of handicapped individuals and review of existing programs.

**EDSP 461 Field Placement: Career/Vocational I (2-3)** Pre- or corequisite: [EDSP 460; and EDSP 456; and EDIT 421] or permission of department. For EDSP majors only. Practicum experience in career vocational education for the handicapped. Field placement for two or three half-days per week.

**EDSP 462 Vocational Assessment and Instruction In Special Education (3)** Prerequisite: EDSP 460 or permission of department. Current vocational assessment strategies, interpretation of assessment results, and planning, delivery and evaluation of instruction in vocational education for secondary students with disabilities.

**EDSP 463 Field Placement: Career/Vocational II (2-3)** Prerequisite: EDSP 461 or permission of department. Pre- or corequisites: EDSP 330; and EDSP 462. Practicum experience in career/vocational programs for the handicapped. Field placement for two or three half-days per week.

**EDSP 464 Secondary and Transition Methods in Special Education (3)** Prerequisite: EDSP 462 or permission of department. Current secondary vocational/ special education issues and transition methods including work-study programming, job development, and job coaching.

**EDSP 465 Field Placement: Career/Vocational III (2-3)** Prerequisite: EDSP 463; pre- or corequisite: EDSP 450. Practicum experience in career/vocational programs for the handicapped. Field placement for two or three half days per week.

**EDSP 467 Student Teaching: Career/Vocational (4-11)** A full-time twelve week field assignment in a setting providing career/vocational education for handicapped students. Enrollment limited to Special Education majors who have successfully completed coursework in career/vocational area of specialization.

**EDSP 468 Special Topics Seminar in Career/Vocational Education For the Handicapped (1-3)** Prerequisite: permission of department. For EDSP majors only. Repeatable to 6 credits if content differs. Current issues and research relating to career/vocational education of the handicapped.

**EDSP 470 Introduction to Special Education (3)** Designed to give an understanding of the needs of all types of exceptional children.

**EDSP 471 Characteristics of Exceptional Children: Mentally Retarded (3)** Prerequisite: EDSP 470 or equivalent. Studies the diagnosis, etiology, physical, social and emotional characteristics of exceptional children.

**EDSP 472 Education of Exceptional Children: Mentally Retarded (3)** Prerequisite: EDSP 471 or equivalent. Offers practical and specific methods of teaching exceptional children. Selected observation of actual teaching may be arranged.

**EDSP 473 Curriculum For Exceptional Children: Mentally Retarded (3)** Prerequisite: EDSP 471 or equivalent. Examines the principles and objectives guiding curriculum for exceptional children; gives experience in developing curriculum; studies various curricula currently in use.

**EDSP 475 Education of the Slow Learner (3)** Studies the characteristics of the slow learner and those educational practices which are appropriate for the child who is functioning as a slow learner.

**EDSP 476 Communicating with Sign Language (3)** Prerequisite: EDSP 376 or permission of department. Intermediate level receptive-expressive skills in American Sign Language. Aspects of the culture, history, and research perspectives of the deaf community.

**EDSP 480 Microcomputers in Special Education (3)** Microcomputers for the education of handicapped individuals.

**EDSP 481 Characteristics of Exceptional Children: Gifted and Talented (3)** Prerequisite: EDSP 470 or equivalent. Studies the diagnosis, etiology, physical, social, and emotional characteristics of gifted and talented children.

**EDSP 482 Education of Exceptional Children: Gifted and Talented (3)** Prerequisite: EDSP 481 or equivalent. Offers practical and specific methods of teaching gifted and talented children. Selected observation of actual teaching may be arranged.

**EDSP 483 Curriculum For Exceptional Children: Gifted and Talented (3)** Prerequisite: EDSP 481 or equivalent. Examines the principles and objectives guiding current curriculum for gifted and talented children; gives experience in developing curriculum; studies various curricula currently in use.

**EDSP 488 Selected Topics in Teacher Education (1-3)** Prerequisite: major in education or permission of department. Repeatable to 6 credits if content differs.

**EDSP 489 Field Experiences in Special Education (1-4)** Prerequisite: permission of department. Planned field experience in education-related activities. Credit not to be granted for experiences accrued prior to registration.

**EDSP 491 Characteristics of Learning Disabled Students: Perceptual Learning Problems (3)** Diagnosis, etiology, physical, social, and emotional characteristics of learning disabled students.

**EDSP 492 Education of Learning Disabled Students (3)** Prerequisite: EDSP 491 or permission of department. Methods of teaching learning disabled children.

**EDSP 493 Curriculum For Exceptional Children: Perceptual Learning Problems (3)** Prerequisite: EDSP 492 or equivalent. Examines the principles and objectives guiding curriculum for children with perceptual learning disabilities; gives experience in developing curriculum; studies various curricula currently in use.

**EDSP 498 Special Problems in Special Education (1-6)** Prerequisite: permission of department. Available only to education majors who have definite plans for

individual study of approved problems. Credit according to extent of work.

**EDSP 499 Workshops, Clinics, and Institutes in Special Education (1-6)** Repeatable to 6 credits if content differs. The following type of educational enterprise may be scheduled under this course heading: workshops conducted by the special education department (or developed cooperatively with other departments, colleges and universities) and not otherwise covered in the present course listing. Laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups such as school superintendents, principals and supervisors.

## EDUC — Education

**EDUC 388 Special Topics in Education (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs.

## ENAE — Engineering, Aerospace

**ENAE 201 Introduction to Aerospace Engineering I (2)** Prerequisite: ENES 110. History of aeronautical engineering, technical fundamentals, the standard atmosphere, basic aerodynamics, and the aerodynamics of airfoils, wings and other aerodynamic shapes.

**ENAE 202 Introduction to Aerospace Engineering II (2)** Prerequisite: ENAE 201. Elements of airplane performance. Principles of airplane stability and control. Basic astronautics, including orbital and escape trajectories, flight propulsion fundamentals, propellers, IC engines, jet and rocket engines.

**ENAE 305 Aerospace Laboratory I (3)** Prerequisite: PHYS 263. Pre- or corequisites: ENAE 345; and ENAE 451; and ENAE 371. Measurement philosophy, data analysis, error assessment, sensing devices, optical methods, material tests; flow visualization techniques, manometry, dynamic response of measurement systems. Application of instrumentation in aerospace engineering.

**ENAE 345 Flight Dynamics (3)** Prerequisites: ENES 221; and MATH 246. Kinematics and concept of system state. Dynamic principles applied to particles, discrete mass and continuously distributed mass systems, Lagrangian dynamics, dynamic stability of systems, applications to dynamics of aerospace vehicles and vehicle components.

**ENAE 355 Aircraft Vibrations (3)** Prerequisite: ENAE 345 or equivalent. Free and forced vibration of single and multiple degree of freedom systems.

**ENAE 371 Aerodynamics I (3)** Prerequisites: ENAE 202; and ENAE 262; and MATH 241. Corequisite: MATH 246. Basic fluid mechanics and aerodynamic theory.

## ENAE 398 Honors Research Project (1-3)

**ENAE 401 Aerospace Laboratory II (2)** Prerequisites: ENAE 305; and ENAE 345. Corequisites: ENAE 452; and ENAE 471. Application of fundamental measurement techniques to experiments in aerospace engineering, structural, aerodynamic, and propulsion tests, correlation of theory with experimental results.

**ENAE 402 Aerospace Laboratory III (1)** Prerequisites: ENAE 305, and ENAE 345. Corequisites: ENAE 452; and ENAE 471; and ENAE 475. Application of fundamental measurement techniques to experiments in aerospace engineering, structural, aerodynamic, flight simulation, and heat transfer tests. Correlation of theory with experimental results.

**ENAE 411 Aircraft Design (3)** Prerequisites: ENAE 345; and ENAE 451; and ENAE 371. Theory background and methods of airplane design, subsonic and supersonic.

**ENAE 412 Design of Aerospace Vehicles (3)** Prerequisites: ENAE 345, and ENAE 371. Theory, background and methods of space vehicle design for manned orbiting vehicles, manned lunar and planetary landing systems.

**ENAE 415 Computer-Aided Structural Design Analysis (3)** Prerequisite: ENAE 452 or permission of both department and instructor. Introduction to structural design concepts and analysis techniques. Introduction to computer software for structural analysis which is utilized to verify exact solutions and perform parametric design studies of aerospace structures.

**ENAE 445 Stability and Control of Aerospace Vehicles (3)** Prerequisites: ENAE 345; and ENAE 371. Dynamics of flight vehicles with emphasis on stability and control of vehicles in the atmosphere.

**ENAE 451 Flight Structures I: Introduction to Solid Mechanics (4)** Prerequisite: ENES 220. An introduction to the analysis of aircraft structural members. Introduction to theory of elasticity, mechanical behavior of materials, thermal effects, finite difference approximations, virtual work, variational and energy principles for static systems.

**ENAE 452 Flight Structures II: Structural Elements (4)** Prerequisite: ENAE 451. Application of variational and energy principles to analysis of elastic bodies; stresses and deflections of beams including effects of non-principal axes, non-homogeneity, and thermal gradients; differential equations of beams, bars, and cables. Stresses and deflections of torsional members, stresses due to shear. Deflection analysis of structures.

**ENAE 453 Matrix Methods in Computational Mechanics (3)** Prerequisite: ENAE 452 or permission of both department and instructor. Introduction to the concepts of computational analysis of continuous media by use of matrix methods. Foundation for use of finite elements in any field of continuum mechanics, with emphasis on the use of the displacement method to solve thermal and structural problems.

**ENAE 461 Flight Propulsion I (3)** Prerequisites: ENAE 217; and ENAE 471. Operating principles of piston, turbopet, turboprop, ramjet and rocket engines, thermodynamic cycle analysis and engine performance, aerothermochemistry of combustion, fuels, and propellants.

**ENAE 462 Flight Propulsion II (3)** Prerequisite: ENAE 461. Advanced and current topics in flight propulsion.

**ENAE 471 Aerodynamics II (3)** Prerequisites: ENAE 371; and ENME 217. Elements of compressible flow with applications to aerospace engineering problems.

**ENAE 472 Aerodynamics III (3)** Prerequisite: ENAE 371. Theory of the flow of an incompressible fluid.

**ENAE 473 Aerodynamics of High-Speed Flight (3)** Prerequisite: ENAE 471 or equivalent. An advanced course dealing with aerodynamic problems of flight at supersonic and hypersonic velocities. Unified hypersonic and supersonic small disturbance theories, real gas effects, aerodynamic heating and mass transfer with applications to hypersonic flight and re-entry.

**ENAE 475 Viscous Flow and Aerodynamic Heating (3)** Prerequisites: ENAE 371; and ENAE 471; and ENME 217. Fundamental aspects of viscous flow, Navier-Stokes equations, similarity, boundary layer equations; laminar, transitional and turbulent incompressible flows on airfoils, thermal boundary layers and convective heat transfer; conduction through solids, introduction to radiative heat transfer.

**ENAE 488 Topics in Aerospace Engineering (1-4)** Technical elective taken with the permission of the student's advisor and instructor. Lecture and conference courses designed to extend the student's understanding of aerospace engineering. Current topics are emphasized.

**ENAE 499 Elective Research (1-3)** Prerequisites: senior standing in ENAE major and permission of department, instructor, and student's advisor. Repeatable to 6 credits. Original research projects terminating in a written report.

**ENAE 588 Professional Development Topics in Aerospace Engineering (1-3)** Prerequisite: permission of both department and instructor. Repeatable to 3 credits. Current topics in aerospace engineering chosen to provide for the professional development of practicing engineers. May not be credited toward a graduate school degree.

## ENAG — Engineering Agricultural

**ENAG 100 Basic Agricultural Engineering Technology (3)** An introduction to the application of engineering concepts. Topics include quantification measurements, mechanical, thermal, fluid and electrical principles and their relationship to biological systems and materials of agricultural and aquacultural products (for non-engineering majors).



**ENAG 200 Introduction to Farm Mechanics (2)** One hour of lecture and two hours of laboratory per week. A study of the hand tools and power equipment and their safe use as it applies to mechanized farms. Principles and practice in arc and gas welding, cold metal and sheet metal work are provided. Also, tool fitting, woodworking, plumbing, blueprint reading and use of concrete.

**ENAG 232 Water, A Renewable Resource (3)** For non-engineering students. Occurrence and distribution of water. Review of both natural and man-made water resource systems. Basics of water quality and waste water treatment.

**ENAG 234 Principles of Erosion and Water Control (1)** Introduction to principles of estimating runoff and erosion. Engineering principles necessary to control erosion and runoff from agricultural areas. For non-engineering students.

**ENAG 236 Design of Drainage Systems (1)** Effect of drainage on crop production and quality. Design of agricultural drainage systems. For non-engineering students.

**ENAG 237 Design of Irrigation Systems (1)** Principles and practices of agricultural irrigation, including types of irrigation systems, soil water concepts, computing evapotranspiration, irrigation scheduling and design of a sprinkler irrigation system. For non-engineering students.

**ENAG 305 Farm Mechanics (2)** For agricultural education majors only. Senior standing. Two laboratory periods a week. This course consists of laboratory exercises in practical farm shop and farm equipment maintenance, repair, and construction projects, and a study of the principles of shop organization and administration.

**ENAG 315 Energy: Its Effects On Agriculture and Food (3)** Introduction to the current energy problems in agricultural production and food supply. Energy issues, alternate sources of energy, energy conservation practices, possible solutions and limitations.

**ENAG 414 Mechanics of Food Processing (4)** Prerequisite: PHYS 121. Three lectures and one laboratory per week. Applications in the processing and preservation of foods, of power transmission, hydraulics, electricity, thermodynamics, refrigeration, instruments and controls, materials handling and time and motion analysis.

**ENAG 421 Power Systems (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: ENME 217 and ENEE 300 and [ENME 342 or ENCE 330]. Analysis of energy conversion devices including internal combustion engines, electrical and hydraulic motors. Fundamentals of power transmission and coordination of power sources with methods of power transmission.

**ENAG 422 Soil and Water Engineering (3)** Prerequisite: ENME 342 or ENCE 330. Applications of engineering and soil sciences in erosion control, drainage, irrigation and watershed management. Principles of agricultural hydrology and design of water control and conveyance systems.

**ENAG 424 Functional and Environmental Design of Agricultural Structures (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: ENAG 454. An analytical approach to the design and planning of functional and environmental requirements of plants and animals in semi- or completely enclosed structures.

**ENAG 435 Aquacultural Engineering (3)** Prerequisite: permission of department. A study of the engineering aspects of development, utilization and conservation of aquatic systems. Emphasis will be on harvesting and processing aquatic animals or plants as related to other facets of water resources management.

**ENAG 444 Functional Design of Machinery and Equipment (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: ENES 221. Senior standing. Theory and methods of agricultural machine design. Application of machine design principles and physical properties of soils and agricultural products in designing machines to perform specific tasks.

**ENAG 454 Biological Process Engineering (4)** Prerequisite: ENME 342 or ENCE 330. Design of systems to pump, heat, cool, dry and control biological materials as part of food and agricultural engineering. The effect of physical parameters on biological material response to these processes.

**ENAG 488 Topics in Agricultural Engineering Technology (1-3)** Prerequisite: permission of department. Selected topics in agricultural engineering technology of current need and interest. May be repeated to a maximum of six credits if topics are different. Not acceptable for credit towards major in agricultural engineering.

**ENAG 489 Special Problems in Agricultural Engineering (1-3)** Prerequisite: permission of department. Student will select an engineering problem and prepare a technical report. The problem may include design, experimentation, and/or data analysis.

**ENAG 499 Special Problems in Agricultural Engineering Technology (1-3)** Prerequisite: permission of department. Not acceptable for majors in agricultural engineering. Problems assigned in proportion to credit.

## ENCE — Engineering, Civil

**ENCE 201 Computational Methods in Civil Engineering I (3)** Corequisite: MATH 241; and ENES 220. Formerly ENCE 360. Introduction to computer programming with structured language. Elementary numerical analysis. Linear algebra, simultaneous equations, roots of equations, numerical integration. Applications to engineering problems.

**ENCE 255 Elementary Structural Analysis (3)** Prerequisite: ENES 220. Methods of analysis of statically dominated and indeterminate structures for fixed and moving loads. Equations of equilibrium and compatibility. Influence lines, shear and moment envelopes. Analysis of forces and deflections in structures by methods of moment distribution, consistent deformation, and virtual work.

**ENCE 300 Fundamentals of Engineering Materials (3)** Two hours of lecture and one hour of laboratory per week. Pre- or corequisite: ENES 220. Properties and constitution of the principal materials used in civil engineering. Laboratory tests for these properties, interpretation of test results and of specifications.

**ENCE 301 Computational Methods in Civil Engineering II (3)** Prerequisites: MATH 246; and ENCE 201. Junior standing. Advanced computer programming, statistical methods, reliability and probability theory, differential equations. Civil engineering applications.

**ENCE 315 Introduction to Environmental Engineering (3)** Prerequisites: CHEM 103; and PHYS 161. Not open to ENGR students who have completed ENCE 221. Formerly ENCE 221. Physical, chemical, and biological systems relating to the quality of land, water, and air environments. Current environmental pollution problems will be examined and methods of pollution abatement discussed.

**ENCE 320 Construction Engineering and Management (3)** Corequisite: ENCE 321 or permission of department. Overview of the management process in relation to each phase of a project from the inception of the need by the client to the completion of the work in the field.

**ENCE 321 Engineering Survey Measurements (1)** Three hours of laboratory per week. Corequisites: MATH 141; and ENCE 320. Formerly ENCE 280. Standards, units, calibration, measurement of distance elevation and angles. Area measurements and mapping.

**ENCE 330 Basic Fluid Mechanics (3)** Prerequisites: ENES 220; and ENES 221; and PHYS 262. The study of fluids at rest and in motion. Principles of viscous and turbulent flow. Impulse and momentum concepts. Pumps, turbines and meters. Dimensional analysis and laws of similarity.

**ENCE 340 Fundamentals of Soil Mechanics (3)** Prerequisite: ENES 220. Corequisite: ENCE 300. Introductory study of soils in civil engineering. Soil origin, phase relationships and classification schemes. Soil hydraulics; capillary, effective stress, permeability and seepage considerations. Basic stress distribution theories and soil consolidation-settlement analysis. Integration of shear strength evaluation with slope stability analysis.

**ENCE 350 Structural Analysis and Design I (3)** Prerequisite: ENES 220. Corequisite: ENCE 300. Methods of analysis of statically determinate structures for fixed and moving loads. Equilibrium, influence lines, stability. Structural design of steel buildings and bridges, including design of tension members, beams, columns, trusses, and welded, bolted, and riveted connections.

**ENCE 351 Structural Analysis and Design II (3)** Prerequisites: ENCE 300, and ENCE 350. Analyses for stresses in statically indeterminate beams and frames by approximate methods and by moment distribution. Influence lines and maximum shear and moment for continuous members. Design of reinforced concrete beams, continuous beams, and columns by elastic theory and by ultimate strength design.

**ENCE 355 Elementary Structural Design (3)** Prerequisites: ENCE 255, and ENCE 300. Structural design of members for buildings and bridges subjected to tension, compression, shear and bending. Materials, structural steel and reinforced concrete. Design of welded and bolted connections. Placement of reinforcing bars in concrete members.

**ENCE 370 Fundamentals of Transportation Engineering (3)** Prerequisite: ENCE 280. Engineering problems of transportation by airways, highways, pipelines, railways, and waterways. Elementary dynamics of traffic and function consideration of routes and terminals.

## ENCE 398 Honors Research Project (1-3)

**ENCE 410 Advanced Strength of Materials (3)** Prerequisites: ENCE 350; and MATH 246. Behavior of structural members under load. Straight and curved beam analysis, unsymmetrical bending, shear center, beams on elastic foundation. Torsion of solid and thin walled members. Applied elasticity and stress-strain relations. Advanced topics in mechanics.

**ENCE 411 Construction Scheduling and Estimating (4)** Two hours of lecture and one hour of laboratory per week. Use of critical path planning and scheduling with arrow and precedence networks; project time control; introduction to resource leveling and least cost scheduling. Cost estimating, using cost indices. Parametric estimates and unit price estimates.

**ENCE 420 Construction Equipment and Methods (3)** Evaluation and selection of equipment and methods for engineering/construction projects, including earthmoving, paving, steel and concrete construction, rock excavation, tunneling, site preparation, and organization of the site.

**ENCE 421 Construction Engineering and Management (3)** Overview of the construction industry and the factors that need to be considered to successfully manage engineering/construction projects. Introduction into how resources of money, labor, material and equipment are committed and managed within the construction environment.

**ENCE 423 Production Planning and Control (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: ENCE 320. Application of planning and scheduling techniques for construction work; introduction to resource leveling and cost control. Design of formwork, trench supports and cofferdams.

**ENCE 424 Operations Analysis for Construction (3)** Application of logical analytical techniques and processes to problems of design and construction; an introduction to decision-making methods and application to construction situations; simulation modeling in construction environment.

**ENCE 425 Decision Support Systems for Construction (3)** Two hours of lecture and three hours of laboratory per week. Information technology, database systems and concepts, and an introduction to artificial intelligence. The laboratory will offer opportunities to undertake computer applications and to devise systems for implementation.

**ENCE 430 Flow in Open Channels and Conveyance Structures (3)** Three hours of lecture and three hours of laboratory per week. Prerequisite: ENCE 330. Application of theoretical, experimental and computer simulation techniques in the design of open channels and conveyance structures including transitions, spillways, culverts, weirs, and bridge openings. Uniform and non-

uniform flows under subcritical or supercritical conditions. Analysis of unsteady, spatially varied overland and channel flows. Laboratories will emphasize techniques to improve understanding of complex flow phenomena and to provide design information.

**ENCE 431 Surface Water Hydrology (3)** Prerequisite: ENCE 330. Study of the physical processes of the hydrologic cycle. Hydrometeorology concepts of weather modification, evaporation and transpiration infiltration studies, runoff computations, flood routing, reservoir requirements, emphasis on process simulation as a tool in the water resource development.

**ENCE 432 Ground Water Hydrology (3)** Prerequisite: ENCE 330. Concepts related to the development of the ground water resource, hydrogeology, hydrodynamics of flow through porous media, hydraulics of wells, artificial recharge, sea water intrusion, basin-wide ground water development.

**ENCE 433 Environmental Engineering Analysis (3)** Two hours of lecture and one hour of laboratory per week. Prerequisites: CHEM 113, and ENCE 221. The theory and analytical techniques used in evaluating man's environment. Emphasis on quantitative, physical, electroanalytical and organic chemistry as applied to chemical analysis of water.

**ENCE 435 Sanitary Engineering Analysis and Design (4)** Three hours of lecture and one hour of laboratory per week. Prerequisites: ENCE 221, and ENCE 330. The application of sanitary analysis and fundamental principles to the design and operation of water and waste water treatment plants and the control of stream pollution.

**ENCE 436 Drinking Water Treatment (3)** Prerequisite: ENCE 315. Formerly ENCE 434. Basic theory and practical design considerations for unit processes involved in drinking water treatment. The physicochemical operations considered include coagulation/flocculation, sedimentation, filtration, adsorption, ion exchange, aeration, and disinfection.

**ENCE 440 Engineering Soil Tests (4)** Two hours of lecture and two hours of laboratory per week. Prerequisite: ENCE 340. Review of major soil tests and their interpretation for engineering purposes. Engineering classification tests (Atterberg limits, grain-size distribution, specific gravity), permeability and seepage properties, in-situ and lab density-moisture tests, soil strength (penetrometers, vane shear, CBR, unconfined compression, direct shear and triaxial) and compressibility characteristics.

**ENCE 441 Soil-Foundation Systems (3)** Prerequisite: ENCE 340. Review of classical lateral earth pressure theories, analysis of braced excavation systems, cantilever and anchored sheet piling design, bearing capacity of shallow foundations (footings and mats) design of deep pile foundations to include pile capacity and pile group action.

**ENCE 442 Highway and Airfield Pavement Design (3)** Prerequisite: ENCE 340. Principles relative to the design, construction and rehabilitation of highway and airfield pavement systems. Introduction to multi-layered elastic and slab theories, properties of pavement materials and methods of characterization, stochastic treatment of design variables, economic principles of design alternatives and the effect of environment upon pavement performance. Review of existing rigid and flexible design methods as well as major fundamentals relative to the rehabilitation of existing pavement systems.

**ENCE 453 Computer-Aided Structural Analysis (4)** Three hours of lecture and three hours of laboratory per week. Prerequisites: ENCE 201, and ENCE 355. Computer-aided analysis of structural systems. Unified matrix formulation of stiffness and flexibility methods. Slope deflection method. Evaluation of truss, frame, and grid systems. Non-pansmatic and curved elements. Error analysis and determination of ill-conditions. Introduction to finite element methods; formulation of simple two-dimensional elements in laboratory, use and development of CAD software.

**ENCE 454 Design of Concrete Structures (3)** Prerequisites: ENCE 255, and ENCE 355. Formerly ENCE 451. Combined bending and compression, development and anchorage of reinforcement, deflections, design of slabs including one-way and two-

way, design of footings, retaining walls, introduction to prestressed concrete, design of multi-story buildings.

**ENCE 455 Design of Steel Structures (3)** Prerequisites: ENCE 255, and ENCE 355. Formerly ENCE 450. Behavior and design of members subjected to fatigue, and combined bending and compression; plate girders, composite beams, open web joists and connections. Methods of allowable stress design, and load and resistance factor design. Elements of plastic analysis and design. Framing systems and loads for industrial buildings and bridges.

**ENCE 460 Modern Techniques For Structural Analysis (3)** Two hours of lecture and one hour of laboratory per week. Prerequisite: ENCE 360. Pre- or corequisite: ENCE 351. Application of computer oriented methods and numerical techniques to analysis and design of structural systems. Matrix formulation of the stiffness and flexibility methods for framed structures. Introduction of numerical techniques to the solution of selected problems in such topics as plates, structural stability, and vibrations.

**ENCE 461 Analysis of Civil Engineering Systems I (3)** Prerequisite: permission of department. Application of the principles of engineering economy and statistics to the solution of civil engineering problems. Economic comparison of alternatives using present worth, annual cost, rate of return and cost benefit analyses. Development and use of simple and multiple regression models, and statistical decision theory.

**ENCE 462 Systems Analysis for Civil Engineers (3)** Prerequisite: ENCE 201. Systems analysis concepts including classifications, life-cycle engineering and function. Deterministic modeling and optimization with emphasis on civil engineering applications. Queuing theory analysis and simulation and systems engineering management.

**ENCE 463 Economic Analysis for Civil Engineers (3)** Prerequisite: permission of department. Development and application of engineering economic principles to engineering problems. Evaluation of design alternatives in terms of costs and benefits, tax effects and uncertainties. Introduction to micro-economic analysis.

**ENCE 464 Computer Applications in Civil Engineering (3)** Senior standing. For ENCE majors only. A broad range of computer applications in civil engineering are surveyed, with emphasis on applications and techniques suited to desk-top workstations, including workstation hardware and software components, operating systems and programming languages, structured programming concepts and the design of interactive engineering software, advanced input/output techniques, data structures, non-numeric algorithms, engineering computer graphics, general applications software, and data communications.

**ENCE 465 Geographic Information Systems for Planning and Design Models (3)** Senior standing. For ENCE majors only. Application of computer-centered techniques to develop, manage, and interpret multi-dimensional data bases required for large scale projects in transportation, water resources, and environmental engineering. Translation of digital format data from remote sensing or conventional sources to quantitative information. Required for spatially distributed simulation models. Use of instructional geographic information systems and image processing software on personal computers.

**ENCE 466 Design of Civil Engineering Systems (3)** One hour of lecture, four hours of laboratory, and one hour of discussion/recitation per week. For graduating seniors only. For ENCE majors only. A major civil engineering design experience that emphasizes development of student creativity, development and use of design methodologies, evaluation of alternate solutions, feasibility considerations, and detailed system descriptions. Realistic design constraints including economic factors, safety, aesthetics, and reliability will be imposed. Students will work in design project groups and be required to exercise oral and written communication skills.

**ENCE 470 Highway Engineering (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: ENCE 370. Location, design, construction and maintenance of roads and pavements. Introduction to traffic engineering.

**ENCE 473 Air and Water Transportation Engineering (3)** Prerequisite: ENCE 370. Detailed study of the planning, design, construction, operations and maintenance of airports and waterways, emphasis on design and operations of transportation facilities.

**ENCE 474 Railroad Mass Transportation Engineering (3)** Prerequisite: ENCE 370. Detailed study of the planning, design, construction, operations, and maintenance of railroads and mass transportation systems, emphasis on design and operations of transportation facilities.

**ENCE 489 Special Problems in Civil Engineering (1-4)** Senior standing. For ENCE majors only. A course arranged to meet the needs of exceptionally well prepared students for study in a particular field of civil engineering.

## ENCH — Engineering, Chemical

**ENCH 215 Chemical Engineering Analysis (3)** Prerequisite: CHEM 104. Pre- or corequisite: MATH 141. Introduction to methods of chemical engineering calculations and analysis. Stoichiometric relations, material and energy balances, and behavior of gases, vapors, liquids and solids. Analytical and computer methods.

**ENCH 280 Transport Processes I: Fluid Mechanics (2)** Pre- or corequisite: MATH 246. Fluid properties, fluid statics, flow concepts and basic equations, viscous effects. Applications in measurement of flow, closed conduit flow, packed bed and other chemical engineering systems.

**ENCH 300 Chemical Process Thermodynamics (3)** Prerequisites: CHEM 203, and ENCH 215, and MATH 241. Principles of thermodynamics and their application to engineering problems. First and second laws of thermodynamics, properties of gases, liquids and solids, phase equilibrium, flow and non-flow systems, energy conversion, production of work from heat, thermodynamic analysis of processes, equilibrium stage operations and the thermodynamics of chemically reacting systems.

**ENCH 333 Chemical Engineering Seminar (1)** Senior standing. Oral and written reports on recent developments in chemical engineering and the process industries.

**ENCH 425 Transport Processes II: Heat Transfer (3)** Prerequisite: MATH 246. Pre- or corequisite: ENCH 280. Steady and unsteady state conduction, convective heat transfer, radiation, design of condensers, heat exchangers, evaporators, and other types of heat transfer equipment.

**ENCH 427 Transport Processes III: Mass Transfer (3)** Prerequisite: ENCH 425. Steady and unsteady state molecular diffusion, inter-phase transfer, simultaneous heat and mass transfer, boundary layer theory, mass transfer and chemical reaction. Design applications in humidification, gas absorption, distillation, extraction, adsorption and ion exchange.

**ENCH 437 Chemical Engineering Laboratory (3)** Prerequisites: ENCH 427, and ENCH 440, and ENCH 442. Application of chemical engineering process and unit operation principles in small scale semi-commercial equipment. Data from experimental observations are used to evaluate performance and efficiency of operations. Emphasis on correct presentation of results in report form.

**ENCH 440 Chemical Engineering Kinetics (3)** Prerequisites: ENCH 300, and ENCH 425, and CHEM 481. Fundamentals of chemical reaction kinetics and their application to the design and operation of chemical reactors. Reaction rate theory, homogeneous reactions and catalysis electrochemical reactions. Catalytic reactor design.

**ENCH 442 Chemical Engineering Systems Analysis (3)** Prerequisites: ENCH 300, and ENCH 425. Dynamic response applied to process systems. Goals and modes of control, Laplace transformations, analysis and synthesis of simple control systems, closed loop response, dynamic testing.

**ENCH 444 Process Engineering Economics and Design I (3)** Prerequisites: ENCH 427, and ENCH 440, and ENCH 442. Principles of chemical engineering economics and process design. Emphasis on equipment types, equipment design principles, capital cost estimation, operating costs, and profitability.

**ENCH 446 Process Engineering Economics and Design II (3)** Prerequisite: ENCH 444. Not open to students who have completed ENCH 445. Application of chemical engineering principles for the design of chemical processing equipment. Typical problems in the design of chemical plants.

**ENCH 450 Chemical Process Development (3)** Prerequisite: ENCH 427. Chemical process industries from the standpoint of technology, raw materials, products and processing equipment. Operations of major chemical processes and industries combined with quantitative analysis of process requirements and yields.

**ENCH 452 Advanced Chemical Engineering Analysis (3)** Prerequisite: ENCH 427. Application of digital and analog computers to chemical engineering problems. Numerical methods, programming, differential equations, curve fitting, amplifiers and analog circuits.

**ENCH 453 Applied Mathematics in Chemical Engineering (3)** Prerequisite: ENCH 427. Mathematical techniques applied to the analysis and solution of chemical engineering problems. Use of differentiation, integration, differential equations, partial differential equations and integral transforms. Application of infinite series, numerical and statistical methods.

**ENCH 454 Chemical Process Analysis and Optimization (3)** Prerequisites: ENCH 427; and ENCH 440. Applications of mathematical models to the analysis and optimization of chemical processes. Models based on transport, chemical kinetics and other chemical engineering principles will be employed. Emphasis on evaluation of process alternatives.

**ENCH 468 Research (1-3)** Prerequisite: permission of both department and instructor. Repeatable to 6 credits. Investigation of a research project under the direction of a faculty member. Comprehensive reports are required.

**ENCH 482 Biochemical Engineering (3)** Prerequisite: senior standing in engineering or permission of both department and instructor. Introduction to biochemical and microbiological applications to commercial and engineering processes, including industrial fermentation, enzymology, ultrafiltration, food and pharmaceutical processing and resulting waste treatment. Enzyme kinetics, cell growth, energetics and mass transfer.

**ENCH 485 Biochemical Engineering Laboratory (2)** Pre- or corequisite: ENCH 482. Techniques of measuring pertinent parameters in fermentation reactors, quantification of production variables for primary and secondary metabolites such as enzymes and antibiotics, the insolubilization of enzymes for reactors, and the demonstration of separation techniques such as ultrafiltration and affinity chromatography.

**ENCH 490 Introduction to Polymer Science (3)** Prerequisite: ENCH 425. The elements of the chemistry, physics, processing methods, and engineering applications of polymers.

**ENCH 494 Polymer Technology Laboratory (3)** One hour of lecture and two hours of laboratory per week. Prerequisite: ENCH 490 or ENCH 492. Measurement of mechanical, electrical, optical, thermal properties of polymers, measurement of molecular weight by viscometry isometric and light scattering methods. Application of X-ray, NMR, ESR, spectroscopy molecular relaxation, microscopy and electron microscopy to the determination of polymer structure, effects of ultraviolet light and high energy radiation.

**ENCH 496 Processing of Polymer Materials (3)** Prerequisite: ENCH 490 or ENCH 492. Credit will be granted for only one of the following: ENCH 496 or ENMA 496. A comprehensive analysis of the operations carried out on polymeric materials to increase their utility. Conversion operations such as molding, extrusion, blending, film forming, and calendaring. Development of engineering skills required to practice in the high polymer industry.

## ENCO — Engineering, Cooperative Education

**ENCO 098 Co-Op Work Experience (0)** Prerequisite: successful completion of freshman and sophomore engineering requirements. Through alternate semesters of full-time work and full-time study, Co-op provides students with a year of practical work experience related to their major. Students must register for both ENCO 098

and ENCO 099 if they are working fall or spring semesters. Students must register for ENCO 096 if they are working during a summer semester.

**ENCO 099 Co-Op Work Experience (0)** Prerequisite: successful completion of freshman and sophomore engineering requirements. Through alternating semesters of full-time and full-time study, Co-op provides students with a year of practical work experience related to their major. Students must register for both ENCO 098 and ENCO 099 if they are working fall or spring semesters.

## ENEE — Engineering, Electrical

**ENEE 204 Basic Circuit Theory (3)** Three hours of lecture and one hour of discussion/recitation per week. Prerequisite: MATH 246. Basic circuit elements: resistors, capacitors, inductors, sources, mutual inductance and transformers; their I-V relationships; Kirchhoff's Laws. DC and AC steady state analysis. Phasors, node and mesh analysis, superposition, theorems of Thevenin and Norton. Transient analysis for first- and second-order circuits.

**ENEE 244 Digital Logic Design (3)** Three hours of lecture and one hour of discussion/recitation per week. Prerequisite: ENES 240. Gates, flip-flops, registers and counters. Karnaugh map simplification of gate networks. Switching algebra. Synchronous sequential systems. PLA's. Elements of binary arithmetic units.

**ENEE 300 Principles of Electrical Engineering (3)** Prerequisites: MATH 241, PHYS 263. Corequisite: ENEE 301. Required of aerospace, mechanical and chemical engineers. Not applicable in the electrical engineering major program. Acceptable as prerequisite for some advanced ENEE courses. Analysis of linear systems, introduction to Laplace transforms, steady-state A-C transforms, introduction to the concepts of electromagnetic fields and electric machines.

**ENEE 301 Electrical Engineering Laboratory (1)** Two hours of laboratory per week. Corequisite: ENEE 300. Experiments on the transient and steady-state response of linear circuits, electric machines, electron tubes and semi-conductor devices.

All lower-division CHEM, MATH, PHYS and Engineering courses that are required courses for the BS degree in Electrical Engineering must be completed before enrolling in any 300- or 400- ENEE course (except ENEE 300 and ENEE 301). Transfer students will be allowed one semester to complete all such courses after starting to take upper-level ENEE courses.

**ENEE 302 Analog Electronic Circuits (3)** Prerequisite: ENEE 204 and completion of all lower-division courses in the EE curriculum. See above note. Basic electronic elements (diodes, bipolar transistors, MOSFETs) their characteristics and principles of operation. Small signal analysis. Circuit models with controlled sources. Diode circuits. Low-frequency amplifiers and feedback. Frequency response of amplifiers. Operational amplifiers and their applications. Wave-shaping and wavform generators. Elements of power electronics.

**ENEE 304 Systems and Circuits II (3)** Pre- or Corequisite: MATH 246. Prerequisite: ENEE 204 and completion of all lower-division technical courses in the EE curriculum. See above note. Sinusoidal analysis. General mesh and node analysis. Analysis by laplace transforms, network functions, network theorems. Two-port theory, controlled sources, small signal analysis of semiconductor devices. Fourier series.

**ENEE 305 Fundamental Laboratory (2)** One hour of lecture and three hours of laboratory per week. Prerequisite: ENEE 204 and completion of all lower-division technical courses in the EE curriculum. See above note. This course is prerequisite to all ENEE 400-level laboratory courses. Concepts and techniques of physical measurements using standard electrical measuring devices: generators, oscilloscopes, voltmeters, etc. Measurements of linear and non-linear circuits; steady state and step response; integrated circuits. Handling and use of data.

**ENEE 314 Electronic Circuits (3)** Prerequisite: ENEE 304 and completion of all lower-division technical courses in the EE curriculum. See above note. Characteristics of semi-conductor devices. Diodes; biasing and stabilization of bipolar and field effect transistors; power amplifier characteristics. Feedback amplifiers, integrated operational amplifiers; transistor switches, gates, and

integrated logic circuits; bistable multivibrators and applications in counters, registers and selected digital networks.

**ENEE 322 Signal and System Theory (3)** Prerequisites: ENEE 204 and MATH 246 and completion of all lower-division technical courses in the curriculum. See above note. Concept of linear systems, state space equations for continuous and discrete systems, time domain analysis of linear systems. Fourier, Laplace and Z transforms. Application of theory to problems in electrical engineering.

**ENEE 324 Engineering Probability (3)** Prerequisite: ENEE 322 and completion of all lower-division technical courses in the EE curriculum. See above note. Axioms of probability; conditional probability and Bayes' rules; random variables; probability distribution and densities; functions of random variables; weak law of large numbers and central limit theorem. Introduction to random processes; correlation functions, spectral densities; and linear systems. Applications to noise in electrical systems, filtering of signals from noise, estimation, and digital communications.

**ENEE 350 Computer Organization (3)** Prerequisite: ENEE 244 and completion of all lower-division technical courses in the EE curriculum. See above note. Not open to students who have completed ENEE 250. Formerly ENEE 250. Structure and organization of digital computers. Registers, memory, control and I/O. Data and instruction formats, addressing modes, assembly language programming. Elements of system software, subroutines and their linkages.

**ENEE 380 Electromagnetic Theory (3)** Prerequisites: MATH 241 and PHYS 263 and completion of all lower-division technical courses in the EE curriculum. See above note. Introduction to electromagnetic fields; and Coulomb's law, Gauss's law, electrical potential, dielectric materials capacitance, boundary value problems, Biot-Savart law, Ampere's law, Lorentz force equation, magnetic materials, magnetic circuits, inductance, time varying fields and Maxwell's equations.

**ENEE 381 Electromagnetic Wave Propagation (3)** Prerequisite: ENEE 380 and completion of all lower-division technical courses in the EE curriculum. See above note. Review of Maxwell's equations; the wave equation, potentials, Poynting's theorem. Transmission, lossy medium, skin effect. Parallel-plate and rectangular wave guides. Radiation, retarded potentials, radiation from dipole.

**ENEE 407 Microwave-circuits Laboratory (2)** One hour of lecture and three hours of laboratory per week. Prerequisites: ENEE 305 and 381 and completion of all lower-division technical courses in the EE curriculum. See above note. Experiments concerned with circuits constructed from microwave components providing practical experience in the design, construction and testing of such circuits. Projects include microwave filters and S-parameter design with applications of current technology.

**ENEE 412 Advanced Electronics (3)** Prerequisite: ENEE 314 and completion of all lower-division technical courses in the EE curriculum. See above note. Design and analysis of tuned circuits, oscillators, VCO's phase-locked loops, multipliers, modulators and A/D converters and their application in telemetry, communication and instrumentation.

**ENEE 413 Electronics Laboratory (2)** One hour of lecture and three hours of laboratory per week. Prerequisite: ENEE 305 and ENEE 314 and completion of all lower-division technical courses in the EE curriculum. See above note. The specification, design and testing of basic electronic circuits and practical interconnections. Emphasis on design with discrete solid state and integrated circuit components for both analog and digital circuits.

**ENEE 418 Projects in Electrical Engineering (1-3)** Hours to be arranged. Prerequisites: permission of instructor and department and completion of all lower-division technical courses in the EE curriculum. See above note. Theoretical and experimental projects.

**ENEE 420 Communication Systems (3)** Prerequisite: ENEE 324 and completion of all lower-division technical courses in the EE curriculum. See above note. Fourier series, Fourier transforms and linear system analysis; random signals, autocorrelation functions and power

spectral densities, analog communication systems amplitude modulation, single-sideband modulation, frequency and phase modulation, sampling theorem and pulse-amplitude modulation, digital communication systems pulse-code modulation, phase-shift keying, differential phase shift keying, frequency shift keying, performance of analog and digital communication systems in the presence of noise.

**ENEE 421 Information Theory and Coding (3)** Prerequisite: ENEE 324 and completion of all lower-division technical courses in the EE curriculum. See above note. Definition of information and entropy. Memoryless and Markov sources, source coding, Kraft and MacMillan inequalities, Shannon's first theorem; Huffman Codes; Channels, Mutual Information, and Capacity; Shannon's Noisy Channel Coding Theorem; Error Correcting Codes.

**ENEE 425 Digital Signal Processing (3)** Prerequisite: ENEE 322 and completion of all lower-division technical courses in the EE curriculum. See above note. Sampling as a modulation process, aliasing, the sampling theorem, the Z transform and discrete-time system analysis; direct and computer-aided design of recursive and nonrecursive digital filters; the Discrete Fourier Transform (DFT) and Fast Fourier Transform (FFT), digital filtering using the FFT, analog-to-digital and digital-to-analog conversion; effects of quantization and finite-word-length arithmetic.

**ENEE 426 Communication Networks (3)** Prerequisite: permission of department and completion of all lower-division technical courses in the EE curriculum. See above note. The main design issues associated with ordinary, single-user, point-to-point communication systems and their juxtaposition to those involved in multi-user systems such as computer networks, satellite systems, radio nets, and general communication networks. Application of analytical tools of queueing theory to design problems in such networks. Review of proposed architectures and protocols.

**ENEE 434 Introduction to Neural Networks and Signals (3)** Prerequisite: ENEE 204 or ENEE 300 and completion of all lower-division technical courses in the EE curriculum. See above note. Introduction in the generation and processing of bioelectric signals including structure and function of the neuron, membrane theory, generation and propagation of nerve impulses, synaptic mechanisms, transduction and neural coding of sensory events, central nervous system processing of sensory information and correlated electrical signals, control of effector organs, muscle contraction and mechanics, and models of neurons and neural networks.

**ENEE 435 Electrodes and Electrical Processes in Biology and Medicine (3)** Prerequisite: ENEE 204 or ENEE 300 and completion of all lower-division technical courses in the EE curriculum. See above note. Techniques for recording biological signals such as brain, muscle and cardiac electrical potentials, membrane theory; half-cell potentials, liquid junction potentials, polarization of electrodes; biological and medical instrumentation, and applications in the design of cardiac pacemakers, or a similar case study.

**ENEE 436 Topics in Biomedical Engineering (1-3)** Prerequisite: permission of department and completion of all lower-division technical courses in the EE curriculum. See above note. Repeatable to 9 credits. The content may vary from semester to semester. Selected topics of current interest from such areas as bioelectric systems, modeling instrumentation, automated diagnostic, healthcare delivery, etc.

**ENEE 440 Microprocessors (3)** Prerequisite: ENEE 250 and completion of all lower-division technical courses in the EE curriculum. See above note. Microprocessor architectures, instruction sets, and applications. Bus structures, memory, I/O interfacing Programming, and the embedding of microprocessors in other systems.

**ENEE 442 Software Engineering (3)** Prerequisites: ENES 240, ENEE 250 or equivalent and completion of all lower-division technical courses in the EE curriculum. See above note. Architectural aspects of software engineering. Machine language and machine structure, assembly language and assemblers; macro-language and macro-processors; loaders and linkers; programming languages and language structure; compilers and interpreters; operating systems.

**ENEE 444 Logic Design of Digital Systems (3)** Prerequisite: ENEE 250 and completion of all lower-

division technical courses in the EE curriculum. See above note. Not open to students who have completed ENEE 244. Review of switching algebra, gates and logic modules. Map simplification techniques; multiple-output systems; memory elements and sequential systems, large switching systems, iterative networks; sample designs, computer oriented simplification algorithms; state assignment, partition techniques, sequential system decompositions.

**ENEE 445 Computer Laboratory (2)** One hour of lecture and three hours of laboratory per week. Prerequisite: ENEE 305 and ENEE 440 or ENEE 444 and completion of all lower-division technical courses in the EE curriculum. See above note. Hardware oriented experiments providing practical experience in the design, construction, and checkout of components and interfaces for digital computers and data transmission systems. Projects include classical design techniques and applications of current technology.

**ENEE 446 Digital Computer Design (3)** Prerequisite: ENEE 250 and completion of all lower-division technical courses in the EE curriculum. See above note. Hardware design of digital computers. Arithmetic and logic units, adders, multipliers and dividers. Floating-point arithmetic units. Bus and register structures. Control units, both hardware and microprogrammed. Index registers, stacks, and other addressing schemes. Interrupts, DMA and interfacing.

**ENEE 450 Discrete Structures (3)** Prerequisite: ENEE 350 and completion of all lower-division technical courses in the EE curriculum. See above note. Modern algebra with applications to computer and communications hardware. Relations, mappings, groups, rings and fields. Boolean algebras and lattice theory. Applications to digital logic design, computer arithmetic and error-correcting codes.

**ENEE 460 Control Systems (3)** Prerequisite: ENEE 322 and completion of all lower-division technical courses in the EE curriculum. See above note. Mathematical models for control system components. Transform and time domain methods for linear control systems. Introductory stability theory. Root locus, Bode diagrams and Nyquist plots. Design specifications in the time and frequency domains. Compensation design in the time and frequency domain. Introduction to sampled data systems. Introduction to computer aided design of control systems.

**ENEE 461 Control Systems Laboratory (2)** One hour of lecture and three hours of laboratory per week. Prerequisites: ENEE 305 and ENEE 460 and completion of all lower-division technical courses in the EE curriculum. See above note. Projects to enhance the student's understanding of feedback control systems and to familiarize him with the characteristics and limitations of real control devices. Students will design, build, and test servomechanisms, and will conduct analog and hybrid computer simulations of control systems.

**ENEE 462 Systems, Control and Computation (3)** Prerequisite: ENEE 322 and completion of all lower-division technical courses in the EE curriculum. See above note. Matrix algebra, state space analysis of discrete systems, state space analysis of continuous systems, computer algorithms for circuit analysis, optimization and system simulation.

**ENEE 472 Electric Power System Components (3)** Prerequisite: ENEE 322, and ENEE 380, and completion of all lower-division technical courses in the EE curriculum. See above note. Linear and nonlinear magnetic circuits, hysteresis and eddy current losses, transformers, induction motors, synchronous generators.

**ENEE 473 Electrical Machines Laboratory (2)** One hour of lecture and three hours of laboratory per week. Prerequisite: ENEE 305 and completion of all lower-division technical courses in the EE curriculum. See above note. Experiments involving single and three phase transformers, induction machines, synchronous machines and D.C. machines.

**ENEE 474 Power Systems (3)** Prerequisite: ENEE 322 and completion of all lower-division technical in the EE curriculum. See above note. Interconnected power systems, transmission lines, load flow studies, unit commitment and economic dispatch. Three phase networks, machine models. Symmetrical components, fault analysis and unbalanced operation. Power system

transients, stability and numerical methods in power system analysis.

**ENEE 475 Power Electronics (3)** Prerequisite: ENEE 302 and completion of all lower-division technical courses in the EE curriculum. See above note. Analytical methods: canonical circuit topologies, fundamentals of power semiconductor, snubbing circuits, drive circuits, fundamentals of control methods.

**ENEE 476 Power System Stability (3)** Prerequisite: ENEE 322 and completion of all lower-division technical courses in the EE curriculum. See above note. Power system modeling, the swing equation, Lyapunov stability analysis. Construction of Lyapunov, or energy, function. The equal-area criterion. Critical clearing time. Potential energy boundary surface method. Emergency control. Recent developments.

**ENEE 480 Fundamentals of Solid State Electronics (3)** Prerequisite: ENEE 381 and completion of all lower-division technical courses in the EE curriculum. See above note. Review of Maxwell's equation, electromagnetic properties of dielectrics, introduction to quantum mechanics and quantum statistics, classical and quantum theory of metals; theory of semiconductors and semiconductor devices; principle of magnetic devices and selected topics.

**ENEE 481 Antennas (3)** Prerequisite: ENEE 381 and completion of all lower-division technical courses in the EE curriculum. See above note. Introduction to the concepts of radiation, generalized far field formulas, antenna theorems and fundamentals, antenna arrays; linear and planar arrays, aperture antennas; terminal impedance, propagation.

**ENEE 482 Design of Active and Passive Microwave Devices (3)** Prerequisite: ENEE 381 and completion of all lower-division technical courses in the EE curriculum. See above note. Design and operation of passive and active microwave devices. The passive components include waveguides, resonators, and antennas. The active devices include klystrons, magnetrons, gyrotrons, and free electron lasers.

**ENEE 483 Electromagnetic Measurements Laboratory (2)** One hour of lecture and three hours of laboratory per week. Prerequisites: ENEE 305 and ENEE 380 and completion of all lower-division technical courses in the EE curriculum. See above note. Experiments designed to provide familiarity with a large class of micro-wave and optical components, techniques for interconnecting them into useful systems, and techniques of high frequency and optical measurements.

**ENEE 488 Topics in Electrical Engineering (3)** Prerequisite: permission of department and completion of all lower-division technical courses in the EE curriculum. See above note. Selected topics of current importance in electrical engineering.

**ENEE 494 Solid State Devices (3)** Prerequisite: ENEE 302 and completion of all lower-division technical courses in the EE curriculum. See above note. Introduction to semiconductor materials; p-n junctions; metal-semiconductor contacts, bipolar transistors, insulated gate field effect transistors, and related selected topics.

**ENEE 495 Integrated Circuit Technology (3)** Prerequisite: ENEE 494 and completion of all lower-division technical courses in the EE curriculum. See above note. Introduction to the fabrication technologies for integrated circuits including oxidation, diffusion, and photolithography, concepts of bipolar and MOS device design; layout of simple digital ICs.

**ENEE 496 Lasers and Electro-optic Devices (3)** Prerequisite: ENEE 381. Completion of all lower-division technical courses in the EE curriculum. See above note. Optical resonators, lasing, period. Theory of laser oscillation, rate equations. Gaseous, solid state, semiconductor and dye laser systems. Electro-optic effects and parametric oscillators. Holography.

## ENES — Engineering Science

**ENES 101 Introductory Engineering Science (3)** Two hours of lecture and two hours of discussion/recitation per week. For engineering majors only. Basic languages of the engineer. Elements of graphic communication and analysis. Orthographic projection, conventions, graphs and curve-fitting. Introduction to structured computer programming. Engineering orientation.

**ENES 110 Statics (3)** Corequisite: MATH 141. The equilibrium of stationary bodies under the influence of various kinds of forces. Forces, moments, couples, equilibrium, trusses, frames and machines, centroids, moment of inertia, beams, and friction. Vector and scalar methods are used to solve problems.

**ENES 120 Noise Pollution (3)** An introduction to the sources and the effects of noise pollution in the modern environment. Physical properties of sound and methods of measurement. Noise abatement methods. Public policy approaches to the control of environmental noise.

**ENES 121 The World of Engineering (3)** Introduction to engineering and its influence on the way we live. Study of the conception, design, and operation of engineering systems from the past to the present and a look into the future.

**ENES 131 Introduction to Flight (3)** An elementary course in aeronautics appropriate for both science and non-science students. The elements of flight as exemplified by the flight of birds and the historical development of the airplane. Navigation and control of the aircraft, weather as it affects aviation, flight instruments, and the operation of the U.S. Civil Aviation System.

**ENES 220 Mechanics of Materials (3)** Prerequisites: MATH 141; and PHYS 161; and ENES 110. Distortion of engineering materials in relation to changes in stress or temperature. Geometry of internal strain and external displacement. Application to beams, columns, shafts, tanks, and other structural, machine and vehicle members.

**ENES 221 Dynamics (3)** Two hours of lecture and two hours of laboratory per week. Prerequisites: ENES 110; and MATH 141; and PHYS 161. Systems of heavy particles and rigid bodies at rest and in motion. Force-acceleration, work-energy and impulse-momentum relationships. Motion of one body relative to another in a plane and in space.

**ENES 230 Introduction to Materials and their Applications (3)** Prerequisite: ENES 110. Structure of materials, chemical composition, phase transformations, corrosion and mechanical properties of metals, ceramics, polymers and related materials. Material selection in engineering applications.

**ENES 240 Engineering Computation (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: MATH 141. Introduction to the design and implementation of algorithms to solve engineering problems using digital computers. Analysis of problems fundamental to engineering design, construction and diagrammatic description of effective procedures for solving them and implementing and testing of these solutions in a common high-level engineering oriented language such as FORTRAN. Techniques for data input and storage, selection of relevant numerical and non-numerical methods for problem solutions, and the efficient ordering of data for meaningful output presentation.

**ENES 388 Engineering Honors Seminar (1)**

**ENES 389 Selected Topics (3)** Repeatable to 6 credits if content differs.

**ENES 405 Power and the Environment (3)** Intended for seniors not majoring in engineering. Not applicable as a technical elective for engineering majors. An introduction to the power needs of society. The interrelationship between man's use of energy and the effect on the eco-system. Introduction to the techniques of power production with special emphasis on nuclear-fueled power plants.

## ENFP — Engineering, Fire Protection

**ENFP 251 Introduction to Fire Protection Engineering (3)** The social, economic, environmental and legal dimensions of the fire problem. The theoretical and engineering principles of basic fire phenomena. Technological assessment of urban fire protection utilizing operations research and systems engineering procedures.

**ENFP 290 Fire Protection Fluids (3)** Fluid flow principles for fire protection systems. Hydrostatic and hydrodynamic problems associated with water supply systems. Calculation methods, techniques and procedures for hydraulically designed distribution networks to meet

prescribed conditions of adequacy and reliability of the total system.

**ENFP 310 Fire Protection Systems Design I (3)** Prerequisite: ENFP 290. Study of aqueous suppression system agents and their application to selected fire protection problems. Examination of specifications, code criteria, published criteria and research utilized in the engineering design of aqueous agent suppression systems. Application of hydraulic theory to a range of design considerations. Problem calculations based upon student prepared design layouts.

**ENFP 312 Heat Transfer Applications in Fire Protection (3)** Prerequisites: CMSC 110; and ENES 240; or ENME 320; or ENME 217. The principles of heat transfer. Application of the governing equations for conduction, convection and radiation heat transfer to fire protection problems. Analysis of the concepts of combustion with the chemical and physical components. Discussion and study of ignition, propagation and explosion phenomena.

**ENFP 315 Fire Protection Systems Design II (3)** Prerequisites: ENFP 290; and ENFP 310. Study of gaseous and particulate fire suppression systems. Examination and evaluation of code criteria, performance specifications and research. Application of fluid theory to the design process and the calculation procedures for gaseous particulate fire suppression systems. An integrated fire protection systems design project. Functional analysis and design of detection systems.

**ENFP 320 Pyrometrics of Materials (3)** Analysis and study of characteristics of materials, and material assemblies related to flame spread, fuel contribution, combustibility and smoke development. Analysis of fuel geometry and configuration to fire severity. Procedures of laboratory analysis, determination and modeling.

**ENFP 398 Honors Research Project (1-3)**

**ENFP 411 Fire Protection Hazard Analysis (3)** Prerequisites: ENFP 251; and ENFP 315. Appraisal and measurement of fire safety. Application of systems analysis, probability theory, engineering economy, and risk management in the identification and synthesis of components of fire protection engineering. Methods for the development of criteria for the design, evaluation and assessment of fire safety or component hazards.

**ENFP 415 Fire Dynamics (3)** Prerequisites: ENCH 300 or ENCE 330 or ENME 342; and ENFP 312 or permission of department. Introduction to premixed and diffusion flames; ignition, flame spread and rate of burning, fire plumes; flame radiation.

**ENFP 416 Problem Synthesis and Design (3)** Senior standing. Techniques and procedures of problem orientation and solution design utilizing logical and numerical procedures. Student development of research projects in selected areas.

**ENFP 421 Functional and Life Safety Analysis (3)** Prerequisites: ENFP 320; and ENFP 315. The function and life safety components of buildings. Analytical concepts and research related to modular loss analysis. The physical and psychological variables of fire casualties using techniques of system analysis. Current research related to egress and smoke movement. Performance criteria of building and fire prevention codes.

**ENFP 489 Special Topics (3)** Prerequisite: permission of department. Repeatable to 6 credits. Selected topics of current importance to fire protection.

## ENGL — English

**ENGL 101 Introduction to Writing (3)** An introductory course in expository writing.

**ENGL 102 Literature and Composition (3)** Open to students who have passed or are exempted from ENGL 101. Further practice in writing, along with readings in the short story, novel, poetry, and drama.

**ENGL 201 World Literature (3)** Homer to the Renaissance, foreign classics being read in translation.

**ENGL 202 World Literature (3)** Shakespeare to the present, foreign classics being read in translation.

**ENGL 205 Introduction to Shakespeare (3)** Recommended for non-majors. Reading of selected representative plays including the major tragedies.

**ENGL 211 English Literature From the Beginnings to 1800 (3)**

**ENGL 212 English Literature From 1800 to the Present (3)**

**ENGL 221 American Literature: Beginning to 1865 (3)**

**ENGL 222 American Literature: 1865 to Present (3)**

**ENGL 234 Introduction to Afro-American Literature (3)** A survey of Black American literature from the late eighteenth century to the present.

**ENGL 240 Introduction to Literary Forms: Fiction, Poetry, Drama (3)** Not open to students who have completed ENGL 102. Readings in the novel, short story, poetry and drama.

**ENGL 241 Introduction to the Novel (3)**

**ENGL 242 Fact and Fiction: Forms of Non-Fictional Prose (3)** Contemporary and historical works in some of the major genres of non-fiction: biography, ecology, science writing, editorial, cultural commentary. The purposes of non-fiction (information, persuasion, analysis, and commentary), the research and writing methods of non-fiction writers; and the impact and value of non-fiction works in society.

**ENGL 243 Introduction to Poetry (3)**

**ENGL 244 Introduction to Drama (3)** A survey of the basic literature of drama from the classical Greeks to modern times.

**ENGL 245 Introduction to Film As Literature (3)** Primary attention is on the film as a narrative medium, but other literary models will be examined.

**ENGL 246 The Short Story (3)**

**ENGL 247 Literature of Fantasy (3)** Reading and analysis of various works of non-realistic literature broadly termed "fantasy".

**ENGL 250 Women in Literature (3)** Images of women in literature by and about women.

**ENGL 260 Introduction to Folklore (3)** Not open to students who have completed ENGL 360. History, theory, and genres of folklore.

**ENGL 278 Special Topics in Literature (3)** Repeatable to 9 credits if content differs.

**ENGL 281 Standard English Grammar, Usage, and Diction (3)** The basic structure of written English, including parts of speech, sentence patterns, standard punctuation, diction, and usage.

**ENGL 291 Intermediate Writing (3)** Writing essays, the revision process, and editing techniques.

**ENGL 294 Introduction to Creative Writing (3)** Sophomore standing.

**ENGL 296 Beginning Fiction Workshop (3)** Introduction to different aspects of the craft of fiction, such as narration, description, and dramatic development. Models taken from the entire range of the genre. Selected readings.

**ENGL 297 Beginning Poetry Workshop (3)** Introduction to different aspects of the craft of poetry, such as image, metaphor, rhythm, tone, and form. Models taken from the range of genre. Selected readings.

**ENGL 300 and 400 level course prerequisites: any two freshman or sophomore English courses.**

**ENGL 301 Critical Methods in the Study of Literature (3)** An introduction to the techniques of literary analysis and a brief survey of the most common approaches to literature.

**ENGL 302 English Medieval Literature in Translation (3)**

**ENGL 304 The Major Works of Shakespeare (3)** Not open to students who have completed ENGL 403 and ENGL 404.

**ENGL 305 Shakespeare and His Contemporaries: An Introduction (3)** An introduction to the plays of Shakespeare and those of several of his contemporaries in the context of the development of the drama in England and of the pertinent Elizabethan theatrical, social, intellectual, and political circumstances.

**ENGL 310 Medieval and Renaissance British Literature (3)** For English and English education majors only. Not open to students who have completed ENGL 211 or ENGL 212. A perspective on the cultural attitudes and values that separate the Middle Ages from the Renaissance, highlighting the changing role and purpose of the writer. Major works and authors include Beowulf, Chaucer, Spenser, and Sidney.

**ENGL 311 Baroque and Augustan British Literature (3)** For English and English education majors only. An intensive study of major works of seventeenth and eighteenth century English literature exploring the variety of artistic ideas and techniques of the period.

**ENGL 312 Romantic to Modern British Literature (3)** For English and English education majors only. An intensive study of major works of nineteenth and twentieth century English literature.

**ENGL 313 American Literature (3)** For English and English education majors only. Not open to students who have completed ENGL 221 or ENGL 222. A detailed study of selected major texts of American literature from the 17th to the 20th century, including women's literature, black literature, and literature from various regions of the country.

**ENGL 320 English Romantic Literature (3)** Prerequisite: two college-level literature courses. Credit will be granted for only one of the following: ENGL 320 and ENGL 420 or ENGL 320 and ENGL 421. Survey of fiction, poetry, and criticism. Emphasis on shifts in thinking from rationalism of the Enlightenment to the romanticism of the nineteenth century.

**ENGL 345 Twentieth Century Poetry (3)** Not open to students who have completed ENGL 445 or ENGL 446. A one-semester survey course in British and American poetry from Yeats and Robinson to the present. Special emphasis on Yeats, Pound, Eliot, Williams, Roethke, and Lowell.

**ENGL 348 Literary Works By Women (3)** Repeatable to 6 credits if content differs. The context, form, style and meaning of literary works by women.

**ENGL 361 Medieval Literary Modes and Modern Narrative (3)** Literary patterns characteristic of medieval myth, epic, and romance; their continuing vitality in modern works; and links between Medieval works like "The Prose Edda," "Beowulf," "The Morte D'Arthur," "The Volsunga Saga," and "Grettis Saga" and modern narratives like Tolkien's "The Lord of the Rings."

**ENGL 369 Honors Seminar: Major Traditions (4-5)** Prerequisite: permission of department. Intensive study of major English and American literary classics in their generic context of narrative and lyric poetry, drama, prose, fiction and non-fiction from the beginnings to the present.

**ENGL 370 Junior Honors Conference (1)** Prerequisite: candidacy for honors in English. Preparation for writing the senior honors project.

**ENGL 371 Senior Honors Conference (1)** Prerequisite: candidacy for honors in English. Presentation and discussion of senior honors projects.

**ENGL 373 Honors Thesis (3)** Prerequisite: candidacy for honors in English. Research and writing of senior honors project. Strongly recommended for students planning graduate work.

**ENGL 378 Independent Research in English (1-6)** Prerequisite: permission of department. Repeatable to 6 credits. Designed to provide qualified majors in English an opportunity to pursue specific English readings under the supervision of a member of the department.

**ENGL 379 Special Topics in Literature (3)** English majors may not count credits earned in this course toward the total required for the major. Repeatable to 9 credits if content differs.

**ENGL 380 Internship (3-6)** Pre- or corequisite: ENGL 381 or ENGL 382, and permission of department. The English Department's internship program. Professional experience in writing and editing in a variety of fields.

**ENGL 381 MGA Legislative Seminar (3)** Prerequisite: permission of department. Classroom analysis component of the Maryland General Assembly internship program.

**ENGL 384 Concepts of Grammar (3)** Introduction to the basic units of grammatical description; motivation for and nature of constituent structure and syntactic categories; fundamental grammatical concepts employed in the teaching and learning of languages.

**ENGL 385 English Semantics (3)** An introductory study of meaning in language and paralinguage. General semantics, kinesics, linguistic relativity and recent developments in linguistic semantics.

**ENGL 391 Advanced Composition (3)** Prerequisite: 56 hours of college credit which must include ENGL 101 or equivalent. An advanced composition course which emphasizes constructing written arguments accommodated to real audiences.

**ENGL 392 Advanced Composition: Pre-Law (3)** Prerequisite: 56 hours of college credit which must include ENGL 101 or equivalent. Techniques of argumentation and persuasion. Intensive practice to help writers achieve stylistic flexibility and correctness.

**ENGL 393 Technical Writing (3)** Prerequisite: 56 hours of college credit which must include ENGL 101 or equivalent. The writing of technical papers and reports.

**ENGL 394 Business Writing (3)** Prerequisite: 56 hours of college credit which must include ENGL 101 or equivalent. Intensive practice in the forms of written communication common in the business world—letters, memos, short reports, and proposals. Principles of rhetoric and effective style.

**ENGL 395 Technical Writing: Pre-Medical (3)** Prerequisite: 56 hours of college credit which must include ENGL 101 or equivalent. Focus on accommodating technical material and empirical studies to lay audiences, and helping writers to achieve stylistic flexibility and correctness.

**ENGL 396 Intermediate Fiction Workshop (3)** Prerequisite: permission of department. Instruction in and development of basic fiction-writing skills. The process of revision, and the writing of longer projects such as stories, novellas, and novels. Voice, style and subject. Intensive reading and discussion of modern and contemporary fiction.

**ENGL 397 Intermediate Poetry Workshop (3)** Prerequisite: permission of department. Instruction in and development of basic writing skills. The process of revision, Voice, style, and subject. Intensive reading and discussion of modern and contemporary poetry within the context of the tradition.

**ENGL 399 Senior Seminar (3)** Limited to graduating English majors, to be taken in the last year and preferably the last semester of the undergraduate program, normally following completion of the core courses. Topics will vary each semester; most will be interdisciplinary or will cross historical periods. The course will provide a seminar experience in material or methodologies not otherwise available to the major.

**ENGL 402 Chaucer (3)**

**ENGL 403 Shakespeare (3)** Early period — histories and comedies.

**ENGL 404 Shakespeare (3)** Late period — tragedies and romances.

**ENGL 407 Literature of the Renaissance (3)**

**ENGL 410 Edmund Spenser (3)**

**ENGL 412 Literature of the Seventeenth Century, 1600-1660 (3)**

**ENGL 414 Milton (3)**

**ENGL 415 Literature of the Seventeenth Century, 1660-1700 (3)**

**ENGL 416 Literature of the Eighteenth Century (3)** Age of Pope and Swift

**ENGL 417 Literature of the Eighteenth Century (3)** Age of Johnson and the Preromantics

**ENGL 418 Major British Writers (3)** Repeatable to 9 credits if content differs. Two writers studied intensively each semester.

**ENGL 419 Major British Writers (3)** Repeatable to 9 credits if content differs. Two writers studied intensively each semester.

**ENGL 420 Literature of the Romantic Period I (3)** Credit will be granted for only one of the following: either ENGL 320 or ENGL 420; or ENGL 320 or ENGL 421. First generation: Blake, Wordsworth, Coleridge, et al.

**ENGL 421 Literature of the Romantic Period (3)** Credit will be granted for only one of the following: either ENGL 320 or ENGL 420; or ENGL 320 or ENGL 421. Second generation: Keats, Shelley, Byron, et al.

**ENGL 422 Literature of the Victorian Period (3)** Early years.

**ENGL 423 Literature of the Victorian Period (3)** Middle years.

**ENGL 424 Late Victorian and Edwardian Literature (3)** A study of the literary movements and techniques which effected the transition from Victorian to modern literature.

**ENGL 425 Modern British Literature (3)** An historical survey of the major writers and literary movements in English prose and poetry since 1900.

**ENGL 430 American Literature, Beginning to 1810, the Colonial and Federal Periods (3)**

**ENGL 431 American Literature, 1810 to 1865, the American Renaissance (3)**

**ENGL 432 American Literature, 1865 to 1914, Realism and Naturalism (3)** Prerequisite: two literature courses.

**ENGL 433 American Literature, 1914 to the Present, the Modern Period (3)**

**ENGL 434 American Drama (3)**

**ENGL 435 American Poetry: Beginning to the Present (3)**

**ENGL 437 Contemporary American Literature (3)** A survey of the poetry, prose, and drama written in America in the last decade.

**ENGL 438 Major American Writers Before 1865 (3)** Repeatable to 9 credits if content differs. Two writers studied intensively each semester.

**ENGL 439 Major American Writers After 1865 (3)** Repeatable to 9 credits if content differs. Two writers studied intensively each semester.

**ENGL 440 The Novel in America to 1810 (3)**

**ENGL 441 The Novel in America Since 1910 (3)**

**ENGL 442 Literature of the South (3)** A historical survey, from eighteenth-century beginnings to the present.

**ENGL 443 Afro-American Literature (3)** An examination of the literary expression of the black American in the United States, from its beginning to the present.

**ENGL 445 Modern British and American Poetry (3)** Prerequisite: permission of department required for students with credit in ENGL 345. A study of the formation of the "Modern Tradition" in British and American poetry, exploring the distinctive energy and consciousness in the poets of the early twentieth century (1896-1930). Special emphasis on Hopkins, Yeats, Pound, Eliot, and Stevens. Collateral readings in essays on modern poetics, and in other poets of the period.

**ENGL 446 Contemporary British and American Poetry (3)** Prerequisite: permission of department required for students with credit in ENGL 345. A study of British and American poetry from the Depression to the present. Special emphasis on Auden, Williams, Dylan Thomas, Theodore Roethke, Robert Lowell. A more general study of the work of some of these: Berryman, Jarrell, Fuller, Bishop, Wright, Kinnell, Larkin and including the projectivists, the beats and the present scene.

**ENGL 447 Satire (3)** An introduction to English and American satire from Chaucer to the present.

**ENGL 449 Playwriting (3)**

**ENGL 450 Elizabethan and Jacobean Drama (3)** Beginnings to Marlowe.

**ENGL 451 Elizabethan and Jacobean Drama (3)** Jonson to Webster.

**ENGL 452 English Drama From 1660 to 1800 (3)**

**ENGL 453 Literary Criticism (3)**

**ENGL 454 Modern Drama (3)**

**ENGL 455 The English Novel (3)** Eighteenth century.

**ENGL 456 The English Novel (3)** Nineteenth century.

**ENGL 457 The Modern Novel (3)**

**ENGL 461 Folk Narrative (3)** Studies in legend, tale and myth.

**ENGL 462 Folksong and Ballad (3)**

**ENGL 463 American Folklore (3)** An examination of American folklore in terms of history and regional folk cultures. Exploration of collections of folklore from various areas to reveal the difference in regional and ethnic groups as witnessed in their oral and literary traditions.

**ENGL 464 Afro-American Folklore and Culture (3)** An examination of the culture of the black American in the United States in terms of history (antebellum to the present) and social changes (rural to urban). Exploration of aspects of black culture and history via oral and literary traditions and life histories.

**ENGL 466 Arthurian Legend (3)** Development of the Arthurian legend of heroism and love in English literature from medieval to modern times.

**ENGL 476 Modern Fantasy and Science Fiction (3)** Major works of fantasy and science fiction since the mid-eighteenth century, emphasizing their continuity and their relationships to philosophical speculation, scientific discovery, literary history and cultural change.

**ENGL 477 Studies in Mythmaking (3)** Major themes, figures, and configurations of northern European mythology, examining the value of the mythic mode of thought in a scientific era.

**ENGL 478 Selected Topics in English and American Literature Before 1800 (1-3)** Repeatable if content differs.

**ENGL 479 Selected Topics in English and American Literature After 1800 (3)** Repeatable if content differs.

**ENGL 482 History of the English Language (3)**

**ENGL 483 American English (3)**

**ENGL 484 Advanced English Grammar (3)** Credit will be granted for only one of the following: ENGL 484 or LING 402.

**ENGL 486 Introduction to Old English (3)** An introduction to the grammar, syntax, and phonology of Old English. Selected readings from Old English prose and poetry.

**ENGL 489 Special Topics in English Language (3)** Repeatable to 9 credits if content differs. Studies in topics of current interest.

**ENGL 493 Advanced Expository Writing (3)**

**ENGL 494 Editing and Document Design (3)** Prerequisite: ENGL 391, ENGL 393 or equivalent. For ENGL majors only. Principles of general editing for

clarity, precision and correctness. Applications of the conventions of grammar, spelling, punctuation and usage, and organization for logic and accuracy. Working knowledge of the professional vocabulary of editing applied throughout the course.

**ENGL 498 Advanced Fiction Workshop (3)** Prerequisite: permission of department. Repeatable to 9 credits. Formerly ENGL 496. Student criticism of student stories or chapters of novels-in-progress. Craft, execution, and technique. Intensive reading of anthologies and individual works in modern and contemporary fiction. Theoretical and critical works that help to define and analyze the context of the tradition.

**ENGL 499 Advanced Poetry Writing Workshop (3)** Prerequisite: permission of department. Repeatable to 9 credits. Formerly ENGL 497. Student criticism of student work within the context of craft, technique, and execution. Relationship to Anglo-American and International Post-Modernist poetry.

## ENMA — Engineering, Materials

**ENMA 300 Materials Science and Engineering (3)** Prerequisite: ENES 220. Credit will be granted for only one of the following: ENMA 300 or ENME 300. Basic principles, nature and properties of engineering materials. Processes and methods to manufacture and usefully apply engineering materials. Fabrication techniques for metals, polymers, and refractories.

**ENMA 301 Materials Engineering Laboratory (1)** Two hours of laboratory per week. Pre- or corequisite: ENMA 300. Credit will be granted for only one of the following: ENMA 301 or ENME 301. Fatigue, tensile and impact testing, heat treatment and hardenability, structure and properties of steels, case studies.

**ENMA 462 Deformation of Engineering Materials (3)** Prerequisite: ENES 230 or permission of both department and instructor. Relationship of structure to the mechanical properties of materials. Elastic and plastic deformation, microscopic yield criteria, state of stress and ductility. Elements of dislocation theory, work hardening, alloy strengthening, creep, and fracture in terms of dislocation theory.

**ENMA 463 Chemical, Liquid and Powder Processing of Engineering Materials (3)** Prerequisite: ENES 230 or permission of both department and instructor. Methods and processes used in the production of primary materials. The detailed basic principles of beneficiation processes, pyrometallurgy, hydrometallurgy, electrometallurgy, vapor phase processing and electroplating. Liquid metal processing including casting, welding, brazing and soldering. Powder processing and sintering. Shapes and structures produced in the above processes.

**ENMA 464 Environmental Effects on Engineering Materials (3)** Prerequisite: ENES 230 or permission of both department and instructor. Introduction to the phenomena associated with the resistance of materials to damage under severe environmental conditions. Oxidation, corrosion, stress corrosion, corrosion fatigue and radiation damage are examined from the point of view of mechanism and influence on the properties of materials. Methods of corrosion protection and criteria for selection of materials for use in radiation environments.

**ENMA 470 Structure and Properties of Engineering Materials (3)** A comprehensive survey of the atomic and electronic structure of solids with emphasis on the relationship of structure to the physical and mechanical properties.

**ENMA 471 Physical Chemistry of Engineering Materials (3)** Equilibrium multicomponent systems and relationship to the phase diagram. Thermodynamics of polycrystalline and polypolyphase materials. Diffusion in solids, kinetics of reactions in solids.

**ENMA 472 Technology of Engineering Materials (3)** Relationship of properties of solids to their engineering applications. Criteria for the choice of materials for electronic, mechanical and chemical properties. Particular emphasis on the relationships between structure of the solid and its potential engineering application.

**ENMA 473 Processing of Engineering Materials (3)** The effect of processing on the structure of engineering materials. Processes considered include refining, melting and solidification, purification by zone refining, vapor phase processing, mechanical working and heat treatments.

**ENMA 489 Selected Topics in Engineering Materials (3)** Prerequisite: permission of department. Repeatable to 12 credits if content differs. To introduce basic concepts such as crystal chemistry, defect chemistry and ternary phase equilibria which can also be used to illustrate the various types of advanced ceramics (superconductors; superionic conductors, dielectrics including ferroelectrics; optical materials; high temperature structural materials; etc.) and allow an understanding of their behaviors.

**ENMA 495 Rheology of Engineering Materials (3)** Prerequisite: ENES 230 or permission of both department and instructor. Credit will be granted for only one of the following: ENMA 495 or ENCH 495. Study of the deformation and flow of engineering materials and its relationship to structural type. Elasticity, viscoelasticity, anelasticity and plasticity of single phase and multiphase materials.

**ENMA 496 Polymeric Engineering Materials (3)** Prerequisite: ENES 230. Credit will be granted for only one of the following: ENMA 496 or ENCH 496. A comprehensive summary of the fundamentals of particular interest in the science and applications of polymers. Polymer single crystals, transformations in polymers, fabrication of polymers as to shape and internal structure.

**ENME — Engineering, Mechanical**  
**ENME 201 Mechanical Engineering Project (1)** The disassembly and assembly of a mechanical device. A written report describing the method of operation of the device with sketches and drawings illustrating the components. Grading will be satisfactory/fail.

**ENME 205 Engineering Analysis and Computer Programming (3)** Pre- or corequisite: MATH 241. Continuation of computer programming techniques: flowcharts, algorithms, and computer languages. Introduction to numerical techniques and error analysis in solving for roots of equations, simultaneous equations, interpolation, numerical differentiation and integration, numerical solution of differential equations. Applications to engineering problems.

**ENME 217 Thermodynamics (3)** Prerequisites: PHYS 262; and MATH 141. Properties, characteristics and fundamental equations of gases and vapors. Work transfer and heat transfer, first and second laws of thermodynamics, entropy, irreversibility, availability, and the thermodynamics of mixtures.

**ENME 310 Mechanics of Deformable Solids (3)** Prerequisite: ENES 220. Introduction to the mechanics of engineering materials in three dimensions. Concepts of stress, strain, generalized Hooke's law, and equilibrium of solids. Modes of failure including plasticity, stability, fatigue, and fracture will be treated.

**ENME 311 Mechanics of Deformable Solids Laboratory (1)** Corequisite: ENME 310. A laboratory course in the mechanics of engineering materials. Concepts of stress, strain, generalized Hooke's law, and equilibrium of solids. Modes of failure including plasticity, stability, fatigue, and fracture will be treated.

**ENME 315 Intermediate Thermodynamics (3)** Prerequisite: ENME 217. Application of the first and second laws of thermodynamics in the analysis of basic heat engines, air compression and vapor cycles. Heat sources in fossil fuels and nuclear fuels. The thermodynamics of fluid flow.

**ENME 320 Thermodynamics (3)** Prerequisites: MATH 141; and PHYS 262. The properties, characteristics and fundamental equations of gases and vapors. Application of the first and second laws of thermodynamics in the analysis of basic heat engines, air compression vapor cycles. Flow and non-flow processes for gases and vapors.

**ENME 321 Transfer Processes (3)** Prerequisite: ENME 342. Conduction by steady state and transient heat flow, laminar and turbulent flow, free and forced convection, radiation, evaporation and condensation vapors. Transfer of mass, heat and momentum.

**ENME 342 Fluid Mechanics I (3)** Prerequisite: ENME 217. Fluid flow concepts and basic equations, effects of viscosity and compressibility. Dimensional analysis and laws of similarity. Flow through pipes and over immersed bodies. Principles of flow measurement.

**ENME 343 Fluid Mechanics Laboratory (1)** Two hours of laboratory per week. Corequisite: ENME 342. Measurement of fluid properties, determination of pressure drops in pipes and fittings, observation of fluid phenomena. Experiment and demonstration of flow measurement techniques.

**ENME 360 Dynamics of Machinery (3)** Prerequisites: ENES 220, and ENES 221; and MATH 246. Dynamic characteristics of machinery with emphasis on systems with single and multiple degrees of freedom.

**ENME 381 Measurements Laboratory (3)** Two hours of lecture and three hours of laboratory per week. Prerequisites: ENME 360, and ENEE 300. Required of juniors in mechanical engineering. Measurements and measurement systems, application of selected instruments with emphasis on interpretation of results.

**ENME 398 Honors Research Project (1-3)**

**ENME 400 Machine Design (3)** Prerequisites: ENME 310, and ENME 360. Corequisite: ENME 401. Working stresses, stress concentration, stress analysis and repeated loadings. Design of machine elements. Kinematics of mechanisms.

**ENME 401 The Structure and Properties of Engineering Materials (3)** Corequisite: ENME 310. The nature and properties of engineering materials as related to their use in all phases of mechanical engineering will be studied. Materials covered include metals, ceramics and glasses, polymer and composites.

**ENME 403 Automatic Controls (3)** Prerequisites: ENEE 300, and ENME 360. Senior standing. Hydraulic, electrical, mechanical and pneumatic automatic control systems. Open and closed loops. Steady state and transient operation, stability criteria, linear and non-linear systems. Laplace transforms.

**ENME 404 Mechanical Engineering Systems Design (4)** Two hours of lecture and six hours of laboratory per week. Prerequisites: ENME 400 or ENME 405, and senior standing in mechanical engineering. Design of components that form a complete working system. Engineering economics, performance-cost studies, optimization. Engineering design practice through case studies. Legal and ethical responsibility of the designer.

**ENME 405 Energy Conversion Design (3)** Prerequisite: senior standing in mechanical engineering. Application of thermodynamics, fluid mechanics and heat transfer to energy conversion processes. Design of engines, compressors, heat exchangers. Energy storage and fuel handling equipment.

**ENME 408 Selected Topics in Engineering Design (3)** Prerequisite: senior standing in mechanical engineering or permission of department. Repeatable to 6 credits if content differs. Creativity and innovation in design. Generalized performance analysis, reliability and optimization as applied to the design of components and engineering systems. Use of computers in design of multivariable systems.

**ENME 410 Operations Research I (3)** Prerequisite: senior standing in mechanical engineering. Applications of linear programming, queuing model, theory of games and competitive models to engineering problems.

**ENME 411 Introduction to Industrial Engineering (3)** Prerequisites: [ENME 300, and ECON 205] or permission of department. Design, improvement and installation of integrated systems of men, materials and equipment. Areas covered include industrial activities, plant layout and design, value analysis, engineering economics, quality and production control, methods engineering, industrial relations, etc.

**ENME 412 Mechanical Design For Manufacturing and Production (3)** Prerequisite: senior standing in engineering. The physical properties of materials. Review of key fundamental principles used in product design. Characterization of various classes of engineering materials. The types of manufacturing processes which can be applied to production of the design.

**ENME 414 Computer-Aided Design (3)** Prerequisites: ENME 205, and MATH 241 or equivalent. Introduction to computer graphics. Plotting and drawing with computer software. Principles of writing interactive software. The applications of computer graphics in computer-aided design. Computer-aided design project.

**ENME 415 Engineering Applications of Solar Energy (3)** Prerequisites: ENME 315, and ENME 321. Collection, storage, and utilization of solar thermal energy. Conversion to electricity. Component and system modeling equations. Performance analysis. Systems design.

**ENME 422 Energy Conversion II (3)** Prerequisite: ENME 315. Advanced topics in energy conversion. Direct conversion processes of fuel cells, solar cells, thermionics, thermoelectrics and magnetohydrodynamics.

**ENME 423 Environmental Engineering (3)** Prerequisites: ENME 321 and senior standing in mechanical engineering. Heating and cooling load computations. Thermodynamics of refrigeration. Low temperature refrigeration. Problems involving extremes of temperature, pressure, acceleration and radiation.

**ENME 424 Thermodynamics II (3)** Prerequisites: ENME 321 and senior standing. Applications to special systems, change of phase, low temperature. Statistical concepts, equilibrium, heterogeneous systems.

**ENME 425 Internal Combustion Engines (3)** Prerequisites: ENME 315, and ENME 321. Fundamentals underlying the design and operation of internal combustion engines. Aspects of fuels, lubricants, instrumentation, combustion and performance. The causes and control of air pollution.

**ENME 442 Fluid Mechanics II (3)** Prerequisites: ENME 342 and senior standing. Hydrodynamics with engineering applications. Stream function and velocity potential, conformal transformations, pressure distributions, circulation, numerical methods and analogies.

**ENME 450 Mechanical Engineering Analysis For the Oceanic Environment (3)** Characteristics of the marine environment which affect the design, operation and maintenance of mechanical equipment, effects of waves, currents, pressure, temperature, corrosion, and fouling. Study of design parameters for existing and proposed mechanical systems used in marine construction, on shipboard, in search and salvage operations.

**ENME 451 Mechanical Engineering Systems For Underwater Operations (3)** Propulsion, control and environmental systems for submerged vehicles. Design of mechanical systems in support of diving and saturated living operations.

**ENME 461 Dynamics II (3)** Prerequisites: ENME 360, and differential equations, and senior standing in mechanical engineering. Linear and non-linear plane and three-dimensional motion, moving axes, LaGrange's equation, Hamilton's principle, non-linear vibration, gyroscopes, celestial mechanics.

**ENME 462 Introduction to Engineering Acoustics (3)** Prerequisite: MATH 246. Study of the physical behavior of sound waves. Introduction to terminology and instrumentation used in acoustics. Criteria for noise and vibration control. Some fundamentals underlying noise control and applications to ventilation systems, machine and shop quieting, office buildings, jet noise, transportation systems and underwater sound.

**ENME 463 Mechanical Engineering Analysis (3)** Prerequisite: MATH 246. Mathematical modeling of physical situations. Solution of problems expressed by partial differential equations. Application of Fourier series and integrals, Laplace transformation, Bessel functions, Legendre polynomials and complex problems in mechanical vibrations, heat transfer, fluid mechanics and automatic control theory.

**ENME 464 Machine Design II (3)** Prerequisite: ENME 400. The study of stress and strain as applied to engineering problems, stress and strain from a three dimensional point of view, theories of failure, residual stresses; dynamic loading; fatigue, environmental influence, temperature extremes; corrosive media. Case studies of design practices.

**ENME 465 Introductory Fracture Mechanics (3)** Senior standing in engineering. An examination of the concepts of fracture in members with pre-existing flaws. Emphasis is primarily on the mechanics aspects with the development of the Griffith theory and the introduction of the stress intensity factor,  $K$ , associated with different types of cracks. Fracture phenomena are introduced

together with critical values of the fracture toughness of materials. Testing procedures for characterizing materials together with applications of fracture mechanics to design.

**ENME 470 Finite Element Analysis (3)** Prerequisites: ENME 310, and ENME 321. Basic concepts of the theory of the finite element method. Applications in solid mechanics and heat transfer.

**ENME 473 Mechanical Design of Electronic Systems (3)** Prerequisites: ENME 310, and ENME 360, and ENME 321. Design considerations in the packaging of electronic systems. Production of circuit boards and design of electronic assemblies. Vibration, shock, fatigue and thermal considerations.

**ENME 475 Robotics (3)** Prerequisites: ENME 360, and ENEE 300. Basic engineering principles in the design and analysis of robots. Industrial applications of robots.

**ENME 480 Engineering Experimentation (3)** One hour of lecture and five hours of laboratory per week. Senior standing in mechanical engineering. Theory of experimentation. Applications of the principles of measurement and instrumentation systems to laboratory experimentation. Experiments in fluid mechanics, solid mechanics and energy conversion. Selected experiments or assigned projects to emphasize planned procedure, analysis and communication of results, analogous systems and leadership.

**ENME 481 Engineering Experimentation (3)** One hour of lecture and four hours of laboratory per week. Senior standing in mechanical engineering. Theory of experimentation. Applications of the principles of measurement and instrumentation systems to laboratory experimentation. Experiments in fluid mechanics, solid mechanics and energy conversion. Selected experiments or assigned projects to emphasize planned procedure, analysis and communication of results, analogous systems and leadership.

**ENME 488 Special Problems (3)** Prerequisite: permission of department. Advanced problems in mechanical engineering with special emphasis on mathematical and experimental methods.

**ENME 489 Special Topics in Mechanical Engineering (3)** Prerequisite: permission of department. Repeatable to 6 credits with permission of advisor. Selected topics of current importance in mechanical engineering.

## ENNU — Engineering, Nuclear

**ENNU 215 Introduction to Nuclear Technology (3)** Prerequisites: MATH 141, and PHYS 151. Engineering problems of the nuclear energy complex, including basic theory, use of computers, nuclear reactor design and isotopic and chemical separations.

**ENNU 310 Environmental Aspects of Nuclear Engineering (3)** Prerequisites: [MATH 241 or MATH 246, and PHYS 263] or permission of both department and instructor. Evaluation of environmental and safety aspects of nuclear power reactors. Calculations of radioactive decay, activation, and shielding, radiation monitoring. Biological effects of radiation, waste handling, siting, plant design and operations, as related to environment safety and licensing regulations.

**ENNU 320 Nuclear Reactor Operation (3)** Two hours of lecture and two hours of laboratory per week. Introduction to nuclear reactor operations. Outline of reactor theory. Nature and monitoring techniques of ionizing radiation, radiation safety. Reactor instrument response. Operation of the University of Maryland nuclear reactor.

**ENNU 398 Honors Research Project (1-3)**

**ENNU 430 Radioisotope Power Sources (3)** Prerequisite: ENNU 215 or permission of both department and instructor. Principles and theory of radioisotope power sources. Design and use of nuclear batteries and small energy conversion devices.

**ENNU 435 Activation Analysis (3)** Prerequisite: ENNU 215 or permission of both department and instructor. Principles and techniques of activation analysis involving neutrons, photons and charged particles. Emphasis placed upon application of this analytical technique to solving environmental and engineering problems.

**ENNU 440 Nuclear Technology Laboratory (3)** One hour of lecture and four hours of laboratory per week.



**Prerequisites:** MATH 240, and PHYS 263. Techniques of detecting and making measurements of nuclear or high energy radiation. Radiation safety experiments. Both a sub critical reactor and the swimming pool critical reactor are sources of radiation.

**ENNU 450 Nuclear Reactor Engineering I (3)** Prerequisites: [MATH 246, and PHYS 263] or permission of both department and instructor. Elementary nuclear physics, reactor theory, and reactor energy transfer. Steady-state and time-dependent neutron distributions in space and energy. Conduction and convective heat transfer in nuclear reactor systems.

**ENNU 455 Nuclear Reactor Engineering II (3)** Prerequisites: ENNU 450. General plant design considerations including radiation hazards and health physics, shielding design, nuclear power economics, radiation effects on reactor materials, and various types of nuclear reactor systems.

**ENNU 460 Nuclear Heat Transport (3)** Prerequisite: ENNU 450. Heat generation in nuclear reactor cores, conduction and transfer to coolants. Neutron flux distributions, fission and heat release. Steady and unsteady state conduction in fuel elements. Heat transfer to nonmetallic and metallic coolants. Heat transfer with phase change. Thermal design of reactor cores.

**ENNU 461 Chemical Separation in the Nuclear Cycle Reactor Fuel (3)** Prerequisite: ENNU 450 or permission of both department and instructor. An introduction to chemical and physical separation of the nuclear reactor fuel. Basic separation processes, reactor fuel fabrication, reactor chemistry problems and the handling and treatment of radioactive waste. Calculations of plant design and operation. Related safety issues.

**ENNU 465 Nuclear Reactor Systems Analysis (3)** Prerequisites: [MATH 246; and PHYS 263; and ENNU 455] or permission of department. Power reactor (PWR, BWR, HTGR) system design and analysis. System specifications and modes of operation. Plant documentation (PSAR, FSAR, etc.). Piping and instrumentation drawings. Theory and application of pump and piping calculations. Steam power plant cycles and calculations. Steam plant equipment (turbines, heaters, condensers, etc.) analysis.

**ENNU 468 Research (2-3)** Prerequisite: permission of both department and instructor. Repeatable to 6 credits. Investigation of a research project under the direction of one of the staff members. Comprehensive reports are required.

**ENNU 470 Introduction to Controlled Fusion (3)** Prerequisite: senior standing in engineering or permission of both department and instructor. The principles and the current status of research to achieve controlled thermonuclear power production. Properties of ionized gases relating to confinement and heating. Concepts of practical fusion devices.

**ENNU 480 Reactor Core Design (3)** Prerequisite: ENNU 450 or permission of both department and instructor. Design of nuclear reactor cores based on a sequence of standard computer codes. Thermal and epithermal cross sections, multigroup diffusion theory in one and two dimensions and fine structure flux calculations using transport theory.

**ENNU 490 Nuclear Fuel and Power Management (3)** Prerequisites: [ENNU 460; and ENNU 480] or permission of both department and instructor. Physics and economics of the nuclear fuel cycle utilizing existing design codes. Mining, conversion, enrichment, fabrication, reprocessing processes. Effects of plutonium recycle, in-core shuffling, fuel mechanical design and power peaking on fuel cycle costs.

## ENTM — Entomology

**ENTM 100 Insects (3)** A survey of the major groups of insects, their natural history, and their relationships with humans and their environment.

**ENTM 111 Beekeeping (2)** First semester. A study of the life history, behavior and seasonal activities of the honeybee, its place in pollination of flowers with emphasis on plants of economic importance and bee lore in literature.

**ENTM 205 Principles of Entomology (4)** Three hours of lecture and two hours of laboratory per week. An introductory overview to the biology and diversity of insects. Basic physiological, ecological and behavioral

processes that result in the dominance of insects in the animal kingdom. The management of pest insect populations and the consequences of the strategies used to regulate insect pests. A collection is required.

**ENTM 252 Agricultural Insect Pests (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: BIOL 105. Not open to ENTM students. An introduction to the principal insect pests of fruit, vegetable, forage, and ornamental crops, with special reference to Maryland agriculture.

**ENTM 303 International Pesticide Problems and Solutions (3)** A global assessment of economic, environmental, legal, and social consequences of pests, pesticides, and alternative pest control methods. Case studies of the influence of legal action, government export and import policies, international aid, marketing practices, research and education, and human perceptions on pesticide use. Emphasis on pest and pesticide problems in the Third World and progress in developing pest and pesticide management systems to solve these problems.

**ENTM 351 Introduction to Insect Population Management (3)** An introduction to the theory and practice of management of insect populations. The course explores the development of all insect pest population suppression methods, as well as the management of insect populations beneficial to humans. The main theme of the course is how humans can manipulate environmental components for the purpose of population regulation of insects; and the beneficial and harmful effects of these manipulations.

**ENTM 398 General Colloquium in Entomology (1)** Prerequisite: ENTM 205 or permission of department. Presentation of original research by invited guest speakers, faculty, and graduate students. No more than 1 credit hour of ENTM 398 may be applied to the 120 credit hours needed for the Bachelor's degree.

**ENTM 399 Special Problems (1-2)** Prerequisite: ENTM 205 and permission of department. Credit to be determined by the department. Should be taken during the junior year. Investigations of assigned entomological problems. No more than 4 credit hours of ENTM 399 may be applied to the 120 credit hours needed for the Bachelor's degree.

**ENTM 407 Entomology For Science Teachers (4)** Four lectures and four three-hour laboratory per week. Summer. This course will include the elements of morphology, taxonomy and biology of insects using examples commonly available to high school teachers. It will include practice in collecting, preserving, rearing and experimenting with insects insofar as time will permit.

**ENTM 423 Insect Comparative Morphology (4)** Two hours of lecture and six hours of laboratory per week. Prerequisite: ENTM 205. Morphology and anatomy of insects. Comparison of structures using specimens from common orders to study the phylogenetic relationships and to form a basis for understanding insect classification systems.

**ENTM 424 Insect Diversity and Classification (4)** One hour of lecture and six hours of laboratory per week. Prerequisites: ENTM 205; and ENTM 423. The techniques of collecting insects in the field and their classification into the latest hierarchical scheme. Field trips will visit habitats throughout the state. An insect collection is required.

**ENTM 432 Insect Physiology (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: ENTM 205; and CHEM 233; and CHEM 243; or permission of department. The physiology of different insect systems. Hormonal basis of insect metamorphosis and reproduction.

**ENTM 451 Insect Pests of Agricultural Crops (4)** Two hours of lecture and four hours of laboratory per week. Prerequisite: ENTM 205. The recognition, biology and control of insects injurious to fruit and vegetable crops, field crops and stored products.

**ENTM 452 Insecticides (2)** Prerequisite: permission of department. The development and use of contact and stomach poisons, fumigants and other important chemicals, with reference to their chemistry, toxic action, compatibility, and host injury. Recent research emphasized.

**ENTM 453 Insect Pests of Ornamentals and Turf (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: ENTM 205 or permission of department. The recognition, biology and control of insects and mites injurious to ornamental shrubs, trees, greenhouse crops, and turf. Emphasis on pests of woody ornamental plants.

**ENTM 454 Principles of Plant Protection (2)** One hour of lecture and two hours of laboratory per week. Prerequisites: ENTM 205 and permission of department. Systematic assessment of the principles of plant protection and pest population management.

**ENTM 455 Urban Entomology (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: ENTM 421 or permission of department. A study of the appearance, habits, life cycles and methods of control of pests of humans, pets and structures in the urban environment. Field observations of professional pest control operations and a paper on a selected pest group are required.

**ENTM 472 Medical and Veterinary Entomology (4)** Three hours of lecture and two hours of laboratory per week. Prerequisite: ENTM 205 or permission of department. A study of the morphology, taxonomy, biology and control of the arthropod parasites and disease vectors of man and animals. The ecology and behavior of vectors in relation to disease transmission will be emphasized.

## FDSC — Food Science

**FDSC 111 Contemporary Food Industry and Consumerism (3)** The role of the food processing industry in attempting to satisfy society's need for food. Food quality nutritional, sensory, and compositional; conventional vs. "natural" organic foods; preservation and spoilage-role of chemical additives; synthetic and convenience foods; consumer protection; the food industry and the environment, future food sources.

**FDSC 398 Seminar (1)** Presentation and discussion of current literature and research in food science.

**FDSC 399 Special Problems in Food Science (1-3)** Designed for advanced undergraduates. Specific problems in food science will be assigned.

**FDSC 412 Principles of Food Processing I (3)** The principles of thermal processing including heat resistance of bacteria and bacterial spores, concepts of lethality, heat transfer, and thermal process calculations. Advanced systems of thermal processing and packaging including aseptic applications.

**FDSC 413 Principles of Food Processing II (3)** A detailed study of food processing with emphasis on line and staff operations, including physical facilities, utilities, pre- and post-processing operations, processing line development and sanitation.

**FDSC 421 Food Chemistry (3)** Prerequisite: BCHM 261. The application of basic chemical and physical concepts to the composition and properties of foods. Emphasis on the relationship of processing technology, to the keeping quality, nutritional value, and acceptability of foods.

**FDSC 422 Food Product Research and Development (3)** Four hours of laboratory per week. Prerequisite: FDSC 412; and FDSC 413 or permission of department. Four all day Saturday trips required. A study of the research and development function for improvement of existing products and development of new, economically feasible and marketable food products. Application of chemical-physical characteristics of ingredients to produce optimum quality products, cost reduction, consumer evaluation, equipment and package development.

**FDSC 423 Food Chemistry Laboratory (2)** Four hours of laboratory per week. Pre- or co-requisite: FDSC 421. Analysis of the major and minor constituents of food by chemical, physical and instrumental methods in concordance with current food industry and regulatory practices. Laboratory exercises coincide with lecture subjects in FDSC 421.

**FDSC 430 Food Microbiology (2)** Prerequisite: MICB 200 or equivalent. A study of microorganisms of major importance to the food industry with emphasis on food-

borne outbreaks, public health significance, bioprocessing of foods and disease control of microbial spoilage of foods.

**FDSC 431 Food Quality Control (4)** Three hours of lecture and two hours of laboratory per week. Definition and organization of the quality control function in the food industry, preparation of specifications, statistical methods for acceptance sampling, in-plant and processed product inspection. Instrumental and sensory methods for evaluating sensory quality, identity and wholesomeness and their integration into grades and standards of quality. Statistical Process Control (SPC).

**FDSC 434 Food Microbiology Laboratory (2)** Four hours of laboratory per week. Pre- or corequisite FDSC 430. A study of techniques and procedures used in the microbiological examination of foods.

**FDSC 442 Horticultural Products Processing (3)** Two hours of lecture and two hours of laboratory per week. Commercial methods of canning, freezing, dehydrating, fermenting, and chemical preservation of fruit and vegetable crops.

**FDSC 451 Dairy Products Processing (3)** Two hours of lecture and two hours of laboratory per week. Method of production of fluid milk, butter, cheese, condensed and evaporated milk and milk products and ice cream.

**FDSC 461 Technology of Market Eggs and Poultry (3)** Two hours of lecture and two hours of laboratory per week. A study of the technological factors concerned with the processing, storage, and marketing of eggs and poultry and the factors affecting their quality.

**FDSC 471 Meat and Meat Processing (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: BCHM 261 or permission of department. Physical and chemical characteristics of meat and meat products, meat processing, methods of testing and product development.

**FDSC 482 Seafood Products Processing (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: BCHM 261 or permission of department. The principal preservation methods for commercial seafood products with particular reference to the invertebrates. Chemical and microbiological aspects of processing are emphasized.

## FMCD — Family and Community Development

**FMCD 105 The Individual in the Family (3)** Study of personality development within the family context. Emphasis on identity and self-awareness.

**FMCD 200 Pre-professional Seminar (1)** Prerequisite: permission of department. Introduction to the family, community, and management-consumer fields. Consideration of professional opportunities.

**FMCD 201 Concepts in Community Development (3)** Theory and practice of development in neighborhood, national and international communities. Models for community action program development and service delivery.

**FMCD 202 Methods for Family, Community and Management Studies (3)** Introduction to the methods of the social and behavioral sciences employed in family, community and management-consumer studies. The role of theory, the development of hypotheses, measurement, validity, data collection, and data analysis.

**FMCD 250 Decision Making in Families and Communities (3)** Introduction to problem solving, decision theory, and systems analysis, and their application to the practical problems facing families, human service organizations, and local communities.

**FMCD 260 Interpersonal Life Styles (3)** Prerequisite: FMCD 105 or equivalent. Couple relationships in contemporary dating, courtship and marriage, and their alternatives.

**FMCD 330 Family Patterns (3)** Junior standing. Theory and research on the family, including a cross-cultural analysis of family patterns.

**FMCD 332 The Child in the Family (3)** Prerequisite: FMCD 105 or PSYC 100. A family life education approach to the study of children and families. Emphasis on the interaction of children with parents, siblings, extended kin and the community.

**FMCD 348 Practicum in Family and Community Development (3-12)** Prerequisites: FMCD 270, and 6 credits of practicum-related course work, and permission of department. Corequisite: FMCD 349. For FMCD majors only. Repeatable to 12 credits. A planned, supervised practicum to complement classroom instruction.

**FMCD 349 Analysis of Practicum (1-2)** For FMCD majors only. Weekly seminars for students concurrently carrying FMCD 348. Opportunities to integrate theory and practice. Two credits for the first semester and one credit every semester thereafter for a maximum total of five credits.

**FMCD 370 Interpersonal Communication Processes (3)** Training in interpersonal communication skills. Relevant concepts, principles, and models.

**FMCD 381 Poverty and Affluence Among Families and Communities (3)** Prerequisite: FMCD 201, or SOCY 100, or SOCY 105. Social, political, economic interrelationships among families and communities with respect to varying resources.

**FMCD 399 Independent Study (1-6)** Prerequisite: permission of department. Repeatable to 12 credits.

**FMCD 430 Gender Role Development in the Family (3)** Prerequisites: SOCY 100, and FMCD 260, or permission of department. The development of historical, cultural, developmental, and psychosocial aspects of masculinity and femininity within the context of contemporary families and the implications for interpersonal relations.

**FMCD 431 Family Crises and Intervention (3)** Prerequisite: PSYC 100. Family crises such as divorce, disability, substance abuse, financial problems, marital abuse, and death. Theories and techniques for intervention and enhancement of family coping strategies.

**FMCD 432 Intergenerational Aspects of Family Living (3)** Prerequisites: PSYC 100, and SOCY 100, and [FMCD 332 or other human development course]. The historical, cultural, developmental, and psychosocial experiences of contemporary American generations. Interactions across generations within the family and the consequences for individual development. Cross-national comparisons.

**FMCD 441 Personal and Family Finance (3)** Prerequisite: ECON 201, or ECON 205, or permission of department. Study of individual and family financial strategies with particular emphasis upon financial planning, savings, insurance, investments, incomes taxes, housing, and use of credit.

**FMCD 443 Consumer Problems (3)** Prerequisite: ECON 201, or ECON 205, or permission of department. The consumer perspective in the production, marketing, and use of goods and services. Special emphasis on the investigation of current issues.

**FMCD 444 Human and Community Program Management (3)** Goals, approaches, settings, and resources relevant to the management of human service programs in the community.

**FMCD 445 Family and Household Management (3)** Interrelationship of resources (time, money, energy, space, materials and human resources) in operation of the household and in meeting demands of multiple roles of family members. Management as intervention strategy.

**FMCD 447 The Disabled Person in the Family and Community (3)** Prerequisite: PSYC 100 or SOCY 100. Disabled persons in family and community settings. Improvement of the quality of life of disabled persons.

**FMCD 453 Family and Community Advocacy (3)** Prerequisites: 6 credits in SOCY and GVPT. Strategies for change used by governmental and non-governmental institutions to improve the quality of family and community life in a variety of political, social and historical contexts.

**FMCD 460 Violence in the Family (3)** Prerequisite: PSYC 100 or SOCY 105 or FMCD 487. Theories of child, spousal, parental, grandparental abuse in the family setting, review of current evidence, and an introduction to methods for prevention and remediation.

**FMCD 483 Family and Community Service Systems (3)** Prerequisites: 6 credits in SOCY and GVPT. The planning, implementation, administration, and evaluation of human services systems affecting families and communities. Major organizational theories, managerial styles, administrative techniques, and issues in human service delivery.

**FMCD 485 Introduction to Family Counseling (3)** Prerequisites: FMCD 431, or PSYC 331, or PSYC 335; or permission of department. The fundamental theoretical concepts and clinical procedures that are unique to marital and family therapy. Individually-oriented psychotherapy. Pre-marital, marital and family, and divorce counseling techniques.

**FMCD 487 Legal Aspects of Family Problems (3)** Prerequisite: FMCD 105 or SOCY 105. Laws and legal procedures, with emphasis on adoption, marriage, divorce, annulment, and property rights, and how they affect family life.

**FMCD 497 The Child and the Law (3)** Legislation and case law regarding children's legal rights with emphasis on the rights of children in the juvenile justice system, and rights to medical, educational, and other social services.

**FMCD 499 Special Topics (1-3)** A - Family Studies B - Community Studies C - Management and Consumer Studies

## FOLA — Foreign Language

**FOLA 108 Elementary Foreign Languages I (3)** Repeatable if content differs. The first semester of conversational study of a language not otherwise offered. The arts and humanities language requirement may be fulfilled by successful completion of FOLA 108, FOLA 109, FOLA 118 and FOLA 119 in a single language.

**FOLA 109 Elementary Foreign Languages II (3)** Prerequisite: FOLA 108 in the subject language or permission of department. Repeatable if content differs. The second semester of conversational study of a language not otherwise offered. The arts and humanities language requirement may be fulfilled by successful completion of FOLA 108, FOLA 109, FOLA 118 and FOLA 119 in a single language.

**FOLA 118 Intermediate Foreign Languages I (3)** Prerequisite: FOLA 109 in the subject language or permission of department. Repeatable if content differs. The third semester of conversational study of a language not otherwise offered. The arts and humanities language requirement may be fulfilled by successful completion of FOLA 108, FOLA 109, FOLA 118 and FOLA 119 in a single language.

**FOLA 119 Intermediate Foreign Languages II (3)** Prerequisite: FOLA 118 in the subject language or permission of department. Repeatable if content differs. The fourth semester of conversational study of a language not otherwise offered. The arts and humanities language requirement may be fulfilled by successful completion of FOLA 108, FOLA 109, FOLA 118 and FOLA 119 in a single language.

**FOLA 128 Introductory Middle Eastern Languages I (3)** Prerequisite: permission of department. Repeatable to 9 credits if content differs. An introduction to the three principal languages of the Islamic Middle East: Arabic, Persian, and Turkish. Only standard written form of the three languages is taught. May not be used to satisfy arts and humanities language requirement.

**FOLA 129 Introductory Middle Eastern Languages II (3)** Prerequisite: FOLA 128 and permission of department. Repeatable to 9 credits if content differs. Continuation of FOLA 128. May not be used to satisfy arts and humanities language requirement.

**FOLA 136 Directed Study of a Foreign Language I (3)** Open only by permission of department to students of high motivation and proven language learning aptitude. Directed study of a modern foreign language with use of a self-instructional approach.

**FOLA 139 Directed Study of a Foreign Language II (3)** Prerequisite: FOLA 136 in the same language or permission of department. A continuation of FOLA 136.

**FOLA 148 Directed Study of a Foreign Language III (3)** Prerequisite: FOLA 139 in the same language or permission of department. A continuation of FOLA 139.

**FOLA 149 Directed Study of a Foreign Language IV (3)** Prerequisite: FOLA 148 in the same language or permission of department. A continuation of FOLA 148

**FOLA 158 Directed Study of a Foreign Language (Intensive) I (6)** Open only by permission of department to students of very high motivation and proven language learning aptitude. Intensive directed study of a modern foreign language with use of a self-instructional approach. Equivalent to FOLA 138 plus FOLA 139

**FOLA 159 Directed Study of a Foreign Language (Intensive) II (6)** Prerequisite: FOLA 158 in the same language or permission of department. A continuation of FOLA 158. Equivalent to FOLA 148 plus FOLA 149

**FOLA 228 Intermediate Middle Eastern Languages I (3)** Prerequisite: FOLA 129 and permission of department. Repeatable to 9 credits if content differs. Continuation of FOLA 129. May not be used to satisfy arts and humanities language requirement

**FOLA 229 Intermediate Middle Eastern Languages II (3)** Prerequisite: FOLA 228 and permission of department. Repeatable to 9 credits if content differs. Continuation of FOLA 228. May not be used to satisfy arts and humanities language requirement.

**FOLA 329 Advanced Middle Eastern Languages II (3)** Prerequisite: FOLA 328 or permission of department. Repeatable to 9 credits if content differs. Continuation of FOLA 328. May not be used to satisfy arts and humanities language requirement.

**FOLA 389 Foreign Civilization (3)** Repeatable to 6 credits if content differs. A survey of the cultural history, arts and letters, folklore and life-style of the speakers of a language not otherwise offered. All readings and instruction in English.

**FOLA 408 Foreign Language I (3)** Intensive study of a foreign language or related topic not available under one of the current foreign language departments or programs. May not be used to fulfill the arts and humanities language requirement.

**FOLA 409 Foreign Language II (3)** Prerequisite: FOLA 408 in the same language or topic. A continuation of FOLA 408. May not be used to fulfill arts and humanities language requirement.

**FOLA 459 Foreign Literature in Translation (3)** Repeatable to 6 credits if content differs. Reading and discussion of selected authors, periods or genres of a foreign literature not otherwise offered. All readings and instruction in English.

## FOOD — Food

**FOOD 105 Professional Orientation (1)** A series of lectures introducing the student to the broad field of careers in food, nutrition, dietetics, and foodservice administration. Includes trends, role of related sciences, educational and personal requirements, ethics, and opportunities in each professional area.

**FOOD 110 Food For People (3)** A study of food in contemporary living. Economic, social, cultural and aesthetic implications of food. Selection and use of food in relation to eating habits and well-being of the individual.

**FOOD 210 Scientific Principles of Food Preparation and Management (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: NUTR 100 or NUTR 200 or FOOD 110. Study of basic scientific principles as applied to food preparation processes and management of family needs through organization of available resources.

**FOOD 240 Science of Food I (3)** Two hours of lecture and three hours of laboratory per week. Pre- or corequisite: CHEM 233 or CHEM 104. Composition and structure of food with study of the fundamental principles involved in food handling and treatment. Especially designed for majors in food, nutrition and foodservice administration.

**FOOD 250 Science of Food II (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: FOOD 240. A continuation of FOOD 240.

**FOOD 300 Economics of Food Consumption (3)** Prerequisites: ECON 201 or ECON 205; and FOOD 110 or NUTR 100 or NUTR 200. Interrelations of food, population and economic progress; trends in food consumption patterns; world and local food problems.

**FOOD 440 Advanced Food Science I (3)** Prerequisites: FOOD 250, and BCHM 261 or BCHM 461. Chemical and physical properties of food as related to consumer use in the home and institutions.

**FOOD 445 Advanced Food Science Laboratory (1)** Three hours of laboratory per week. Pre- or corequisite: FOOD 440. Chemical determination of selected components in animal and plant foods.

**FOOD 450 Advanced Food Science II (3)** One hour of lecture and six hours of laboratory per week. Prerequisite: FOOD 440 or equivalent. Individual and group laboratory experimentation as an introduction to methods of food research.

**FOOD 480 Food Additives (3)** Prerequisite: FOOD 440 or equivalent or permission of department. Effects of intentional and incidental additives on food quality, nutritive value and safety. Current regulatory procedures.

**FOOD 490 Special Problems in Foods (2-3)** Prerequisites: FOOD 440 and permission of department. Individual selected problems in the area of food science.

**FOOD 498 Selected Topics (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Selected current aspects of food.

## FREN — French

**FREN 101 Elementary French (4)** Four classroom meetings per week plus one laboratory hour. Not open to students with 2 or more years of high-school level French. Introduction to basic structures and pronunciation with emphasis on the four skills: listening, speaking, reading and writing.

**FREN 102 Elementary French (4)** Four classroom meetings plus one laboratory hour per week. Prerequisite: FREN 101 at UMCP or permission of department. Further work on basic structures and pronunciation with emphasis on the four skills: listening, speaking, reading and writing.

**FREN 103 Review of Elementary French (4)** Limited to students who have had at least two years of high-school French or equivalent or who do not qualify for FREN 203. Credit will be granted for only one of the following: FREN 101; FREN 102 or FREN 103.

**FREN 121 Accelerated French I (3)** Prerequisite: good background in at least one other foreign language (successful completion of level 4 in high school or equivalent at the university level; or linguistic competence acquired by residence abroad; or demonstration of equivalent proficiency). An intensive beginning course in French language skills to enable the student to move more quickly to advanced courses. With FREN 122, may be used to satisfy language requirements.

**FREN 122 Accelerated French II (3)** Prerequisite: FREN 121. Continuation of the intensive beginning course in French to enable the student to move more quickly to advanced courses. May be used to satisfy language requirements.

**FREN 200 French For Reading (3)** Course not open to students who have completed two years of high school French or two semesters college French within the last five years nor to students for whom French is the native language. Intensive course designed to bring students to a basic reading and translating competence of ordinary literary and scientific French, with the aid of a dictionary, in one semester. Study of essential grammar, but no spoken or written French involved. No prerequisites. May not be used to satisfy the language requirement of the College of Arts and Humanities.

**FREN 203 Intermediate French (4)** Completion of the study of basic grammatical structures, with readings, conversation, and composition. Fulfills the Arts and Humanities language requirement.

**FREN 204 Review Grammar and Composition (3)** Prerequisite: FREN 203 or permission of department. An intensive review of major aspects of contemporary grammatical usage; training in comprehension and guided composition.

**FREN 211 Intermediate Conversation (3)** Not open to native speakers. Prerequisite: FREN 203 or permission of department. Practice in spoken French with emphasis on contemporary French topics.

**FREN 250 Readings in French (3)** Prerequisite: FREN 203 or equivalent. Selected readings from various genres in French literature. Discussion and brief written reports in French.

**FREN 301 Composition and Style (3)** Prerequisite: FREN 204 or permission of department. Grammatical analysis, translation, free and guided composition.

**FREN 302 Introduction to Translation (3)** Prerequisite: FREN 301 or permission of department. Problems and strategies of translation into both English and French. Journalistic and literary styles, practicum format.

**FREN 311 Advanced Comprehension and Expression in French (3)** Prerequisites: FREN 211 or permission of department. Not open to native speakers of French. Development of aural comprehension and oral expression through use of radio and television broadcasts.

**FREN 312 French Conversation: Current Cultural Events (3)** Not open to native speakers of French. Emphasis on speaking and intonation practice, with vocabulary to the level of the contemporary French press.

**FREN 340 Modern French Literature in Translation (3)** A survey of major authors and movements of French literature from pre-revolutionary France to the present. All work in English.

**FREN 351 French Literature From the Revolution to the Present (3)** Prerequisite: FREN 204 or FREN 250 or permission of department. A survey of the chief authors and major movements of French literature from Pre-Romanticism to the present.

**FREN 352 French Literature From the Middle Ages to the Revolution (3)** Prerequisite: FREN 204 or FREN 250 or permission of department. A survey of the chief authors and major movements of French literature from the Middle Ages to the end of the 18th century.

**FREN 370 Aspects of French Civilization (3)** Credit may not be counted toward a French major. Credit will be granted for only one of the following: FREN 370 or FREN 472. Political, social, intellectual, and literary forces shaping contemporary France, from the French revolution to the present. Taught in English.

**FREN 398 Practicum in Spoken French (1)** Prerequisite: FREN 312 or permission of department. Credit may not be counted toward a French major. Repeatable to 3 credits. Practice in French conversation at the advanced level. Satisfactory/Fail only.

**FREN 399 Directed Study in French (1-3)** Prerequisite: permission of department. Repeatable to 3 credits. Intended for advanced undergraduates who wish to work on an individual basis with a professor of their choice. Open as elective to all students, but may not be counted toward French major. May be taken for one, two or three credits, according to nature and scope of work envisaged. Grading method: Satisfactory/Fail only.

**FREN 400 Applied Linguistics (3)** The nature of applied linguistics and its contribution to the effective teaching of foreign languages. Comparative study of English and French, with emphasis upon points of divergence. Analysis, evaluation and construction of related drills.

**FREN 401 Stylistics (3)** Prerequisite: FREN 301 or permission of department. Comparative stylistic analysis; translation.

**FREN 402 Advanced Grammar and Phonetics (3)** Prerequisite: FREN 301 or permission of department. Theory and practice of grammatical structures and rules of phonetics.

**FREN 404 Advanced Conversation in French (3)** Prerequisite: FREN 311 or FREN 312 or permission of department. Development of fluency in French, stress on correct sentence structure and idiomatic expression.

**FREN 405 Explication De Textes (3)** Oral and written analysis of short literary works, or of excerpts from longer works chosen for their historical, structural, or stylistic interest, with the purpose of training the major to understand literature in depth and to make mature esthetic evaluations of it.

## 202 GEOG — Geography

**FREN 406 Business and Commercial French (3)** A study of French as used in the business and commercial world.

**FREN 407 History of the French Language (3)** Evolution of the French language from Latin to modern French.

**FREN 419 Studies in Medieval French Literature (3)** Repeatable to 6 credits if content differs. Selected topics in medieval French literature.

**FREN 429 Studies in French Literature of the Renaissance (3)** Repeatable to 6 credits if content differs. Selected topics in French literature of the Renaissance.

**FREN 439 Studies in 17th Century French Literature (3)** Repeatable to 6 credits if content differs. Selected topics in seventeenth-century French literature.

**FREN 449 Studies in 18th Century French Literature (3)** Repeatable to 6 credits if content differs. Selected topics in eighteenth-century French literature.

**FREN 459 Studies in 19th Century French Literature (3)** Repeatable to 6 credits if content differs. Selected topics in nineteenth-century French literature.

**FREN 469 Studies in 20th Century French Literature (3)** Repeatable to 6 credits if content differs. Selected topics in twentieth-century French literature.

**FREN 471 French Civilization I (3)** French life, customs, culture, traditions (800-1750).

**FREN 472 French Civilization II (3)** Credit will be granted for only one of the following: FREN 472 or FREN 370. French life, customs, culture, traditions (1750 to the early twentieth century).

**FREN 473 Contemporary French Society (3)** The forces shaping contemporary France. Analysis of social groups, economic development, institutions, political structures. Lectures, discussions and most readings in French.

**FREN 475 French Cinema: A Cultural Approach (3)** A study of French culture, civilization, and literature through the medium of film.

**FREN 478 Themes and Movements of French Literature in Translation (3)** Studies treatments of thematic problems or of literary or historical movements in French literature. Topic to be determined each semester. Given in English.

**FREN 479 Masterworks of French Literature in Translation (3)** Treats the works of one or more major French writers. Topic to be determined each semester. Given in English.

**FREN 489 Pro-Seminar in Themes or Movements of French Literature (3)** Repeatable to 6 credits if content differs.

**FREN 494 Honors Independent Study (3)** Open only to students admitted to the departmental honors program. Honors independent study involves guided readings based on an honors reading list and tested by a 6 hour written examination. HONR 494 and HONR 495 are required to fulfill the departmental honors requirement.

**FREN 495 Honors Thesis Research (3)** Open only to students admitted to the departmental honors program. Honors thesis research involves the writing of a paper under the direction of a professor in this department and an oral examination. HONR 494 and HONR 495 are required to fulfill the departmental honors requirement.

**FREN 498 Special Topics in French Literature (3)** Repeatable to 6 credits if content differs.

**FREN 499 Special Topics in French Studies (3)** Repeatable to 6 credits if content differs. An aspect of French studies, the specific topic to be announced each time the course is offered.

**FSAD — Foodservice Administration**  
**FSAD 200 Introduction to Foodservice (2)** Introduction to the historical development, future trends, and careers in the foodservice industry. e.g. franchises, multi-unit

corporations, hospitals, educational institutions, and vending.

**FSAD 300 Foodservice Organization and Management (3)** Prerequisite: permission of department. Introduction to basic principles of foodservice management. Interrelationships of management processes and technical operations applied to foodservice.

**FSAD 350 Foodservice Operations I (5)** Three hours of lecture and five hours of laboratory per week. Prerequisite: FOOD 250. Pre- or corequisites: FSAD 300; and MICB 200. Introduction to management responsibilities in quantity food production and purchasing in a foodservice operation. Laboratory experience in planning, preparation, and service of meals which meet the nutritional needs of the consumer.

**FSAD 355 Foodservice Operations II (4)** Two hours of lecture and five hours of laboratory per week. Prerequisite: FSAD 350. Foodservice systems management competencies and laboratory experience in recipe development, market analysis and merchandising, testing quality food products, and solving foodservice problems.

**FSAD 390 Introduction to Foodservice Budgeting (1)** Prerequisite: FSAD 300. Pre- or corequisite: FSAD 350. Introduction to basic principles of budgeting for dietetics.

**FSAD 415 Foodservice Cost Accounting (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: FSAD 350. Study of foodservice financial management and cost accounting, and utilization of computers in controlling foodservice systems.

**FSAD 440 Foodservice Personnel Administration (2)** Prerequisite: FSAD 350. Personnel selection, training, scheduling, job evaluation, labor regulations and costs.

**FSAD 450 Foodservice Equipment Planning (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: FSAD 350. Layout and design of a foodservice facility; prospectus, menu, equipment selection and maintenance. Factors affecting foodservice design and operations.

**FSAD 455 Manpower Planning for Foodservice (3)** Pre- or corequisite: FSAD 350. Foodservice management responsibilities in human resource planning and development based on current theories, legislation and the foodservice labor market.

**FSAD 480 Practicum in Foodservice Administration (3)** Prerequisites: FSAD 350 and permission of department. Inservice training and practical experience totaling at least 120 hours in an approved foodservice operation under direct supervision of practicum advisor.

**FSAD 490 Special Problems in Foodservice (2-3)** Prerequisites: senior standing, five hours in FSAD courses and permission of department. Individual selected problems in the area of foodservice.

**FSAD 498 Selected Topics (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Selected current aspects of foodservice administration.

### GEOG — Geography

**GEOG 100 Introduction to Geography (3)** An introduction to the broad field of geography as it is applicable to the general education student. The course presents the basic rationale of variations in human occupancy of the earth and stresses geographic concepts relevant to understanding world, regional and local issues.

**GEOG 110 The World Today: A Regional Geography (3)** An examination of the functioning world today and the regions and major countries that are part of the whole. Organized around the framework of modern and traditional lifestyles with the aim of providing understanding of the world and its regions for the general education student.

**GEOG 120 Nations in Conflict: A Spatial View (3)** The geographic characteristics of conflict areas around the world. Issues common to international disputes such as uneven access to resources, population pressures, religious differences and boundary disputes.

**GEOG 130 Developing Countries (3)** An introduction to the geographic characteristics of the development problems and prospects of developing countries. Spatial distribution of poverty, employment, migration and urban growth, agricultural productivity, rural development, policies and international trade. Portraits of selected developing countries.

**GEOG 140 Coastal Environments (3)** Introduction to coastal environments with emphasis on U.S. East Coast. Physical and ecological systems, beach processes, waves, currents, human impacts, coastal zone management and shoreline engineering. Case studies of coastal areas, including Ocean City, Maryland.

**GEOG 150 World Cities (3)** An introduction to the forces that affect the growth of cities in different parts of the world. Regional variations in city design and examples of great world cities. The impact of changing technologies, economic and social change on the evolution of the city. Current and emerging trends.

**GEOG 160 World Resources (3)** The location of forestry, mineral, energy, maritime and agricultural resources. Identification of resource rich and poor regions and international resource flows. U.S. consumption and production of resources. Emerging world trends.

**GEOG 170 Maps and Map Use (3)** The use and interpretation of maps encountered in both "everyday" reading and in scientific literature. Development of skills in map reading, environmental analysis, interpretation and orienteering.

**GEOG 171 Maps and Map Use Laboratory (1)** Two hours of laboratory per week. Pre- or corequisite: GEOG 170. A laboratory course to accompany GEOG 170. Experience with maps as research tools; coordinate systems, projections, measurement of angles, directions, distance, area, topographic maps; map interpretation; symbolization; statistical mapping; spatial arrangement, and remote sensing.

**GEOG 201 Geography of Environmental Systems (3)** A systematic introduction to the processes and associated forms of the atmosphere and earth's surfaces emphasizing the interaction between climatology, hydrology and geomorphology.

**GEOG 202 The World in Cultural Perspective (3)** The impact of cultural traits, such as religion, language and livelihood systems, on the earth's landscape. The transformation of the earth's surface as a result of cultural diversity, settlement patterns, political organization, cultural evolution, and population growth.

**GEOG 203 Economic Geography (3)** The spatial characteristics of world and regional economic activities. Population patterns, technology and economic development; principles of spatial interactions in trade; transportation networks, the city as an employment generator, the location of industries and services; the production and trade of agricultural and energy products.

**GEOG 211 Geography of Environmental Systems Laboratory (1)** Two hours of laboratory per week. Pre- or corequisite: GEOG 201 or GEOL 100 or GEOL 120. A laboratory course to accompany GEOG 201. Analysis of the components of the earth's energy balance using basic instrumentation, weather map interpretation, soil analysis; the application of map and air photo interpretation techniques to landform analysis.

**GEOG 298 Special Topics in Geography (3)** Repeatable to 6 credits if content differs. An introductory course dealing with special topics in geography.

**GEOG 305 Quantitative Methods in Geography (3)** A practical introduction to data sources and measurement, descriptive statistics, data collection, sampling and questionnaire design, field techniques, map use, computer use and data presentation.

**GEOG 310 Research and Writing in Geography (3)** Prerequisite: GEOG 305. Development of research methods in geography including the formulation of problem, the establishment of hypotheses, development of structures for testing hypotheses, and practice with forms of geographic presentation. Maps, quantitative and field methods are used as appropriate.

**GEOG 320 The United States and Canada (3)** The two countries as functioning geographic systems with

important differences and key linkages. An examination of the cultural, environmental, and economic components and their spatial variation. Attention to the role of regions in national economies.

**GEOG 321 Maryland and Adjacent Areas (3)** The physical environment, natural resources, and population in relation to agriculture, industry, transport, and trade in the State of Maryland and adjacent areas.

**GEOG 322 Central America, the Caribbean and Mexico (3)** The physical framework, broad economic and historical trends, cultural patterns, and regional diversification of Mexico, Central America, the West Indies.

**GEOG 323 South America (3)** A survey of natural environment and resources, economic development and cultural diversity of the South American countries, with emphasis on problems and prospects of the countries.

**GEOG 324 Europe (3)** The geographical diversity of modern Europe from landscape and regional perspectives. The diverse features of Europe's physical environment and resource base, and their integration into the demographic, economic, social and political patterns of the continent's major geographic regions.

**GEOG 325 Soviet Union (3)** The Soviet Union as a functioning geographic system: its ethnic and cultural diversity, historical development, resource base, and economic regions. The contributions of the regional parts to the national whole.

**GEOG 326 Africa (3)** A geography of sub-Saharan Africa: physical features, climates, political and cultural regions. Population and resource distribution, current levels of economic and social well-being, urbanization development policies, projects and constraints, and migration trends.

**GEOG 327 South Asia (3)** Methods of regional analysis and area studies applied to the Indian Subcontinent, including India, Pakistan, Bangladesh, Sri Lanka and adjacent nations. Locational significance of the natural environment, historical and cross-cultural processes, languages and religion, the economy and government, population, archaeology, urbanization and development.

**GEOG 328 Topics in Regional Geography (3)** Repeatable to 6 credits if content differs. Selected topics in regional geography.

**GEOG 330 East Asia (3)** The geographic characteristics of China, Japan, and Korea plus other East Asian entities. The physical setting, climate, population distribution, cultural and language regions. Contemporary problems, resource distribution, and development policies and projects.

**GEOG 331 Southeast Asia (3)** Spatial organization and development in and among Malaysia, Singapore, Indonesia, the Philippines, Thailand, Vietnam, Laos, Kampuchea and adjacent countries. Locational significance of the natural environment, historical and cross-cultural processes, economic and modernization trends, social conflicts and future development prospects.

**GEOG 340 Geomorphology (3)** Survey of landform types and role of processes in their generation. Frequency of occurrence and implications for land utilization. Emphasis on coastal, fluvial, and glacial landforms in different environmental settings. Landform regions of Maryland.

**GEOG 345 Climatology (3)** The geographic aspects of climate with emphasis on energy-moisture budgets, steady-state and non steady-state climatology, and climatic variations at both macro- and micro-scales.

**GEOG 347 The Physical Environment of Urban Areas (3)** The constraints imposed upon urban land use by such environmental factors as geology, geomorphology and hydrology. The effects of urban land use upon climatology, soils, earth processes, water movement and vegetation.

**GEOG 350 The American City: Past and Present (3)** Development of the American city from the early nineteenth century to the present. The internal structure of contemporary metropolitan areas, the spatial

arrangement of residential, commercial, and other activities. Washington, D.C. and Baltimore examples.

**GEOG 370 Principles of Cartography (3)** Lecture and laboratory learning each week. Techniques and problems of compilation, symbolization, design and construction of special purpose maps. Emphasis on the methods of improving map design based on the organization of map components and the proper selection of symbols.

**GEOG 372 Remote Sensing (3)** Principles of remote sensing in relation to photographic, thermal infra-red and radar imaging. Methods of obtaining quantitative information from remotely sensed images. Interpretation of remotely-sensed images emphasizing the study of spatial and environmental relationships.

**GEOG 373 Computer Mapping (3)** Prerequisite: GEOG 370 or CMSC 110 or permission of department. Introduction to the use of computers to produce maps, with emphasis on software packages and algorithms used to produce thematic maps. Mathematical and perceptual problems of maps produced on line printers, line plotters, and display screens.

**GEOG 380 Local Field Course (3)** Training in geographic field methods and techniques. Field observation of land use in selected rural and urban areas in Maryland and adjacent areas.

**GEOG 384 Internship in Geography (3)** Prerequisite: GEOG 305; and GEOG 310; and permission of department. Corequisite: GEOG 385. Supervised field training to provide career experience. Introduction to professional level activities, demands, opportunities. Placement at a public agency, non-profit organization, or private firm. Participation requires application to the internship advisor in preceding semester.

**GEOG 385 Internship Research Paper (3)** Prerequisite: GEOG 305; and GEOG 310; and permission of department. Corequisite: GEOG 384. Seminar conducted on campus. Research paper related to the student's internship.

**GEOG 398 Honors Research (3)** Student development of a potential research topic under the guidance of a faculty advisor, culminating in a written and oral presentation of a research proposal.

**GEOG 399 Honors Thesis (3)** Prerequisite: GEOG 398. Second course in departmental honors sequence. Student research under the auspices of a faculty advisor, culminating in a research paper to be defended orally before the geography honors committee.

**GEOG 410 Colonial North America (3)** The changing geography of the U.S. and Canada from pre-Columbian times to the end of the 18th century. Emphasis on areal variations, and changes in the settlements and economies of Indian and colonial populations. Areal specialization, and the changing patterns of agriculture, industry, trade and transportation. Population growth, composition and interior expansion. Regionalization.

**GEOG 411 19th Century North America (3)** An analysis of the changing geography of the U.S. and Canada from 1800 to the 1920's. The settlement, expansion and socio-economic development of the U.S., and comparisons with the Canadian experience. Immigration, economic activities, industrialization, transportation and urbanization.

**GEOG 414 Historical Geography of the Hispanic World (3)** The social, economic, political and cultural geography of the countries of the Iberian peninsula and Latin America in the past with concentration on specific time periods of special significance in the development of these countries.

**GEOG 416 Overseas European Colonization and the Third World (3)** The impact of European overseas expansion on Africa, Asia and Australasia during the 19th and early 20th centuries. Settlement patterns and territorial organization. Cultural and demographic change. Economic organization of space.

**GEOG 420 Cultural Geography (3)** Prerequisite: GEOG 201, or GEOG 202, or ANTH 101, or ANTH 102, or permission of department. Impact of the human race through ideas and technology on the evolution of geographic landscapes. Major themes in the relationships between cultures and environments.

**GEOG 421 Cultural Ecology (3)** Basic issues concerning the natural history of the human race from the perspective of the geographer. Basic components of selected behavioral and natural systems, their evolution and adaptation, and survival strategies.

**GEOG 422 Population Geography (3)** The spatial characteristics of population distribution and growth, migration, fertility and mortality from a global perspective. Basic population-environmental relationships; carrying capacity, density, relationships to national development.

**GEOG 423 Political Geography (3)** Geographical factors in the national power and international relations; an analysis of the role of "geopolitics" and "geostrategy," with special reference to the current world scene.

**GEOG 430 Location Theory and Spatial Analysis (3)** Theories and procedures for determining the optimal location of industrial, commercial and public facilities. Techniques to evaluate location decisions. The provision of services within regions and metropolitan areas. Emerging trends.

**GEOG 433 Transportation Networks (3)** Description and modeling of spatial components of transportation systems. The theory and practice of analyzing transportation networks, including nodes, links, routes, flows and regions. Examples drawn from different transportation nodes.

**GEOG 434 Agricultural and Rural Development (3)** Spatial organization of agricultural resources; major types of agricultural activities in the world and their relationship to geographic conditions. Problems of conservation.

**GEOG 436 Issues in Urban Transportation (3)** Spatial patterns of personal travel, movement of goods, and public transit services in cities. Transportation and land use. Public policy issues: transportation access, energy use, and neighborhood disruption. Methods of data collection and analysis, travel demand surveys.

**GEOG 440 Process Geomorphology (3)** Prerequisite: GEOG 340 or GEOL 340 or permission of department. A quantitative investigation of the fundamental geomorphic processes shaping modern landscapes, with emphasis on coastal, fluvial, and glacial processes. Field, instrumentation and laboratory analyses.

**GEOG 441 Geomorphological Environments (3)** Prerequisite: GEOG 201 or GEOL 100 or permission of department. Analysis of regional geomorphic environments; arctic, alpine, coastal, desert. Fluvial and glacial landscape impacts. Discussion of historical environments.

**GEOG 442 Urban Climates (3)** Prerequisite: GEOG 345 or GEOG 347 or METO 301 or permission of department. Effects of cities on their climatic environment. Radiant energy budgets, urban heat islands, precipitation patterns and effects of the urban climate on human activities.

**GEOG 446 Applied Climatology (3)** Prerequisite: GEOG 345 or permission of department. Components of earth's radiation balance and energy budgets: radiation, soil heat flux and the evaporation process. Measurement and estimation techniques. Practical applications of microclimatological theory and techniques.

**GEOG 448 Field and Laboratory Techniques in Environmental Science (1-3)** Prerequisite: GEOG 201 or GEOL 100 or AGRO 105 or ENCE 221 or permission of department. Lecture and laboratory learning each week. A variable credit course that introduces field and laboratory analyses in environmental science. Individual learning contracts are developed with instructor.

**GEOG 450 The Contemporary City (3)** The contemporary urban system: towns, cities and metropolitan areas and their role as concentrations of social and economic activity. Patterns of land-use: residential, employment, commercial activity, manufacturing, and transportation. Explanatory and descriptive models. International comparisons.

**GEOG 454 Washington, D.C.: Past and Present (3)** Development of the Washington, D.C. area from its origin as the Federal Capital to its role as a major metropolitan area. The geographic setting, the L'Enfant

Plan and its modification, the federal government role, residential and commercial structure. The growth of Washington's suburbs

**GEOL 456 The Social Geography of Metropolitan Areas (3)** A socio-spatial approach to human interaction with the urban environment, ways people perceive, define, behave in, and structure their cities and metropolitan areas. Spatial patterns of social activities as formed by the distribution and interaction of people and social institutions.

**GEOL 457 Historical Geography of North American Cities (3)** The urbanization of the United States and Canada prior to 1920. The evolution of the urban system across each country and the spatial distribution of activities within cities. The process of industrialization and the concurrent structuring of residential patterns among ethnic groups.

**GEOL 462 Water Resources Policy and Planning (3)** Critical concepts in U.S. water resources management with emphasis on Federal fresh and surface water policy. Examination of water resources planning models, focusing on demand projections, prediction of water supply, and economic and environmental project evaluation.

**GEOL 463 Geographic Aspects of Pollution (3)** Impact of human activities on the environment and resulting pollution problems. Characteristics and spatial aspects of air, water, and land resource problems. Federal legislation and planning techniques to reduce pollution.

**GEOL 464 Energy Resources and Planning (3)** Regional distribution of energy resources and consumption in the U.S. Past and present patterns of energy use. Assessment of the potential of conservation, and nuclear, fossil and renewable energy resources with an emphasis on spatial impact of energy policy decisions

**GEOL 467 Energy Resources and the Environment (3)** Effects of energy resource utilization on the physical environment including land use, air and water quality, and solid waste generation. Recent laws and policies designed to reduce environmental impacts. Physical consequences of alternative energy technologies.

**GEOL 470 Development of Cartographic Technology (3)** History of technological improvements in land surveying and maps production of graphic and spatial images. The formation, expansion and diffusion of geographic information. Study of cartographic imagery as a changing form of communication

**GEOL 471 Cartographic Production (3)** Prerequisite: GEOL 370. Lecture and laboratory learning each week. Map making and modern methods of production and reproduction. Organization of artwork for multicolor or series map production including production planning and quality control.

**GEOL 475 Principles of Map Design (3)** Prerequisite: GEOL 370. The principles of designing maps for publication in print media, including books and atlases. The selection of symbols, colors, lettering, map projections, and map content. Constraints and problems in the classification and representation of map data.

**GEOL 478 Problems in Cartography (3)** Prerequisite: six credit hours in cartography or permission of department. Repeatable to 6 credits if content differs. Special topics in cartography for advanced students. Topics can include problems of cartographic management, special use maps, automated map production, map pattern perception, tabular information from maps; map projections, transformations, and new technologies.

**GEOL 480 Advanced Remote Sensing (3)** Prerequisite: GEOL 372 or introductory remote sensing course in another department. Project-oriented approach to specific applications of remote sensing. Use of numerical, digital data and pictorial images from aircraft and space vehicles. Image display and enhancement. Applications in resources management and environmental studies.

**GEOL 481 Advanced Computer Mapping (3)** Prerequisite: GEOL 373 or permission of department. Advanced concepts in automated cartography. Computerized map projections and displays. Computer-assisted map design and symbolization.

**GEOL 482 Geographic Information Systems (3)** Prerequisite: GEOL 373 or permission of department.

The construction and use of computer-based information systems. The collection, manipulation and automated display of geographical data. Applications in areas such as resource management, political districting, terrain analysis, and community planning

**GEOL 483 Survey of Computer Facilities for Geography and Urban Studies (1)** The PRIME computer system. Graphics terminals, digitizers, plotters. File creation and use (PRIMOS); software for statistical analysis (MINITAB); relational data base management system (INFORM); digitizing (DIGSRF2); contour mapping (SURFACE II); mapping of census data (CHOROMAP); symbol mapping (GIMMS). Other computer facilities on campus

**GEOL 490 Geographic Concepts and Source Materials (3)** A comprehensive and systematic survey of geographic concepts designed exclusively for teachers. Focus on philosophy of geography in relation to social and physical sciences, the use of the primary tools of geography, source materials, and the problems of presenting geographic principles.

**GEOL 498 Topical Investigations (1-3)** Restricted to advanced undergraduate students with credit for at least 24 hours in geography and to graduate students. Any exceptions should have approval of department. Repeatable to 6 credits if content differs. Independent study under individual guidance

## GEOL — Geology

**GEOL 100 Physical Geology (3)** Credit will be granted for only one of the following: GEOL 100 or GEOL 101. A general survey of the rocks and minerals composing the earth, its surface features and the agents that form them, and the dynamic forces of plate tectonics

**GEOL 101 Physical Geology for Science Students (4)** Two hours of lecture, three hours of laboratory, and one hour of discussion/recitation per week. Credit will be granted for only one of the following: GEOL 100 or GEOL 101. For science students. Basic physical, chemical, and biological models describing how the earth's dynamic systems function.

**GEOL 102 Historical Geology (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: GEOL 100 or GEOL 101. Earth's history as revealed through the principles of stratigraphy and the processes of physical geology. Emphasis on formations and geologic development of the North American continent

**GEOL 110 Physical Geology Laboratory (1)** Three hours of laboratory per week. Pre- or corequisite: GEOL 100 or GEOL 101. The basic materials and tools of physical geology stressing familiarization with rocks and minerals and the use of maps in geologic interpretations

**GEOL 120 Environmental Geology (3)** A review of geologic factors underlying many environmental problems and the interactions between population and physical environment. Geologic hazards, land-use planning, conservation, mineral resources, waste disposal, land reclamation and the geologic aspects of health and disease. The course is aimed at lower division students in education and liberal arts, and should be useful to any student concerned with geologic perspectives of environmental problems

**GEOL 210 Gems and Gemstones (3)** A survey of the origin, occurrences, properties, fashioning, and treatments of natural and synthetic materials, with emphasis on diamonds and colored stones

**GEOL 212 Planetary Geology (3)** An examination of the geological and geochemical processes at work in the solar system from the perspectives supplied by space age exploration of the planets and other solar system bodies.

**GEOL 301 Evolution in Geology (3)** Prerequisite: a college-level physical or biological science course with laboratory. An analysis of data, assumptions and logical structure of seafloor spreading and continental drift, biological evolution and the geological record, the concept of geologic time, catastrophism in geology, and "creationist geology"

**GEOL 302 Analysis of Environmental Pollution of Mining and Mineral Utilization (3)** Prerequisite: GEOL 100 and CHEM 103 or permission of department. Sources

and nature of pollution derived from the mining and utilization of ore minerals. Analysis of the appropriateness of current government regulations

**GEOL 321 Crystallography (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: MATH 115. An introduction to the study of crystals. The theoretical and practical relationships between the internal and external properties of crystalline solids. Morphological, optical and chemical crystallography

**GEOL 322 Mineralogy (4)** Two hours of lecture and two hours of laboratory per week. Prerequisite: GEOL 110 and CHEM 103. Basic mineralogy for geology majors. The principles of morphologic crystallography, crystal chemistry, and determinative mineralogy

**GEOL 331 Invertebrate Paleontology (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: GEOL 102. A systematic review of the morphology, classification, interrelationships and geologic significance of all the commonly fossilized invertebrate phyla

**GEOL 340 Geomorphology (4)** Three hours of lecture and three hours of laboratory per week. Two Saturday field trips. Prerequisites: GEOL 101 or (GEOL 100 and GEOL 110). Analysis of landforms, organized on the basis of the geological processes that have operated during the late Cenozoic. Constructional and erosional landforms related to physical systems operating on geologic structures through time

**GEOL 341 Structural Geology (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: GEOL 102 or permission of department. Deformation of the earth's crust, stress and strain, mechanical behavior of rocks, origin and significance of structural features. Construction of geologic maps and cross sections; stereographic and orthographic representation of structures

**GEOL 342 Sedimentation and Stratigraphy (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: GEOL 322 or permission of department. Description, origin and distribution of sediments and sedimentary rocks. Mandatory field trip

**GEOL 375 General Oceanography (3)** Formerly GEOL 475. Introduction to the processes shaping the marine environment. The geological and biological processes contributing significantly to the geological record and the environment

**GEOL 390 Field Methods (3)** Six hours of laboratory per week. Prerequisites: GEOL 331; and GEOL 341. Corequisites: GEOL 342; and GEOL 443. The basic skills and procedures used in field geology. Course serves as a prerequisite for GEOL 490, Geology Field Camp

**GEOL 393 Technical Writing for Geoscientists (3)** Prerequisites: ENGL 101 and completion of any two of the following and concurrent registration in the third: GEOL 341, GEOL 331 and GEOL 322. For GEOL majors only. Planning, writing and presenting a plan for research in the geosciences

**GEOL 394 Research Problems in Geology (3)** Prerequisite: GEOL 393. Investigation of a specific laboratory, library or field problem. Written and oral presentation of the study

**GEOL 410 Industrial Rocks and Minerals (3)** Prerequisite: GEOL 322. The origin, occurrence, mineralogy, extraction and treatment technology, production and deposit-evaluation of rocks and minerals used in the construction, ceramic, chemical and allied industries. Restricted to non-fuels, non-metallic, non-gem materials. Field trips to industrial locations are required

**GEOL 423 Optical Mineralogy (3)** One hour of lecture and four hours of laboratory per week. Prerequisite: GEOL 322. The optical behavior of crystals with emphasis on the theory and application of the petrographic microscope.

**GEOL 432 Biostratigraphy (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: GEOL 331. Principles of biostratigraphy, paleoecology and paleogeology. Laboratory study emphasizes significant index fossils.

**GEOL 434 Micropaleontology (3)** Two lectures and one laboratory per week. Prerequisite: GEOL 331. A systematic review of the morphology, classification, ecology and geologic ranges of important microfossil groups, particularly ostracodes and foraminifera.

**GEOL 436 Regional Geology of North America (3)** Prerequisite: GEOL 102. A systematic study of the regional geology of North America including history, structure, stratigraphy and petrology of the physiographic provinces of the United States, Canada and the Caribbean.

**GEOL 443 Petrology (3)** Two lectures and one laboratory per week. Prerequisite: GEOL 322. A detailed study of rocks: petrogenesis, distributions, chemical and mineralogical relation, macroscopic descriptions and geologic significance.

**GEOL 444 Petrography (3)** One lecture and two laboratories per week. Prerequisite: GEOL 423, GEOL 342. Microscopic thin-section studies of rocks stressing the description and classification of igneous and metamorphic rocks.

**GEOL 445 Principles of Geochemistry (3)** Prerequisites: CHEM 103, and GEOL 322. An introduction to the basic principles of geochemistry including geothermometry, geobarometry, geochronology and the genesis of natural inorganic materials.

**GEOL 446 Geophysics (3)** Two lectures and one laboratory per week. Prerequisite: PHYS 142. An introduction to the basic theories and principles of geophysics stressing such important applications as rock magnetism, gravity anomalies, crustal strain and earthquakes, and surveying.

**GEOL 447 Geochemistry of Fuels (3)** Prerequisite: CHEM 104. Discussion of the progenitors and the biochemical, chemical and physical agencies that convert them into crude oils, coals of various ranks, natural gas and other organic fuels. The origin, composition, mineralogy and organic constituents (kerogen) of oil shales. Mineralogy, geochemical cycles and accumulation of uranium and thorium.

**GEOL 451 Groundwater Geology (3)** Prerequisite: GEOL 100 or GEOL 101. An introduction to the basic geologic parameters associated with the hydrologic cycle. Problems in the accumulation, distribution and movement of groundwater will be analyzed.

**GEOL 453 Economic Geology (3)** Two laboratories per week. Prerequisite: GEOL 322. A study of the geology of metallic ore deposits stressing ore-forming processes, configuration of important ore bodies, and familiarization with characteristic ore mineral suites.

**GEOL 456 Engineering Geology (3)** Two lectures and one laboratory per week. Prerequisite: GEOL 341. A study of the geological problems associated with the location of tunnels, bridges, dams and nuclear reactors, slope control, and natural hazards.

**GEOL 462 Geological Remote Sensing (3)** One lecture and two laboratories per week. Prerequisite: GEOL 341 and GEOL 342. An introduction to geological remote sensing including applications of aerial photographic interpretation to problems in regional geology, engineering geology, structural geology, and stratigraphy. Films, filters, and criteria used in selecting imagery are also discussed. Laboratory exercises include measurements of geologic parameters and compilation and transference of data to base maps.

**GEOL 471 Geochemical Methods of Analysis (3)** Prerequisite: CHEM 103 and CHEM 113. Principles and application of geochemical analysis as applied to a variety of geological problems. X-ray and optical spectroscopy, X-ray diffraction, atomic absorption, electron microprobe and electron microscopy.

**GEOL 472 Tectonics (3)** Prerequisite: GEOL 341. Selected tectonic elements of organic belts through out the world viewed in the framework of plate tectonics and sea floor spreading.

**GEOL 474 Computer Modeling for Geologists (3)** Prerequisites: GEOL 331; GEOL 341; [GEOL 342 or GEOL 423]; CMSC 110. Computer modeling in the geosciences.

**GEOL 490 Geology Field Camp (3)** Prerequisite: GEOL 390 or equivalent. Three-week intense field geology course taught off campus during the summer. Students describe and compile maps of formations and structures from outcrops, subsurface, and remotely sensed data. Special fees required.

**GEOL 499 Special Problems in Geology (1-3)** Prerequisites: GEOL 102; and GEOL 110 or equivalent, and permission of department. Intensive study of a special geologic subject or technique selected after consultation with instructor. Intended to provide training or instruction not available in other courses which will aid the student's development in his or her field of major interest.

## GERM — German

**GERM 101 Elementary German I (4)** One hour of laboratory and four hours of discussion/recitation per week. Introduction to basic structures and pronunciation by emphasis on the four skills: listening, speaking, reading and writing. Readings concern the current life-style and civilization of the German-speaking world.

**GERM 102 Elementary German II (4)** One hour of laboratory and four hours of discussion/recitation per week. Prerequisite: GERM 101 or equivalent. A continuation of GERM 101, completing the introduction of basic structures and continuing the involvement with the civilization of the German-speaking world.

**GERM 103 Review of Elementary German (4)** One hour of laboratory and four hours of discussion/recitation per week. Prerequisite: assignment either by placement examination or by the undergraduate director (Germanic Section). Designed specifically for students who are too advanced for GERM 101 but are not sufficiently prepared to take GERM 102. GERM 103 covers the coursework to the completion of GERM 102 in one semester.

**GERM 104 Intermediate German (4)** One hour of laboratory and four hours of discussion/recitation per week. Prerequisite: GERM 102 or GERM 103 or equivalent. Grammar review and greater mastery of vocabulary, idioms, conversational fluency and compositional skills. Readings stress the current life-style and civilization of the German-speaking world.

**GERM 141 Elementary Yiddish I (3)** Pronunciation and basic grammatical structures; readings in the life-style and culture of the Yiddish-speaking world.

**GERM 142 Elementary Yiddish II (3)** Prerequisite: GERM 141 or equivalent. A continuation of GERM 141.

**GERM 144 Intermediate Yiddish I (3)** Prerequisite: GERM 142 or equivalent. Grammar review and greater mastery of vocabulary, idioms, conversational fluency and compositional skills; readings on Yiddish culture.

**GERM 145 Intermediate Yiddish II (3)** Prerequisite: GERM 144 or equivalent. Continuation of GERM 144.

**GERM 152 Elementary Dutch II (3)** Prerequisite: GERM 151 or equivalent. A continuation of GERM 151.

**GERM 163 Elementary Norwegian I (3)** Conversational skills in modern Norwegian.

**GERM 165 Elementary Swedish I (3)** Conversational skills in modern Swedish.

**GERM 166 Elementary Swedish II (3)** Prerequisite: GERM 165 or equivalent. A continuation of GERM 165.

**GERM 220 Introduction to German Literature (3)** Prerequisite: GERM 114 or equivalent. May be taken concurrently with GERM 115. Reading and discussion of major authors with emphasis on contemporary German literature. Readings and instruction in German.

**GERM 280 German-American Cultural Contrast (3)** A study of German-American culture in contemporary literature.

**GERM 281 Women in German Literature and Society (3)** A study of changing literary images and social roles of women from the beginning of the 19th century to the present.

**GERM 282 Germanic Mythology (3)** An introduction to the religious beliefs of the pagan Germanic peoples. Comparison of Germanic myths with those of other Indo-European peoples. The conversion of the Germania to

Christianity and the preservation of pagan beliefs in superstition and literature.

**GERM 285 German Film and Literature (3)** A visual approach to German literature through a study of the historical, cultural, and literary significance of German films. Representative examples from the golden age of German silent films to the new German cinema.

**GERM 301 Conversation and Composition I (3)** Prerequisite: GERM 115 or equivalent. Practice in contemporary spoken and written German. Systematic review of grammar, and exercise in composition. Emphasis on cultural contrasts.

**GERM 302 Conversation and Composition II (3)** Prerequisite: GERM 301 or equivalent. Continuation of GERM 301.

**GERM 321 Highlights of German Literature I (3)** Prerequisite: GERM 220 or equivalent. Selected masterworks from different periods of German literature: middle ages, reformation, baroque, 18th century, classicism. Readings and instruction in German.

**GERM 322 Highlights of German Literature II (3)** Prerequisite: GERM 220 or equivalent. Selected masterworks from different periods of German literature: romanticism, Biedermeier, Junges Deutschland, realism, naturalism and its counter currents, expressionism to the present. Readings and instruction in German.

**GERM 339 German Literature In Translation (3)** Repeatable to 6 credits if content differs. Selected movements, genres or other special topics in German literature. Readings and instruction in English. May not be counted in the fulfillment of German major requirements in German literature.

**GERM 348 Yiddish Culture (3)** Repeatable to 6 credits if content differs. Various phases of Yiddish culture ranging from the life-style of European Jewry in the "shtetl" to experiences of the immigrant. Readings and instruction in English.

**GERM 349 Yiddish Literature in Translation (3)** Repeatable to 6 credits if content differs. Study of an important Yiddish author, period or theme. Readings and instruction in English.

**GERM 368 Scandinavian Civilization (3)** Repeatable to 6 credits if content differs. Literary, artistic and historic traditions, folklore and superstition, customs and life-style shared by Scandinavian nations. Readings and instruction in English.

**GERM 369 Scandinavian Literature in Translation (3)** Repeatable to 6 credits if content differs. Study of a major Scandinavian author, genre, period or theme. Readings and instruction in English.

**GERM 381 German Civilization I (3)** A survey of the literary, educational and artistic traditions, great men and women, customs and general culture of the German-speaking world from the beginnings to the middle of the 19th century. All readings and instruction are in English.

**GERM 382 German Civilization II (3)** A continuation of GERM 381 covering the development of German, Austrian and Swiss civilizations from the middle of the 19th century to the present. All readings and instruction are in English.

**GERM 383 The Viking Era (3)** An introduction to the life-style of northern Europe in the 9th to 11th centuries. Readings and instruction in English.

**GERM 384 The Age of Chivalry (3)** An introduction to the life-style of northern Europe in the 12th to 14th centuries. Readings and instruction in English.

**GERM 389 Topics in Germanic Culture (3)** Repeatable to 6 credits if content differs. Topics in the cultures of the German, Germanic, Indo-European peoples and of their culturally related non-Indo-European neighbors. In English.

**GERM 397 Honors Reading (Independent Study) (3)** Supervised reading to be taken normally only by students admitted into honors program.

## 206 GVPT — Government and Politics

**GERM 401 Advanced Conversation (3)** Prerequisite: GERM 302 or equivalent. Development of fluency in spoken German. Discussion of contemporary issues.

**GERM 403 Advanced Composition (3)** Prerequisite: GERM 302 or equivalent. Advanced instruction in writing skills.

**GERM 405 Stylistics (3)** Prerequisite: GERM 302 or equivalent. Stylistic analysis of oral and written German both literary and non-literary. Intensive study of vocabulary and syntax. Dictionary and composition exercises.

**GERM 415 German English Translation I (3)** Not open to students who have completed GERM 111, GERM 115 and/or GERM 301. GERM 302. An intensive presentation of German grammar limited exclusively to reading skill. Graded readings in the arts and sciences. Instruction in English, can not be used to satisfy the arts and humanities foreign language requirement.

**GERM 416 German English Translation II (3)** Prerequisites: GERM 302 and GERM 415 or equivalent. Written translation of materials from the student's field of study. Discussion of basic problems of German-to-English translation, with examples from students' projects. Instruction in English. Cannot be used to satisfy the arts and humanities foreign language requirement.

**GERM 419 Selected Topics in German Language Study (3)** Prerequisite: GERM 302 and permission of department. Repeatable to 6 credits if content differs.

**GERM 421 Literature of the Middle Ages (3)** Prerequisite: GERM 321 and 322 or permission of department. German literature from the 8th through the 15th centuries. Readings include old high German texts, the German heroic, courtly and popular epic, Minnesang, Meistersang, the late Medieval epic, folk literature of the late Middle Ages. Read in modern German translation.

**GERM 422 From the Reformation Through the Baroque (3)** Prerequisite: GERM 321 and GERM 322 or permission of department. Readings of representative authors from the reformation and the period of humanism through the baroque (ca. 1517-1720). Readings and instruction in German.

**GERM 423 From Enlightenment through Storm and Stress (3)** Prerequisite: GERM 321 and GERM 322, or permission of department. Readings of representative authors from the Enlightenment (1720-1785), the Age of Sentimentalism (1740-1780), and Storm and Stress (1767-1785). Readings and instruction in German.

**GERM 424 Classicism (3)** Prerequisite: GERM 321 and GERM 322, or permission of department. Readings of representative authors from the Age of Classicism (1785-1832). Readings and instruction in German.

**GERM 431 Romanticism and Biedermeier (3)** Prerequisite: GERM 321 and GERM 322, or permission of department. Readings of representative authors from the periods of Romanticism (1798-1835) and Biedermeier (1820-1850). Readings and instruction in German.

**GERM 432 Junges Deutschland and Realism (3)** Prerequisite: GERM 321 and 322, or permission of department. Readings of representative authors from the periods of Junges Deutschland (1830-1850) and Realism (1850-1890). Readings and instruction in German.

**GERM 433 Naturalism and Its Counter Currents (3)** Prerequisite: GERM 321 and GERM 322, or permission of department. Readings of representative authors from the period of naturalism and its counter currents (1880-1920). Readings and instruction in German.

**GERM 434 Expressionism to 1945 (3)** Prerequisite: GERM 321 and GERM 322, or permission of department. Readings of representative authors from Expressionism through the period between the wars to the contrast of Nazi and Exile Literature (ca. 1910-1945). Readings and instruction in German.

**GERM 435 From 1945 to the Present (3)** Prerequisite: GERM 321 and GERM 322, or permission of department. Readings of representative authors from the "Two Germanies," Austria, and Switzerland in the period from the end of World War II to the present. Readings and instruction in German.

**GERM 461 Reading Swedish, Danish and Norwegian I (3)** Not open to students who have completed GERM 164 or GERM 165. Develops reading facility in three languages in one semester. Texts read include Bergman's Seventh Seal, tales by H.C. Andersen, excerpts from works by Ibsen and Hamsun, and selected folk literature. No foreign language prerequisite.

**GERM 462 Reading Swedish, Danish and Norwegian II (3)** GERM 461 or permission of department. Further development of reading facility.

**GERM 463 The Icelandic Family Saga (3)** Analysis of the old Norse saga as historiography, literature, and folklore. Readings and instruction in English.

**GERM 464 The Fantastic and Historic Saga (3)** Mythological heroic sagas; translation of chivalric materials from the continent, and the histories of the Norwegian kings, the "viking colonies" and the settlement of Iceland contrasted with the classical structure of the family saga, chivalric models, and other national histories by Germanic writers of the Middle Ages. Readings and instruction in English.

**GERM 469 Selected Topics in Scandinavian Studies (3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Study of a linguistic, literary or cultural topic in Scandinavian studies.

**GERM 472 Introduction to Germanic Philology (3)** Prerequisites: GERM 115 and GERM 471, or equivalent. Reconstructed proto-Germanic and surveys of Gothic, Old Norse, Old English, Old Saxon. The development of High German from the Old High German period through Middle High German to modern German; a short introduction to modern German dialectology. Instruction in English.

**GERM 475 Old Norse (3)** The language of the old Icelandic saga, the Eddas and Skaldic poetry. Reading of texts in the original; historical development of Old Norse and its role in the Germanic language family. No knowledge of German or a Scandinavian language required; instruction in English.

**GERM 479 Selected Topics in Germanic Philology (3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Selected topics such as comparative Germanic studies, Old Norse language or readings in Old Norse literature, modern German dialectology.

**GERM 499 Directed Study (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs.

### GNED — General Education

**GNED 100 The Anatomy of Knowing: The University and Its Curriculum (3)** Open to students with freshman and sophomore standing. An exploration of the ways of understanding the world that characterize the three large areas of university study: the sciences, the social sciences, and the arts and humanities. Students will have the opportunity to develop, in consultation with faculty, their personal plans for intellectual exploration. Open to students with freshman and sophomore standing.

**GNED 189 College Park Seminar (3)** Not open to upperclass students who have completed more than 27 semester hours (including current registration). Repeatable to 3 credits if content differs. Each seminar will be taught by regular faculty and composed of no more than twenty students. The seminars will satisfy a Distributive Studies requirement and afford students an intense introduction to undergraduate education with emphasis on analytical and critical thinking.

**GNED 288 Introduction to British Culture (3)** Aspects of British culture they will encounter during their stay in London for students in the Study in London Program. An historical introduction to the development of London, illustrating the city's dominant role in British life and culture. Studies of the different communities, the media, architecture, the relationship between the community and the arts, environmental issues, as well as the political and commercial life of the city.

**GNED 300 Perspectives on Nuclear War (3)** Nuclear weapons are an important issue facing the world today. A multidisciplinary approach to the issue of nuclear war, drawing upon the resources of many departments on campus and organizations off campus. The mechanics of nuclear weapons and delivery systems, and the

biological, psychological, medical, and meteorological effects of the use of nuclear weapons. The history of confrontation, development of arms policies, and efforts at arms control.

**GNED 301 The Arts and the Sciences (3)** A comparison of the modes of conceptualization and expression characteristic of scientists and creative artists. Examination of such matters as description, style and the relationship of the artist and the scientist to society.

### GREK — Greek

**GREK 101 Elementary Greek (3)** A student who has had two units of Greek in high school may register for GREK 101 for purposes of review but not for credit.

**GREK 102 Elementary Greek (3)** A student who has had two units of Greek in high school may register for GREK 102 for credit with departmental permission.

**GREK 203 Intermediate Greek (Grammar and Reading) (3)** Prerequisites: GREK 101; and GREK 102 or equivalent.

**GREK 204 Intermediate Greek (Homer) (3)** Prerequisite: GREK 203 or equivalent.

**GREK 300 level course prerequisite: GREK 204 or equivalent.** Except that, with the instructor's permission, a student who plans to take no more than four semesters of Greek may substitute GREK 352 for GREK 204.

**GREK 351 Euripides (3)**

**GREK 352 The New Testament (3)**

**GREK 353 Herodotus (3)**

**GREK 354 Greek Lyric Poetry (3)** Selections in translation of Greek literature from Homer to Lucian, with special emphasis on epic and dramatic poetry.

**GREK 402 Greek Philosophers (3)**

**GREK 403 Greek Tragedy (3)**

**GREK 404 Greek Comedy (3)**

**GREK 406 Greek Epigraphy (3)**

**GREK 488 Greek Readings (1-3)** Prerequisite: permission of department. May be repeated if content differs. The reading of one or more selected Greek authors. Reports.

**GREK 490 Survey of Greek Literature (3)** Greek literature, including authors, genres and periods. The reading of selections from many of the major authors, combined with the study of the history of Greek literature. Review of Greek grammar.

**GREK 499 Independent Study in Greek Language and Literature (3)** Prerequisite: permission of department. Repeatable to 6 credits.

### GVPT — Government and Politics

**GVPT 100 Principles of Government and Politics (3)** A study of the basic principles and concepts of political science.

**GVPT 170 American Government (3)** A comprehensive study of national government in the United States: national, state and local.

**GVPT 200 International Political Relations (3)** Prerequisite: GVPT 100. Formerly GVPT 300. A study of the major factors underlying international relations, the methods of conducting foreign relations, the foreign policies of the major powers, and the means of avoiding or alleviating international conflicts.

**GVPT 210 Introduction to Public Administration and Policy (3)** Prerequisite: GVPT 170. An introduction to the study of the administrative process in the executive branch with an examination of the concepts and principles of administration and their relationship to public policy. The organizational structure, theory and the behavior of participants in the administration of policy.

**GVPT 220 Introduction to Political Behavior (3)** Prerequisite: GVPT 100 or GVPT 170. Development, concepts and techniques of the behavioral approach to political science and other recent developments in the field.



- GVPT 231 Law and Society (3)** Prerequisite: GVPT 170. A study of the basis of law and its relationship with various contemporary institutions such as the courts, the legal profession, and society at large.
- GVPT 240 Political Ideologies (3)** Prerequisite: GVPT 100. A survey and analysis of the leading ideologies of the modern world, including anarchism, communism, socialism, fascism, nationalism, and democracy.
- GVPT 260 State and Local Government (3)** Prerequisite: GVPT 170. A study of the functioning and problems of state and local government in the United States, with illustrations from Maryland jurisdictions.
- GVPT 272 The Politics of Race Relations in the United States (3)** Prerequisite: GVPT 170. Political dimension of historical and contemporary racial cleavage in the United States with particular emphasis on the post World War II period.
- GVPT 273 Introduction to Environmental Politics (3)** Prerequisite: GVPT 170. A comprehensive overview of environmental problems, institutions, policies, practices, and remedies found in present-day world society, with special emphasis on environmental matters as objects of American public policy, both domestic and foreign.
- GVPT 280 Comparative Politics and Governments (3)** Prerequisite: GVPT 100. An introduction to the comparative study of politics and governance, including the analytical frameworks for studies of politics and governmental institutions and a survey of the major types of European regimes.
- GVPT 282 The Government and Politics of the Third World (3)** Prerequisite: GVPT 100. A study of the governmental institutions, processes and problems, and the socio-economic environment which are common to the great majority of the third world states of Africa, the Middle East, Asia, and Latin America; and in which internal politics develop.
- GVPT 306 Global Ecopolitics (3)** Prerequisite: GVPT 200. Consideration of global problems such as the growth controversy, agricultural productivity, pollution, resource depletion, the energy crisis, and the general impact of science and technology on the world ecological, socio-economic, and political system, with particular emphasis on such matters as objects of public policy.
- GVPT 341 Political Morality and Political Action (3)** Prerequisite: GVPT 100. The ethical problems implicit in public actions by individuals, groups, and government. Selected topics in contemporary political theory such as distribution, participation, and equality.
- GVPT 343 Political Themes in Contemporary Literature (3)** Prerequisite: GVPT 100. An analysis of political concepts and issues in novels, plays and poetry drawn largely from the twentieth century. Among the themes considered in the course are the nature and limits of power, conflict, leadership, submissiveness, rebellion, and loyalty.
- GVPT 376 Applied Field Research in Government and Politics (6)** Prerequisite: GVPT 170. Corequisite: GVPT 377. Students in this course participate as interns in an agency of government or in some other appropriate political organization. Assignments are arranged to provide students with insights into both theoretical and practical aspects of politics. Under the tutelage of the host agency and an academic adviser, students conduct a major research project of mutual interest to the student and his or her host agency in the field of government and politics.
- GVPT 377 Seminar For Academic Interns (3)** Prerequisite: GVPT 170. Corequisite: GVPT 376. The application of major concepts of political science to the realities of the political process. Readings and discussion attempt to relate the experiences of the academic interns to appropriate literature on the subject of political decision-making.
- GVPT 388 Topical Investigations (3)** Prerequisite: one 200-level GVPT course. Independent research and writing on selected topics in government and politics.
- GVPT 390 Honors Seminar In American Government and Public Administration (3)** Prerequisite: admission to honors program. Directed reading, reporting and discussion on the major materials of historical and contemporary relevance in the fields of American government and public administration.
- GVPT 391 Honors Seminar in Comparative Government and International Relations (3)** Prerequisite: admission to honors program. Directed reading, reporting and discussion centering on the major materials of historical and contemporary relevance in the fields of comparative government and international relations.
- GVPT 392 Honors Seminar in Public Law and Political Theory (3)** Prerequisite: admission to honors program. Directed reading, reporting and discussion centering on the major materials of historical and contemporary relevance in the fields of public law and political theory.
- GVPT 393 Honors Seminar in Public Policy, Political Behavior, and Methodology (3)** Prerequisite: admission to honors program. Directed reading, reporting and discussion centering on the major materials of historical and contemporary relevance in the fields of public policy and political behavior.
- GVPT 396 Introduction to Honors Research (3)** Prerequisite: admission to and permission of GVPT Honors Program. A required course for all honors students designed to emphasize library, research, methodology, and writing skills in political science and political philosophy. A written proposal, bibliography and research design for an honors paper required of all students as a final project.
- GVPT 397 Honors Research (3)** Prerequisite: GVPT 396 and admission to GVPT honors program. Individual reading and research. Preparation of an original paper.
- GVPT 399 Seminar in Government and Politics (3)** Prerequisite: one 200-level GVPT course. Reading, research, discussion, analysis, and writing in the area of politics. Both substantive issues and methodological approaches will be considered. Primarily for government and politics undergraduate majors.
- GVPT 401 Problems of World Politics (3)** Prerequisite: GVPT 200. A study of governmental problems of international scope, such as causes of war, problems of neutrality, and propaganda. Students are required to report on readings from current literature.
- GVPT 402 International Law (3)** Prerequisite: GVPT 200. A study of the basic character, general principles and specific rules of international law, with emphasis on recent and contemporary trends in the field and its relation to other aspects of international affairs.
- GVPT 403 Law, Morality and War (3)** Prerequisite: GVPT 200. An exploration of fundamental moral and legal issues concerning war.
- GVPT 405 Defense Policy and Arms Control (3)** Prerequisite: GVPT 200. Contemporary issues of military strategy and international security are covered, including nuclear war, conventional (limited) war, guerrilla insurgency, arms control, disarmament, moderation of war, defense policy processes, and defense economics.
- GVPT 411 Public Personnel Administration (3)** Prerequisite: GVPT 210. A survey of public personnel administration, including the development of merit civil service, the personnel agency, classification, recruitment, examination techniques, promotion, service ratings, training, discipline, employee relations, and retirement.
- GVPT 412 Public Financial Administration (3)** Prerequisite: GVPT 210. A survey of governmental financial procedures, including processes of current and capital budgeting, the administration of public borrowing, the techniques of public purchasing, and the machinery of control through pre-audit and post-audit.
- GVPT 413 Governmental Organization and Management (3)** Prerequisite: GVPT 210. A study of the theories of organization and management in American government with emphasis on new trends, experiments and reorganizations.
- GVPT 414 Administrative Law (3)** Prerequisite: GVPT 210. A study of the discretion exercised by administrative agencies, including analysis of their functions, their powers over persons and property, their procedures, and judicial sanctions and controls.
- GVPT 422 Quantitative Political Analysis (3)** Prerequisite: GVPT 220. Introduction to quantitative methods of data analysis, including selected statistical methods, block analysis, content analysis, and scale construction.
- GVPT 423 Elections and Electoral Behavior (3)** Prerequisite: GVPT 220. An examination of various topics relating to elections; the focus includes the legal structure under which elections are conducted, the selection and nomination process, the conduct of election campaigns, and patterns of political participation and voting choice in different types of elections.
- GVPT 426 Public Opinion (3)** Prerequisite: GVPT 220. An examination of public opinion and its effect on political action, with emphasis on opinion formation and measurement, propaganda and pressure groups.
- GVPT 427 Political Sociology (3)** Prerequisite: GVPT 220. A study of the societal aspects of political life including selected aspects of the sociology of group formation and group dynamics, political association, community integration and political behavior.
- GVPT 429 Problems in Political Behavior (3)** Prerequisite: GVPT 220. The problem approach to political behavior with emphasis on theoretical and empirical studies on selected aspects of the political process.
- GVPT 431 Introduction to Constitutional Law (3)** Prerequisite: GVPT 231. A systematic inquiry into the general principles of the American constitutional system, with special reference to the role of the judiciary in the interpretation and enforcement of the federal constitution.
- GVPT 432 Civil Rights and the Constitution (3)** Prerequisite: GVPT 231. A study of civil rights in the American constitutional context, emphasizing freedom of religion, freedom of expression, minority discrimination, and the rights of defendants.
- GVPT 433 The Judicial Process (3)** Prerequisite: GVPT 231. An examination of judicial organization in the United States at all levels of government, with some emphasis on legal reasoning, legal research and court procedures.
- GVPT 434 Race Relations and Public Law (3)** Prerequisite: GVPT 231. A political and legal examination of the constitutionally protected rights affecting racial minorities and of the constitutional power of the federal courts, congress, and the executive to define, protect and extend these rights.
- GVPT 436 The Legal Status of Women (3)** Prerequisite: GVPT 231. An examination of judicial interpretation and application of common, statutory, and constitutional law as these affect the status of women in American society.
- GVPT 441 History of Political Theory: Ancient and Medieval (3)** Prerequisite: GVPT 100. A survey of the principal political theories set forth in the works of writers before Machiavelli.
- GVPT 442 History of Political Theory—Medieval to Recent (3)** Prerequisite: GVPT 100. A survey of the principal theories set forth in the works of writers from Machiavelli to Nietzsche.
- GVPT 443 Contemporary Political Theory (3)** Prerequisite: GVPT 100. A survey of the principal political theories and ideologies set forth in the works of writers from Karl Marx to the present.
- GVPT 444 American Political Theory (3)** Prerequisite: GVPT 100 or GVPT 170. A study of the development and growth of American political concepts from the Colonial period to the present.
- GVPT 445 Russian Political Thought (3)** Prerequisite: GVPT 100. A survey and analysis of political ideas in Russia and the Soviet Union from early times to the present.
- GVPT 448 Non-Western Political Thought (3)** Prerequisite: GVPT 100; permission of department required for repeat. Examination of works by major authors and general themes of political thought originating in Asia, the Middle East, and Africa. This is not a survey of all non-western political thought, but a course to be limited by the professor with each offering.
- GVPT 450 Comparative Study of Foreign Policy Formation (3)** Prerequisite: GVPT 200. The opportunity to learn the theoretical underpinnings of foreign policy decision-making and to apply this knowledge in a simulation of a "real world" negotiation arena.
- GVPT 451 Foreign Policy of the U.S.S.R. (3)** Prerequisite: GVPT 280 or GVPT 282. A study of the

development of the foreign policy of the Soviet Union, with attention paid to the forces and conditions that make for continuities and changes from Tsarist policies.

**GVPT 453 Recent East Asian Politics (3)** Prerequisite: GVPT 280 or GVPT 282. The background and interpretation of recent political events in East Asia and their influence on world politics.

**GVPT 454 Contemporary African Politics (3)** Prerequisite: GVPT 280 or GVPT 282. A survey of contemporary development in the international politics of Africa, with special emphasis on the role of an emerging Africa in world affairs.

**GVPT 455 Contemporary Middle Eastern Politics (3)** Prerequisite: GVPT 280 or GVPT 282. A survey of contemporary development in the international politics of the Middle East, with special emphasis on the role of emerging Middle East nations in world affairs.

**GVPT 457 American Foreign Relations (3)** Prerequisite: GVPT 200. The principles and machinery of the conduct of American foreign relations, with emphasis on the Departments of State and Defense, and an analysis of the major foreign policies of the United States.

**GVPT 460 Problems in State and Local Government (3)** Prerequisite: GVPT 260. A study of the structure, procedures and policies of state and local governments with special emphasis on the state level and on intergovernmental relationships, and with illustrations from Maryland governmental arrangements.

**GVPT 461 Metropolitan Government (3)** Prerequisite: GVPT 260. An examination of administrative problems relating to public services, planning and coordination in a metropolitan environment.

**GVPT 462 Urban Politics (3)** Prerequisite: GVPT 260. Urban political process and institutions considered in the light of changing social and economic conditions.

**GVPT 471 Women and Politics (3)** Prerequisite: GVPT 170. An examination of patterns of political participation among women and of problems of public policy especially relevant to women.

**GVPT 473 Legislatures and Legislation (3)** Prerequisite: GVPT 170. A detailed survey of lawmaking and the legislative process, emphasizing the U.S. Congress and its members.

**GVPT 474 Political Parties (3)** Prerequisite: GVPT 170. A descriptive and analytical examination of American political parties, nominations, elections, and political leadership.

**GVPT 475 The Presidency and the Executive Branch (3)** Prerequisite: GVPT 170. An examination of the U.S. presidency in historical and contemporary perspective: nomination and electoral politics and the president's place in policy-making, administration, and public opinion.

**GVPT 479 Problems of American Public Policy (3)** Prerequisite: GVPT 170. The background and interpretation of various factors which affect the formation and execution of American public policy.

**GVPT 480 Comparative Political Systems (3)** Prerequisite: GVPT 280 or GVPT 282. A study, along functional lines, of major political institutions, such as legislatures, executives, courts, bureaucracies, public organizations, and political parties.

**GVPT 481 Government and Administration of the Soviet Union (3)** Prerequisite: GVPT 280 or GVPT 282. A study of the adoption of the communist philosophy by the Soviet Union, of its governmental structure and of the administration of government policy in the Soviet Union.

**GVPT 482 Government and Politics of Latin America (3)** Prerequisite: GVPT 280 or GVPT 282. A comparative study of the governmental systems and political processes of the Latin American countries.

**GVPT 483 Government and Politics of Asia (3)** Prerequisite: GVPT 280 or GVPT 282. A comparative study of the political systems of China, Japan, India and other selected Asian countries.

**GVPT 484 Government and Politics of Africa (3)** Prerequisite: GVPT 280 or GVPT 282. A comparative study of the governmental systems and political

processes of the African countries, with special emphasis on the problems of nation-building in emergent countries.

**GVPT 485 Government and Politics of the Middle East (3)** Prerequisite: GVPT 280 or GVPT 282. A comparative study of the governmental systems and political processes of the Middle Eastern countries, with special emphasis on the problems of nation-building in emergent countries.

**GVPT 486 Comparative Studies in European Politics (3)** Prerequisite: GVPT 280 or GVPT 282. Comparative studies in the forms of government, political processes, and public policies in European countries.

**GVPT 492 The Comparative Politics of Race Relations (3)** Prerequisite: GVPT 280 or GVPT 282. Impact of government and politics on race relations in various parts of the world. The origins, problems, and manifestations of such racial policies as segregation, apartheid, integration, assimilation, partnership, and nonracialism will be analyzed.

## HEBR — Hebrew

**HEBR 111 Elementary Hebrew I (6)** Six hours of discussion recitation per week. Modern Israeli Hebrew. Emphasis on conversation. Study of linguistic structure and development of audio-lingual, writing and reading ability.

**HEBR 112 Elementary Hebrew II (6)** Six hours of discussion recitation per week. Prerequisite: HEBR 111 or equivalent. Continuation of HEBR 111.

**HEBR 211 Intermediate Hebrew I (6)** Six hours of discussion recitation per week. Prerequisite: HEBR 112 or equivalent. Study of linguistic structure, further development of audio-lingual, reading, writing, and speaking skills. Reading of texts and newspapers designed to give some knowledge of Hebrew life, thought and culture.

**HEBR 212 Intermediate Hebrew II (6)** Six hours of discussion recitation per week. Prerequisite: HEBR 211 or permission of department. Continuation of HEBR 211.

**HEBR 223 The Hebrew Bible: Narrative (3)** Selected readings from narrative sections of the Hebrew Bible stressing the new literary approaches to the biblical text. In English, no knowledge of Hebrew required.

**HEBR 224 The Hebrew Bible: Poetry and Rhetoric (3)** Readings of poetic and prophetic selections from the Hebrew Bible. Analysis of devices and their rhetorical effect. Comparison of biblical poetry with other poetry of the ancient near east. In English, no knowledge of Hebrew required.

**HEBR 231 Jewish Literature in Translation (3)** Selections from the Bible, Talmud, medieval, and modern sources illustrating the basis and diversity of Jewish thought.

**HEBR 298 Special Topics in Jewish Studies (3)** Repeatable to 6 credits if content differs.

**HEBR 313 Conversation and Composition I (3)** Prerequisite: HEBR 212 or equivalent. A practical language course recommended for all students continuing with Hebrew. Review of grammar and composition. Selected readings. Oral and written exercises.

**HEBR 314 Conversation and Composition II (3)** Prerequisite: HEBR 313 or equivalent. A practical language course recommended for all students continuing with Hebrew. Review of grammar and composition. Selected readings. Oral and written exercises.

**HEBR 321 Survey of Hebrew Literature 1 (3)** Prerequisite: HEBR 301 or equivalent. Haskalah (enlightenment) period. Selections from prose and poetry of Michal, Mapu, Gordon, Mendele. Hebrew Neo-Classicism and Romanticism. Reading in Hebrew. Discussions in Hebrew and in English.

**HEBR 322 Israeli Literature in Translation (3)** A study of the major works of Israeli fiction and poetry which explore aspects of the society and culture of modern Israel and its European background. War and peace, the

individual and the community, tradition and modernity, generational conflict.

**HEBR 333 Hebrew Civilization (In English) (3)** Trends in the cultural, social and literary history of the Jews from their earliest experiences as a people until Maccabean times. Readings and instruction in English.

**HEBR 334 Hebrew Civilization (In English) (3)** Trends in the cultural, social and literary history of the Jews from their encounter with Hellenism until the end of the Talmudic era in late antiquity. Readings and instruction in English.

**HEBR 381 Advanced Conversation and Composition (3)** Prerequisite: HEBR 314 or permission of department. Concentrated practice in spoken and written Hebrew.

**HEBR 382 Readings in Hebrew Newspapers and Periodicals (3)** Prerequisite: HEBR 314 or permission of department. Current events, editorials, theatrical reports, book reviews, and scholarly articles. Conducted in Hebrew.

**HEBR 401 Introduction to Classical Hebrew I (3)** Readings in the Bible and other classical texts in original Hebrew. Emphasis on classical grammar and vocabulary, and reading of textual passages.

**HEBR 402 Introduction to Classical Hebrew II (3)** Prerequisite: HEBR 401 or equivalent. Continuation of HEBR 401.

**HEBR 431 Modern Hebrew Literature (3)** Prerequisite: HEBR 301 or equivalent. Selected readings from the major Hebrew prose writers of the 20th century such as J. Steinberg, Boria Berkovitz, Sholman and Agnon describing traditional Jewish life in the Diaspora. Mileu and in the land of Israel.

**HEBR 432 Contemporary Hebrew Literature (3)** Prerequisite: HEBR 301 or equivalent. The problems facing modern man as reflected in the writings of Agnon, Hazaz, Megeed, Yehoshua Amichai, and others. Training in literary criticism. Reading of periodicals dealing with current literary trends.

**HEBR 441 Studies in Classical Hebrew and Epigraphy (3)** Prerequisite: HEBR 115 or equivalent. Linguistic peculiarities of Classical Hebrew from Pre-Biblical epigraphic records to the Dead Sea Scrolls. Application of the method of literary form criticism to epic poetry and Thanksgiving songs, cultic formulae, historical annals and narratives.

**HEBR 442 Classical Hebrew Literature (3)** Prerequisite: HEBR 115 or knowledge of Classical Hebrew. Readings in the Hebrew text of the Bible and related texts. Emphasis on the issues and methodology of modern biblical scholarship.

**HEBR 471 Readings in Rabbinic Hebrew (3)** Prerequisite: HEBR 212 or permission of department. Introductory readings in Mishnaic and Talmudic Hebrew texts. Language of instruction English; all texts in Hebrew.

**HEBR 472 Readings in Medieval Hebrew (3)** Prerequisite: HEBR 115 or permission of department. Introductory readings in Medieval Hebrew texts. Language of instruction English; all texts in Hebrew.

**HEBR 498 Special Topics in Hebrew (3)** Repeatable to 6 credits if content differs.

**HESP — Hearing and Speech Sciences**  
**HESP 120 Introduction to Linguistics (3)** An introduction to the scientific study of natural language with focus on the basic concepts of phonology, syntax, semantics and pragmatics, with subsequent attention to the applied aspects of linguistic principles.

**HESP 202 Introduction to Hearing and Speech Sciences (3)** Introduction to phonetics, the physiological bases of speech production and reception, and the physics of sound.

**HESP 300 Introduction to Psycholinguistics (3)** Prerequisite: HESP 202. An introduction to current theories of language and an investigation of their relationship to human communication behavior. Survey of the experimental literature relating to this question.

**HESP 305 Anatomy and Physiology of the Speech Mechanism (3)** Prerequisite: HESP 202. Anatomy, physiology, and neurology of speech mechanism.

**HESP 311 Anatomy, Pathology and Physiology of the Auditory System (3)** Prerequisite: HESP 202 Gross anatomy of the ear and pathways for transmission of sound energy through the peripheral and central auditory system. Causes, development and effects of pathological conditions contributing to temporary or chronic hearing impairments.

**HESP 400 Speech and Language Development in Children (3)** Prerequisite: HESP 300 Analysis of the normal processes of speech and language development in children.

**HESP 401 Introduction to Communication Disorders (3)** Disorders of hearing, language and speech for non-majors. Communication disorders in children and adults, with emphasis on etiologies, characteristics, assessment and management.

**HESP 402 Speech Pathology I (3)** Prerequisite: HESP 300. Etiology, assessment and treatment of language and phonological disorders in children.

**HESP 403 Introduction to Phonetic Science (3)** Prerequisite: HESP 305. An introduction to physiological, acoustic and perceptual phonetics, broad and narrow phonetic transcription, current models of speech production and perception.

**HESP 404 Speech Pathology II (3)** Prerequisite: HESP 305. Etiology, assessment and therapeutic management of phonation, resonance, and fluency disorders in children and adults.

**HESP 406 Speech Pathology III (3)** Prerequisite: HESP 303, HESP 305. Survey of the dysarthrias and aphasia in adults from an interdisciplinary point of view.

**HESP 407 Bases of Hearing Science (3)** Prerequisite: HESP 311. Fundamentals of hearing including the physics of sound, anatomy and physiology of peripheral and central auditory nervous system, psychophysical procedures used in measurement of auditory sensation and perception and topics in psychological acoustics.

**HESP 411 Introduction to Audiology (3)** Prerequisite: HESP 311. An introduction to the field of audiology. Evaluation and remediation of the hearing-handicapped.

**HESP 417 Principles and Methods in Speech-Language Pathology and Audiology (3)** Prerequisite: HESP 402, HESP 411. The principles underlying the treatment of speech, language and hearing disorders in children and adults.

**HESP 418 Clinical Practice in Speech-Language Pathology and Audiology (3)** Prerequisite: HESP 417. Repeatable to 6 credits. Supervised observation with some direct participation in clinical methods for the treatment of disorders of articulation, fluency, child and adult language; evaluation and habilitation/rehabilitation of hearing impaired children and adults.

**HESP 438 Seminar: Special Issues in Early Childhood Special Education (1-3)**

**HESP 498 Seminar (3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Selected topics in human communication and its disorders.

**HESP 499 Independent Study (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. A directed study of selected topics pertaining to human communication and its disorders.

## HIST — History

**HIST 106 American Jewish Experience (3)** History of the Jews in America from colonial times to the present. Emphasis on the waves of migration from Germany and Eastern Europe; the changing nature of the American Jewish community and its participation in American social, economic and political life.

**HIST 110 The Ancient World (3)** Formerly HIST 130. Interpretation of select literature and art of the ancient Mediterranean world with a view to illuminating the antecedents of modern culture; religion and myth in the ancient near East; Greek philosophical, scientific, and literary invention; and the Roman tradition in politics and administration.

**HIST 111 The Medieval World (3)** Formerly HIST 131. The development of Europe in the Middle Ages; the role of religious values in shaping new social, economic, and

political institutions, medieval literature, art and architecture.

**HIST 112 The Rise of the West: 1500 - 1789 (3)** Formerly HIST 132. History of early modern Europe. Development of the national consciousness of European peoples. Evolution of state power and bureaucracy, economic institutions, art, literature, science and religion.

**HIST 113 Modern Europe: 1789 - Present (3)** Formerly HIST 133. Evolution of modern nation states. Industrial-economic structure and demography. Emergence of modern secular society.

**HIST 120 Islamic Civilization (3)** Formerly HIST 280. Islamic civilization. The major institution of Islam. Pre-Islamic Arabia, rise of Muhammad, basic tenets of Islam, Islamic religious law, and sectarian developments.

**HIST 122 African Civilization (3)** Formerly HIST 290. Sub-Saharan Africa from prehistoric times to the end of the colonial era. Neolithic civilizations, major migrations, political and commercial developments in pre-colonial Africa.

**HIST 126 Jewish Civilization (3)** Formerly HIST 105. Jewish history, culture, and society from Biblical times to the present.

**HIST 156 History of the United States to 1865 (3)** The United States from colonial times to the end of the Civil War. Establishment and development of American institutions.

**HIST 157 History of the United States Since 1865 (3)** The United States from the end of the Civil War to the present. Economic, social, intellectual, and political developments. Rise of industry and emergence of the United States as a world power.

**HIST 170 The Humanities I (3)** Formerly HIST 144. Cultural development of western civilization from pre-historic times to the Renaissance. Influences on the common cultural heritage of western civilization.

**HIST 171 The Humanities II (3)** Formerly HIST 145 and HIST 252. Cultural development from the Renaissance to the present. Influences on the common cultural heritage of modern western civilization.

**HIST 174 Introduction to the History of Science (3)** Credit will be granted for only one of the following: HIST 174 or PHIL 250. Formerly HIST 200. Major issues in the development of modern science. Specific examples of discoveries and theories from the viewpoint of theories of historical change, philosophies of science, and interaction of science with philosophy.

**HIST 175 Science and Technology in World History: Space/Time/Man/ Woman (3)** Formerly HIST 201. Selected topics in the history of science and technology and their relationship to society organized around gender and race.

**HIST 176 Modern Business History (3)** Formerly HIST 115. Evolution of the modern business system in Europe and America. Modern corporations and banks and their relations with government and the rest of society.

**HIST 178 Biography in History (3)** Repeatable to 6 credits if content differs. Detailed investigations in the lives, times, and works of important and visible figures in world history. Concern for both the theory of the individual in history and close examination of the single person. Course content changes semester to semester.

**HIST 180 The Chinese World (3)** An introduction to China, both traditional and modern. The various aspects of Chinese culture, including the language, family, history, art, and agriculture.

**HIST 206 The Holocaust of European Jewry (3)** Roots of Nazi Jewish policy in the 1930's and during World War II; the process of destruction and the implementation of the "final solution of the Jewish problem" in Europe, and the responses made by the Jews to their concentration and annihilation.

**HIST 210 Women in America to 1880 (3)** An examination of the economic, family and political roles of colonial, slave, immigrant and frontier women in America from pre-industrial colonial period through the early stages of nineteenth century industrialization and urbanization.

**HIST 211 Women in America Since 1880 (3)** An examination of women's changing roles in working class and middle class families, the effects of industrialization on women's economic activities and status, and women's involvement in political and social struggles including those for women's rights, birth control, and civil rights.

**HIST 212 Women in Western Europe, 1750-Present (3)** An analysis of the economic, family, and political roles of European women from 1750 to the present. The effects of industrialization on women's work and status, the demographic parameters of women's lives, and women's participation in political events from market riots to suffrage struggles.

**HIST 214 Pre-honors Colloquium in Early American History (3)** Prerequisite: permission of department. Selected reading in Early American history with emphasis on independent discussion and writing. May be taken for credit by students exempt from American history by AP credit.

**HIST 215 Pre-honors Colloquium in Modern American History (3)** Selected readings in modern American history with emphasis on independent study, discussion and writing. May be taken for credit by students exempt from American history. Permission of instructor required.

**HIST 219 Special Topics in History (3)**

**HIST 224 Modern Military History, 1494-1815 (3)** Survey of the military history of Europe through an examination of the economic, financial, strategic, tactical, and technological aspects of the development of military institutions and warfare from the dynastic wars of the Valois and Hapsburgs to the national wars of the French Revolution and Empire.

**HIST 225 Modern Military History, 1815-Present (3)** The military history of Europe through an examination of the economic, financial, strategic, tactical, and technological aspects of the development of military institutions and warfare from the Congress of Vienna in 1815 to the present.

**HIST 234 History of Britain to 1485 (3)** British history from Roman times to the 15th century. The Anglo-Saxon, Scandinavian and Norman invasions; the coming of Christianity; Magna Carta, the development of Parliament, legal institutions and the Common Law, the decline of medieval kingship.

**HIST 235 History of Britain 1461 to 1714 (3)** British history from the War of the Roses to the Hanoverian succession; Yorkist and Tudor society and politics; the Renaissance and Reformation in England, Henry VIII through Elizabeth; 17th century crises and revolutions; intellectual and cultural changes; the beginnings of empire; the achievement of political and intellectual order.

**HIST 236 History of Britain 1688 to Present (3)** British history from the Glorious Revolution of 1688 to the present. The revolution of 1688; the structure of 18th century society and politics; economic and social change in the industrial revolution; 19th and 20th century political and social reform; imperialism; the impact of the First and Second World Wars on British society.

**HIST 237 Russian Civilization (3)** An overview of Russian history stressing the main lines of development of the Russian state and the evolution of Russian culture to the present day.

**HIST 250 Latin American History I (3)** Latin America from pre-Columbian Indian cultures to the beginnings of the wars for independence (ca. 1810), covering cultural, political, social, and economic developments.

**HIST 251 Latin American History II (3)** The republics of Latin America since independence, with special emphasis upon their social, economic, and cultural development as third world nations.

**HIST 255 Afro-American History (3)** A survey of the Afro-American in American history, covering the African background, slavery, the role of the Negro in the social, political, economic, cultural and artistic life of the United States. Emphasis will be placed on the enduring themes and the black experience in American society, including contemporary problems in race relations.

**HIST 264 Social and Cultural History of Early America (3)** American social experience from colonial times

through the Civil War. The development of colonial societies, the economic and religious bases of 18th century life, the social character of the revolution, the growth of cities, rise of immigration, and maturation of the economic enterprise in Antebellum America, and the social causes and consequences of the Civil War

**HIST 265 Social and Cultural History of Modern America (3)** American social history from Civil War to the present. Examination of a network of social interaction accompanying the rise of male-dominated, business-oriented urban culture after the Civil War. Concentration on the major social forces clashing and cooperating to produce the modern United States—business republicanism, urban workers; intellectuals, rural populists; immigrants (especially Jewish); Black Americans; and struggling women liberators. The swift crosscurrents of a “free society” still wrestling with inherent contradictions of the democratic experiment begun in the American colonies some 350 years ago

**HIST 266 The United States in World Affairs (3)** A study of the United States as an emerging world power and the American response to changing status in world affairs. Emphasis on the relationship between internal and external development of the nation

**HIST 275 Law and Constitutionalism in American History (3)** An exploration of the relationship between law and the social and political order between 1750 and 1950. Discussion of important historical issues—religious liberty, economic development, slavery and the Civil War, the political economy of industrialization, the creation of the modern state—from a legal and constitutional perspective.

**HIST 282 History of the Jewish People I (3)** Political, economic, social and cultural development within Jewish history from the Biblical period to the late Middle Ages. Special attention to the emergence of Rabbinic Judaism and its subsequent encounter with medieval Christian and Islamic civilizations.

**HIST 283 History of the Jewish People II (3)** Political, economic, social and cultural development within Jewish history from the end of Middle Ages to the present. Special attention to twentieth century developments including the Nazi holocaust and its aftermath, the Zionist movement and the creation of the State of Israel; rise of the contemporary American Jewish community.

**HIST 284 East Asian Civilization I (3)** An interdisciplinary survey of the development of East Asian cultures. An historical approach drawing on all facets of East Asian traditional life, to gain an appreciation of the different and complex cultures of the area.

**HIST 285 East Asian Civilization II (3)** A survey of the historical development of Modern Asia since 1700. Primarily concerned with the efforts of East Asians to preserve their traditional cultures in the face of western expansion in the eighteenth and nineteenth centuries, and their attempts to survive as nations in the twentieth century.

**HIST 301 Women and Industrial Development (3)** Analysis of women's role in the industrial state. Emphasis on the process of industrialization and its effect on women's lives since the industrial revolution. Comparisons of women in industrial and non-industrial settings.

**HIST 304 Modern Church History (3)** Introduction to major developments and problems of modern church history primarily in Europe from the “waning” of the confessional age in the 17th and 18th centuries through the 20th century.

**HIST 305 The Eastern Orthodox Church: Its Cultural History (3)** A study of the development of the Christian church in the Near East and Eastern Europe from the conversion of Constantine to the present. Emphasis on the relations between church and state in various periods and on the influence of Eastern Christianity on the cultures of traditionally Eastern Orthodox nations.

**HIST 306 History of Religion in America (3)** A history of religion, religious movements, and churches in America from the early colonial period to the present, with special attention to the relation of church and society.

**HIST 309 Proseminar in Historical Writing (3)** Discussions and research papers designed to acquaint the student with the methods and problems of research

and presentation. Students will be encouraged to examine those phases of history which they regard as their specialties.

**HIST 310 The Practice of History (3)** Prerequisite: one course in history. Not open for credit to students majoring in history. Methods of historical research and presentation.

**HIST 311 Approaches to the Past (3)** Prerequisite: one course in history. Not open for credit to students majoring in history. Analysis of various theories and schools of historical interpretation.

**HIST 312 Crisis and Change in the United States (3)** Prerequisite: one course in history. Major historical crises, controversies, and readjustments in the United States.

**HIST 313 Crisis and Change in European Society (3)** Prerequisite: one course in history. Major historical crises, controversies, and readjustments in European society.

**HIST 314 Crisis and Change in the Middle East and Africa (3)** Prerequisite: one course in history. Major historical crises, controversies, and readjustments in the Middle East and Africa.

**HIST 315 Crisis and Change in East Asia (3)** Prerequisite: one course in history. Major historical crises, controversies, and readjustments in East Asia.

**HIST 316 Crisis and Change in Latin America (3)** Prerequisite: one course in history. Major historical crises, controversies, and readjustments in Latin America.

**HIST 319 Special Topics in History (3)** Repeatable to 6 credits if content differs.

**HIST 324 Classical Greece (3)** The ancient Greeks from Homer to Socrates, 800-400 B.C. Society and religion of the city-state, the art and literature of Periclean Athens, the Peloponnesian war, and the intellectual circle of Socrates.

**HIST 325 Alexander the Great and the Hellenistic Age (3)** History of the Greeks 400-300 B.C. Alexander and the changes he wrought in the Mediterranean world, the rise of monarchies and leagues; new directions in religion, art, literature, and science; and Hellenization of the Near East, including the Jews.

**HIST 326 The Roman Republic (3)** Ancient Rome 753-44 B.C., from its founding to the assassination of Julius Caesar. Rome's conquest of the Mediterranean world, the social and political forces which brought it about, and the consequent transformation and decline of the republic.

**HIST 327 The Roman Empire (3)** Roman history from Augustus to Heraclius, 44 B.C.-A.D. 641. The imperial court and government, the diversity of culture in provinces and cities and the progress of Romanization; Roman religion and its transformation in late antiquity; the Roman army and defense of the frontiers.

**HIST 330 Medieval Civilization I (3)** Europe from the fall of Rome to the death of Charlemagne. The economic, social and intellectual movements which shaped the civilization of the Latin West, including the rise of Christianity and the church, the creation of a feudal nobility, and the foundation of European states. Developments in art and literature. Readings from sources when available in translation.

**HIST 331 Medieval Civilization II (3)** Medieval civilization in the 12th and 13th centuries: the Renaissance of the 12th century, the rise of universities, Gothic architecture, the European state system, medieval parliaments and scholastic learning and culture. Emphasis on cultural and political developments of the high Middle Ages with study of the principal sources of medieval thought and learning, art and architecture and political theory. Recommended as a sequel to HIST 411.

**HIST 332 Europe During the Renaissance and Reformation I (3)** Continental Europe from 1450 to 1650: development and spread of Renaissance culture, growth in the powers of central government, economic expansion and beginnings of overseas colonization, division of Western Christendom into two rival religious camps. Particular emphasis on the Protestant and

Catholic reformations and their consequences for Europe's political, social, and cultural development. Renaissance and reformation, 1450-1555. The age of religious wars, 1555-1650.

**HIST 333 Europe During the Renaissance and Reformation II (3)** Continuation of HIST 332.

**HIST 334 The Age of Absolutism, 1600-1715 (3)** Europe in the age of Louis XIV, with emphasis upon social, religious, and cultural developments.

**HIST 335 Society, Ideas and Culture in the Old Regime, 1715-1789 (3)** Europe during the French, revolution and Napoleonic period. Intellectual, social, and cultural movements in revolutionary Europe.

**HIST 336 Europe in the 19th Century, 1815-1919 (3)** The political, economic, social, and cultural development of Europe from the Congress of Vienna to the First World War.

**HIST 337 Europe in the World Setting of the 20th Century (3)** Political, economic and cultural developments in 20th century Europe with special emphasis on the factors involved in the two world wars and their global impacts and significance.

**HIST 340 Eastern Europe Under Communism (3)** The evolution of communist regimes and socialist societies in Poland, Czechoslovakia, Hungary, East Germany, Romania and Bulgaria with separate treatment of Yugoslavia. Emphasis on pre-1945 continuity and post-1945 change.

**HIST 341 History of Anti-Semitism (3)** The historical development of anti-Semitism in its European context. Anti-Semitism both as a set of ideas and as a political movement from the ancient era to the present, with emphasis on the modern era.

**HIST 342 Fascism: Theory and Practice (3)** The origins and history of fascism in Europe, 1918-1945. Emphasis divided between the industrialized (or industrializing) nations and the largely agrarian countries of Europe. The rise of fascism in other parts of the world.

**HIST 344 The Russian Revolutions of 1917 (3)** A close examination of the historical background, the doctrines, the immediate causes, the events, and the results of the February and October revolutions.

**HIST 346 Social and Cultural History of Europe (3)** An exploration of social structure, life styles, rituals, symbols, and myths of the peoples of Europe.

**HIST 347 History of Crime and Punishment (3)** Emphasis on the historical development of law enforcement agencies, criminal jurisdictions and trial procedure, 1500-1800. Nature of principal felonies and major trends in crime, penal theory and practice in historical perspective.

**HIST 350 History of Baltimore (3)** Social, economic, spatial, and political evolution of Baltimore and its inhabitants from first settlement to the present.

**HIST 351 Social History of Washington, D.C. (3)** Development of the “resident city” of Washington neighborhoods, schools, places of worship, economic establishments, and local population groups.

**HIST 360 American Colonial History (3)** Colonial America from Jamestown to 1763. The establishment of the various colonies with emphasis on the reasons for the instability of colonial society to 1689, the emergence of stable societies after 1689, the development of colonial regionalism, political institutions, social divisions, education, urban and frontier problems in the eighteenth century.

**HIST 361 The American Revolution (3)** The background and course of the American revolution through the formation of the Constitution. Emphasis on the impact of the political movement and war years on the character of American society.

**HIST 362 The Formative Period in America, 1789-1824 (3)** The evolution of the federal government, the origins of political parties, problems of foreign relations in an era of international conflict, beginnings of the industrial revolution in America, and the birth of sectionalism.

**HIST 363 The Middle Period of American History, 1824-1860 (3)** An examination of the political history of the United States from Jackson to Lincoln with particular emphasis on the factors producing Jacksonian Democracy, Manifest Destiny, the Whig Party, the anti-slavery movement, the Republican Party, and Secession

**HIST 364 Reconstruction and the New Nation (3)** Sectional and class conflicts and their impact on American life and institutions from the Civil War through the gilded age; social, economic and political reconstruction of the Union; industrialization, urbanization and technological changes

**HIST 365 The Progressive Period: the United States, 1896-1919 (3)** How the McKinley, Roosevelt, Taft, and Wilson administrations dealt with the trust, money, tariff, and black issues. World War I is treated briefly

**HIST 366 Between the Wars: the United States, 1919-1945 (3)** The American way of life in the 1920's and 1930's, the Great Depression, New Deal, and a brief consideration of World War II

**HIST 367 The United States Since World War II (3)** American history from the inauguration of Harry S. Truman to the present with emphasis upon politics and foreign relations, but with consideration of special topics such as radicalism, conservation, and labor.

**HIST 374 Modern Jewish History I: the Road to Emancipation, 1650-1870 (3)** Social, political, economic, and cultural change in the Jewish world since 1650. Emphasis on emancipation, assimilation, and new forms of Jewish identity in Western and Eastern European Jewry from the 17th to the 20th centuries.

**HIST 375 Modern Jewish History II: World Jewry Since 1870 (3)** Continuation of HIST 374.

**HIST 376 History of Zionism and the State of Israel (3)** Ideological and political factors leading to the establishment of a secular Jewish state in 1948. Zionist thought of Herzl, Ahad Ha-am, the socialist and religious Zionists, and the revisionists; diplomatic activities; Arab-Israeli conflict; post-1948 Israeli society.

**HIST 380 American Relations With China and Japan, 1740-1970 (3)** American political, economic, and cultural relations with China and Japan from the American colonial era to the present. Diplomacy and power politics; Christian missions; immigration and exclusion; overseas education; art and literature; trade, investment, technology.

**HIST 390 Middle East I (3)** A survey of the political, cultural and institutional history covering the period up to the tenth century.

**HIST 391 Middle East II (3)** A survey of the political, cultural and institutional history covering the period up from the tenth century to the beginning of the nineteenth century.

**HIST 392 History of the Contemporary Middle East (3)** The rise of sovereign nation-states; modernization, westernization and secularization in a traditional society; shifting political and economic power groupings within a regional and global context.

**HIST 395 Honors Colloquium I (3)** Enrollment limited to students admitted by the departmental honors committee. Discussion of reading and written work in weekly seminar meetings.

**HIST 396 Honors Colloquium II (3)** Continuation of HIST 395.

**HIST 398 Honors Thesis (3)**

**HIST 401 The Scientific Revolution: From Copernicus to Newton (3)** Major events in the history of physical science during the 16th and 17th centuries and their relation to philosophy, religion and society in Western Europe. The attack on ancient and medieval scientific theories; the transition from geocentric to heliocentric astronomy; discoveries of Kepler, Galileo and Newton; and the establishment of the "mechanical philosophy" that dominated early modern science.

**HIST 402 The Development of Modern Physical Science: From Newton to Einstein (3)** Prerequisites:

MATH 110, and PHYS 112 or PHYS 117 or equivalent The history of physics in the 18th and 19th centuries, including some of its connections with mathematics, technology, chemistry and planetary science. Emphasis on internal technical developments in physical theory, with some discussion of experimental, philosophical and sociological aspects. This is the second part of a three-semester sequence (HIST 401, HIST 402, PHYS 490); each part may be taken independently of the others

**HIST 403 20th Century Revolutions in the Physical Sciences (3)** Prerequisites: MATH 110 or equivalent and six credits of college-level physics. Major changes in knowledge of the physical world, including quantum theory, atomic structure, relativity cosmology, and continental drift, plate tectonics; theories about the nature of scientific revolutions.

**HIST 404 History of Modern Biology (3)** The internal development of biology in the nineteenth and twentieth centuries, including evolution, cell theory, heredity and development, spontaneous generation, and mechanism - vitalism controversies. The philosophical aspects of the development of scientific knowledge and the interaction of biology with chemistry and physics.

**HIST 406 History of Technology (3)** Not open to students who have completed HIST 407 prior to Fall Semester, 1989. The changing character of technology in modern history, beginning with the Middle Ages. Concentrates on the Industrial Revolution and its aftermath, the nature of technological knowledge and the sources of technological change.

**HIST 407 Technology and Social Change in History (3)** Students with HIST 407 prior to Fall Semester, 1989 must have permission of department to enroll in this course. Social consequences of technological innovations and the ways in which societies people have coped with new technologies.

**HIST 409 Topics in the History of Science and Technology (3)** Repeatable to 6 credits if content differs. Selected topics in the history of science and technology

**HIST 410 Introduction to Archives I (3)** Prerequisite: permission of department. Corequisite: HIST 411. History of the basic intellectual problems relating to archives and manuscript repositories; emphasis on problems of selection, access, preservation, inventorying and editing as well as the variety of institutions housing documents.

**HIST 411 Introduction to Archives II (3)** Prerequisite: permission of department. Corequisite: HIST 410. Practical experience through placement in cooperating archives or manuscript repositories in the Baltimore/Annapolis/Washington, D.C. areas. Assignments to specific projects based on intellectual interest of students.

**HIST 412 Readings in Psycho-history (3)** Application of psychological theories to the study of historical personalities and collective behavior; survey of relevant personality theorists, and an evaluation of recent contributions.

**HIST 413 History of Medicine and Public Health (3)** The history of medicine and public health from primitive times to the present, covering major medical theories, therapeutics, and techniques, the evolution of the medicine man or priest-physician into a professional medical practitioner, and the close relationship between medicine and society.

**HIST 414 History of European Ideas I (3)** Review of the basic western intellectual traditions as a heritage from the ancient world. Selected important currents of thought from the scientific revolution of the 16th and 17th centuries down to the end of the 18th century.

**HIST 415 History of European Ideas II (3)** A continuation of HIST 414 emphasizing 19th and 20th century thought.

**HIST 418 Jews and Judaism: Selected Historical Topics (3)** Repeatable to 6 credits if content differs.

**HIST 419 Special Topics in History (3)** Repeatable to 9 credits if content differs.

**HIST 422 Byzantine Empire I (3)** The Eastern Roman Empire from Constantine the Great to the crisis of the ninth century. The development of the late Roman state into the Medieval Christian Byzantine empire and the evolution of a distinctive Byzantine culture.

**HIST 423 Byzantine Empire II (3)** The Byzantine empire from the Macedonian renaissance to the conquest of Constantinople by the Turks in 1453. The Byzantine empire at its height: the crusades; Byzantium as a minor power, and its contributions to the Renaissance and the cultures of Russia and the Balkans

**HIST 424 History of Russia to 1801 (3)**

**HIST 425 History of Russia From 1801 - 1917 (3)** A continuation of HIST 424

**HIST 426 Age of Industry: Britain 1760 to 1914 (3)** An economic, social, political and cultural analysis of Britain in the age of its industrial supremacy. The nature of the first industrial revolution, the emergence of modern social classes; the cultural impact of industrialization; politics and society in the early and mid-nineteenth century; Victorianism and its critics, imperialism and politics; high and low culture, the rise of labor; social and political tensions 1910-1914

**HIST 427 Age of Decline: Britain 1914 to Present (3)** British society since the First World War. The social, cultural, economic and political impact of the First World War; labor and politics in the 1920s and 1930s; the inter-war depression, appeasement and foreign policy; the social impact of the Second World War; the welfare state and nationalization of industry; the dissolution of Empire; the emergence of a consumer society; social criticism in 1950s, the economic and political problems of the 1960s and 1970s.

**HIST 430 Tudor England (3)** An examination of the political, religious and social forces in English life, 1485-1603, with special emphasis on Tudor government, the English reformation and the Elizabethan era.

**HIST 431 Stuart England (3)** An examination of the political, religious and social forces in English life, 1603-1714, with special emphasis on Puritanism and the English revolutions.

**HIST 432 Britain in the 18th Century (3)** Developments in Great Britain from the revolution of 1688 to the end of the Napoleonic wars.

**HIST 435 Constitutional and Legal History of Britain (3)** Not open to students who have completed HIST 434 or HIST 435. Constitutional and legal developments in England from the Anglo-Saxon settlement to the present day. The rise and decline of monarchical government, the development of parliament, and the emergence of systematized, democratic government. The origins of the common law and legal profession, the development of a centralized judicial system, and the emergence of modern trial procedures. Survey knowledge of English history desirable.

**HIST 436 French Revolution and Napoleon (3)** The causes and course of the French Revolution with emphasis on the struggle among elites, popular intervention, the spread of counterrevolution, the Terror as repression and popular government, the near collapse of the Republic, and the establishment and defeat of dictatorship.

**HIST 437 Modern France from Napoleon to DeGaulle (3)** The changing political and cultural values of French society in response to recurrent crises throughout the 19th and 20th centuries. Students should have had some previous survey of either western civilization or European history.

**HIST 440 Germany in the Nineteenth Century, 1815-1914 (3)** The development of modern Germany and the rise of national socialism.

**HIST 441 Germany in the Twentieth Century, 1914-1945 (3)** Germany's aims and policies during World War I, its condition and policies in the inter-war period, the rise of national socialism, and Germany's part in World War II.

**HIST 442 The Soviet Union (3)** A history of Soviet Russia and the Soviet Union from 1917 to the present. Stress on the relationship between Marxist theory and practice, and the development of peculiarly socialist institutions and practices.

**HIST 443 Modern Balkan History (3)** A political, socio-economic, and cultural history of Yugoslavia, Bulgaria, Romania, Greece, and Albania from the breakdown of Ottoman domination to the present. Emphasis is on

movements for national liberation during the nineteenth century and on approaches to modernization in the twentieth century

**HIST 444 Nineteenth Century European Diplomatic History (3)** The development and execution of European diplomacy from the Congress of Vienna to the outbreak of World War I, concentrating on Central and Western Europe

**HIST 445 Twentieth Century European Diplomatic History (3)** The development and execution of European diplomacy from the outbreak of World War I to the conclusion of World War II, concentrating on Central and Western Europe

**HIST 446 European Economic History to 1750 (3)** Economic development of Europe from the manorial economy of medieval feudalism through the emergence of capitalist institutions and overseas empires to the advent of the industrial revolution

**HIST 447 European Economic History Since 1750 (3)** The mansprings of the Industrial Revolution first in 18th century England and then across the rest of Europe during the 19th and 20th centuries. Emphasis on the English, French, German, Austro-Hungarian and Russian experiences with private capitalism and public policy, including fascism and communism. Social consequences of industrial development such as urbanization and the rise of labor movements.

**HIST 450 Economic History of the United States to 1865 (3)** The development of the American economy from Columbus through the Civil War.

**HIST 451 Economic History of the United States After 1865 (3)** The development of the American economy from the Civil War to the present.

**HIST 452 Diplomatic History of the United States to 1914 (3)** American foreign relations from the American Revolution to the beginning of World War I. International developments and domestic influences that contribute to American expansion in world affairs. Analyses of significant individuals active in American diplomacy and foreign policy

**HIST 453 Diplomatic History of the United States from 1914 (3)** American foreign relations in the twentieth century: World War I, the Great Depression, World War II, the Cold War, the Korean War, and Vietnam. A continuation of HIST 452.

**HIST 454 Constitutional History of the United States: From Colonial Origins to 1860 (3)** The interaction of government, law, and politics in the constitutional system. The nature and purpose of constitutions and constitutionalism; the relationship between the constitution and social forces and influences, the way in which constitutional principles, rules, ideas, and institutions affect events and are in turn affected by events. The origins of American politics and constitutionalism through the constitutional convention of 1787. Major constitutional problems such as the origins of judicial review, democratization of government, slavery in the territories and political system as a whole.

**HIST 455 Constitutional History of the United States: Since 1860 (3)** American public law and government, with emphasis on the interaction of government, law, and politics. Emphasis on the political-constitutional system as a whole, rather than simply the development of constitutional law by the Supreme Court. Major crises in American government and politics such as Civil War, reconstruction, the 1890's, the New Deal era, the civil disorders of the 1960's.

**HIST 456 History of Ideas in America to 1865 (3)** The ideas, conflicts, myths, and realities that shaped American character and society from the first settlements to the Civil War.

**HIST 457 History of Ideas in America Since 1865 (3)** A continuation of HIST 456.

**HIST 458 Selected Topics in Women's History (3)** Repeatable to 6 credits if content differs. Selected topics on women in American society including such areas as women and the law, women and politics, the "feminine mystique" and the "new feminism."

**HIST 459 Society in America: Historical Topics (3)** Repeatable to 6 credits if content differs. A consideration

of selected aspects of American society from colonial times to the present. Special emphasis on regionalism, immigration, nativism, minorities, urbanization, and social responses to technological changes

**HIST 460 History of Labor in the United States (3)** The American working class in terms of its composition; its myths and utopias; its social conditions, and its impact on American institutions.

**HIST 461 Blacks in American Life: 1865 to Present (3)** The role of the Black in America since slavery, with emphasis on twentieth century developments: the migration from farm to city, the growth of the civil rights movement; the race question as a national problem.

**HIST 462 The Civil War (3)** A detailed study of historical interpretations; the forces, situations and events that caused the war, the war and its impact

**HIST 463 History of the Old South (3)** The golden age of the Chesapeake, the institution of slavery, the frontier south, the antebellum plantation society, the development of regional identity and the experiment in independence.

**HIST 465 History of the American Frontier: the Trans-Allegheny West (3)** Major historical interpretation of the significance to the period of the Trans-Allegheny West. Assesses the impact of the frontier experience on American history. Equal attention is given to political, economic, social and cultural problems associated with the development of the west. Indian culture, treatment of the Indians, and Indian-White relations are integrated into the course through readings and lectures.

**HIST 467 History of Maryland (3)** Political, social and economic history of Maryland from the seventeenth century to the present.

**HIST 470 Diplomatic History of Latin America (3)** A survey of the political, economic and cultural relations of the Latin American nations with emphasis on their relations with the United States and the development of the inter-American system

**HIST 471 History of Brazil (3)** The history of Brazil with emphasis on the national period

**HIST 472 History of the Argentine Republic (3)** Concentration upon the recent history of Argentina with emphasis upon the social and economic development of a third world nation.

**HIST 473 History of the Spanish Caribbean (3)**

**HIST 474 History of Mexico and Central America I (3)** History of Mexico and Central America, beginning with the Pre-Spanish Indian cultures and continuing through European contact, conquest, and colonial dominance, down to the beginning of the Mexican War for Independence in 1810.

**HIST 475 History of Mexico and Central America II (3)** A continuation of HIST 474 with emphasis on the political development of the Mexican nation.

**HIST 477 American Foreign Relations in the Age of Roosevelt (3)** An intensive study of foreign relations from 1932 to 1945. Diplomacy in the Great Depression; rise and fall of American isolationism; "aid-short-of-war" in opposition to Axis aggression; FDR's conduct of foreign affairs during World War II; his guidance toward an expanded leadership role for the United States after the war; and beginnings of the Cold War with the Soviet Union.

**HIST 480 History of Traditional China (3)** China from earliest times to 1644 A.D. Emphasis on the development of traditional Chinese culture, society, and government.

**HIST 481 A History of Modern China (3)** Modern China from 1644 to the People's Republic of China. Emphasis on the coming of the west to China and the various stages of the Chinese reaction.

**HIST 482 History of Japan to 1800 (3)** Traditional Japanese civilization from the age of Shinto mythology and introduction of continental learning down to the role of military families, the transition to a money economy, and the creation of a townsmen's culture. A survey of political, economic, religious, and cultural history

**HIST 483 History of Japan Since 1800 (3)** Japan's renewed contact with the western world and emergence as a modern state, industrial society, and world power, 1800-1931, and Japan's road to war, occupation, and recovery, 1931 to the present

**HIST 485 History of Chinese Communism (3)** An analysis of the various factors in modern Chinese history that led to the victory of the Chinese communist party in 1949 and of the subsequent course of events of the People's Republic of China, from ca. 1919 to the present.

**HIST 487 History of Soviet Foreign Relations, 1917 to Present (3)** A history of Soviet foreign relations both conventional diplomacy and the spread of international proletarianism from the October Revolution to the present.

**HIST 491 History of the Ottoman Empire (3)** Survey of the Ottoman Turkish Empire from 1300 A.D. to its collapse during World War I. Emphasis on the empire's social and political institutions and its expansion into Europe, the Arab East and North Africa.

**HIST 496 Africa Since Independence (3)** Analysis of socio-political and economic-political changes in Africa since approximately 1960, development of class structures, the role of the military, personal rule and the patronal state; decline of party politics and participatory politics. Discussion of changes in economic policies, policies with respect to rural communities, and their relationship to the state and decision-making

**HIST 497 Islam in Africa (3)** The introduction of Muslims and Islam into Africa from approximately the eighth to nineteenth century. Impact of Islam on a regional-cultural basis, as well as Islam in state development. A discussion of political theory in Islamic Africa, and the impact of Islam on social structures, e.g. domestic African slavery. Role of Islam in resistance movements against imperialism and colonization, as well as the place of Islam in the independence movements of the 1950's and 1960's.

**HIST 499 Independent Study (1-3)** Prerequisite: permission of department. Repeatable to 6 credits

## HLTH — Health

**HLTH 105 Science and Theory of Health (2)** The scientific and philosophical bases for various theories of health, including health, wellness, individual control and limitations of health status, and holistic health.

**HLTH 106 Drug Use and Abuse (3)** An interdisciplinary analysis of contemporary drug issues and problems. The course will examine physiological, psychological, social, philosophical, historical, legal and health aspects of drug use and abuse. Special attention will be focused on those general motivations for drug use that attend life on the college campus

**HLTH 130 Introduction to Health (3)** Development of understanding and appreciation of the historic and significant purpose and place of each of the specialized health areas in general education. A study of the educational and personal requirements and opportunities of a career in each professional health area.

**HLTH 140 Personal and Community Health (3)** Meaning and significance of physical, mental and social health as related to the individual and to society; important phases of national health problems, constructive methods of promoting health of the individual and the community.

**HLTH 150 First Aid and Emergency Medical Services (2)** Lecture, demonstration and training in emergency care, including cardiopulmonary resuscitation, hemorrhage control, shock, poisons and bone injury treatment and childbirth. American Red Cross and Heart Association of Maryland Certification awarded

**HLTH 230 Introduction to Health Behavior (3)** Psychological, social, psychological, and sociological approaches to the following health areas: development of health attitudes and behavior, patient-provider interaction and the organization of health care

**HLTH 260 Instructor's Course in First Aid (2)** Prerequisite: HLTH 150 or equivalent. Advanced consideration of first aid techniques: orientation to methods, techniques and teaching aids, practical classroom instruction required. Red Cross instructor's certification awarded

**HLTH 270 Safety Education (3)** Safety in the home, school and community. Safety education programs in the public schools.

**HLTH 280 The Driver and His Characteristics (3)** Driver behavior problem in its relation to many of the psychophysical factors and forces in the traffic environment that impinge upon the person behind the wheel. Valid driver's license required.

**HLTH 285 Controlling Stress and Tension (3)** Health problems related to stress and tension. Analysis of causative psycho-social stressors and intervening physiological mechanisms. Emphasis on prevention and control of stress through techniques such as biofeedback, meditation and neuromuscular relaxation.

**HLTH 305 Driver Education and Traffic Safety I (3)** Prerequisite: HLTH 280. This course is a study of the place of the automobile in modern life and deals with the fundamentals, principles, practices, and content of high school driver education and traffic safety. Laboratory experience consists of observation and experience in teaching beginners to drive in dual control cars and simulators. Course includes eight weeks of practice teaching.

**HLTH 310 Introduction to the School Health Program (2)** Prerequisites: HLTH 105 or HLTH 140. This course deals with the aspects of school health, health environment, health services, and health education. The relationships of the school health program and the general education program are emphasized. The roles of teachers, administrators, health specialists, and others in related fields are discussed.

**HLTH 340 Curriculum, Instruction and Observation (3)** Prerequisite: HLTH 140; and HLTH 420. A course designed to provide directed observation and discussion, coordinating these experiences with those from previous methods courses in the development of curricula for health and physical education. The course is planned to prepare for student teaching which follows in the same semester. The observations will be made of health programs in junior and senior high schools.

**HLTH 345 Driver Education and Traffic Safety II (3)** Prerequisite: HLTH 305 or equivalent. Comprehensive programming for driver education; teaching to meet driving emergencies and winter conditions; resources and agencies; the teacher and driver education; consumer education, insurance and liability.

**HLTH 365 Organization, Administration and Supervision of School Safety Education (3)** Prerequisite: HLTH 270 or equivalent. Designed for teachers, school administrators, college instructors, and others responsible for directing or supervising safety programs in the schools. Deals with the problems, policies, practices, and procedures involved in the organization, administration and the supervision of a comprehensive accident prevention and safety education program for the schools. Considers integration factors of the school safety programs with special emphasis on traffic programs.

**HLTH 370 Behavioral Factors in Accident Causation and Prevention (3)** Prerequisite: HLTH 270 or permission of department. The role of behavioral factors, as opposed to environmental or machine-agent influences in determining and reducing injurious mishaps. Special emphasis on variables which affect protective motivation.

**HLTH 371 Communicating Safety and Health (3)** The communication and evaluation of safety and health information. Emphasis on various types of communications and recipient factors which contribute to their success or failure.

**HLTH 375 Problems in Driver and Traffic Safety Education (3)** Prerequisite: HLTH 345 or equivalent. An advanced course which gives consideration to the individual problems encountered in teaching driver and safety education. The psychology of teaching and learning are emphasized. Consideration is given to implications of emotion and attitude factors in driver and traffic education. The course includes an examination of existing courses of study, research, supervisory and evaluation practices.

**HLTH 377 Human Sexuality (3)** The biological and developmental aspects of human sexuality; the psychological and emotional aspects of sexual behavior; sexual identity; the historical, cultural, social, linguistic,

legal and moral forces affecting sexual issues; the importance of communication, disclosure and intimacy in interpersonal relationships; and research trends in the area of human sexuality.

**HLTH 380 Peer Education: Alcohol and Other Drugs (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: HLTH 106; and permission of department. Peer training dealing with drug information and abuse to facilitate workshops in various outreach locations (dorms, Greek system, classrooms).

**HLTH 381 Peer Education: Stress Management (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: HLTH 285; and permission of department. Peer training in different forms of stress management to facilitate workshops in various outreach locations (dorms, Greek system, classes).

**HLTH 382 Peer Education: Sexuality and Communication (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: HLTH 377; and permission of department. Peer training in communication and issues of sexuality to facilitate workshops in various outreach locations (dorms, Greek system, classes).

**HLTH 383 Peer Education: Reproductive Health (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: HLTH 377; and permission of department. Peer training in methods of birth control, sexually transmitted disease and AIDS education to facilitate workshops in the student Health Center and various outreach locations (dorms, Greek system, classes).

**HLTH 390 Organization and Administration of School Health Programs (3)** Prerequisite: HLTH 105. The three major aspects of the school health program are considered. Problems connected with health services, health instruction, and the health aspects of the school environment are discussed. The responsibilities of school personnel are delineated with emphasis on the role of the administrator.

**HLTH 420 Methods and Materials in Health Education (3)** Prerequisites: HLTH 105 or HLTH 140. The purpose of this course is to present the interrelationships of curriculum planning, methodology and the selection and use of teaching aids and materials. Special problems associated with health teaching are discussed. Students become familiar with a variety of resources as well as planning for and presenting demonstration lessons.

**HLTH 430 Health Education in the Workplace (3)** A survey of the role of health education in work settings. Examination of occupational stress, the health effects of shift work, women's health in the workplace, health education approaches to informing workers and management, and health promotion programs in the workplace.

**HLTH 440 Health Education and Behavioral Approaches to Nutrition (3)** Prerequisite: NUTR 100 or equivalent. Health education and health behavior methods, techniques and approaches applied to nutrition behavior, ways of changing nutrition and dietary behavior, relationship between nutrition and health, nutrition education, psychology of eating, and behavioral and cultural factors in diet.

**HLTH 450 Health of Children and Youth (3)** A study of the health of 5 to 18 year olds. Physical, mental, social, and emotional health. Psychosexual development, diet, exercise, recreation, and the roles of parents and teachers.

**HLTH 455 Physical Fitness of the Individual (3)** Study of major physical fitness problems confronting the adult in modern society. Consideration given to the scientific appraisal, development and maintenance of fitness at all age levels. Obesity, weight reduction, chronic fatigue, posture, and special exercise programs are explored. Open to persons outside the physical education and health fields.

**HLTH 456 Health of the Aging and Aged (3)** Psychological, physiological and socio-economic aspects of aging; nutrition; sexuality; death, dying, and bereavement; self-actualization and creativity; health needs and crises of the aged.

**HLTH 465 Safety Program Evaluation (3)** Prerequisite: HLTH 370 or permission of department. Methods and

techniques used to evaluate safety programs with special reference to managerial decisionmaking, needs assessment and hazard recognition, evaluation and control.

**HLTH 470 The Health Program in the Elementary School (3)** Prerequisites: HLTH 105 or HLTH 140, and HLTH 310. Designed for the elementary school classroom teacher. Analyzes biological and sociological factors which determine the health status and needs of the individual elementary school child. Various aspects of the school program are evaluated for their role in health education. The total school health program is surveyed from the standpoint of organization and administration, and health appraisal. Emphasis is placed upon modern methods and current materials in health instruction. (The state department of education accepts this course for biological science credit).

**HLTH 471 Women's Health (3)** The women's health movement from the perspective of consumerism and feminism. The physician-patient relationship in the gynecological and other medical settings. The gynecological exam, gynecological problems, contraception, abortion, pregnancy, breast and cervical cancer and surgical procedures. Psychological aspects of gynecological concerns.

**HLTH 476 Death Education (3)** Examination of the genesis and development of present day death attitudes and behavior by use of a multidisciplinary life cycle approach.

**HLTH 480 Measurement in Health (3)** Two hours of lecture and two hours of laboratory per week. The application of the principles and techniques of educational measurement to the teaching of health and physical education; study of functions and techniques of measurements in the evaluation of student progress toward the objectives of health and physical education, and in the evaluation of the effectiveness of teaching.

**HLTH 487 Adult Health and Developmental Program (3)** Training and experience in a clinically oriented development program for the aged.

**HLTH 489 Field Laboratory Projects and Workshop (1-6)** Note: the maximum total number of credits that may be earned toward any degree in kinesiology, recreation, or health education under KNES, RECR, or HLTH 489 is six. A course designed to meet the needs of persons in the field with respect to workshop and research projects in special areas of knowledge not covered by regularly structured courses.

**HLTH 490 Theories of Children's Love and Peace Behavior (3)** The development of love and peace behaviors as health correlates in infant, human and human species from infancy through childhood with special emphasis upon the role of physical education, recreation, and health. The examination of existing models in the areas of family, school, and clinical settings.

**HLTH 498 Special Topics in Health (3)** Prerequisite: permission of department. Repeatable to 3 credits if content differs. Topics of special interest in areas not covered by regularly scheduled courses.

## HONR — Honors

**HONR 118 Freshman Honors Colloquium: Cultural and Historical (3)** A colloquium on a variety of topics, each of which will include the study of a culture or cultures from a comparative or historical perspective. The course may be repeated for credit, with the permission of the Director of the University Honors Program, if the content of the course is substantially different. Open to University honors freshmen or sophomores and to other students by permission of the Director of University Honors.

**HONR 128 Freshman Honors Colloquium: Natural Sciences and Mathematics (3)** A colloquium on a variety of topics in natural sciences or mathematics. The course may be repeated for credit, with the permission of the Director of the University Honors Program, if the content of the course is substantially different. Class discussion and active student participation will be stressed. Open to University honors freshmen or sophomores and to other students by permission of the Director of University Honors.

**HONR 138 Freshman Honors Colloquium: Literature and the Arts (3)** A colloquium on a variety of topics each of which deals with the aesthetic from an analytical and

evaluative viewpoint. The course may be repeated for credit, with the permission of the Director of the University Honors Program, if the content of the course is substantially different. Class discussion and active student participation will be stressed. Open to University Honors freshmen or sophomores and to other students by permission of the Director of University Honors.

**HONR 148 Freshman Honors Colloquium: Social and Behavioral Sciences (3)** A colloquium on a variety of topics in the social and behavioral sciences. The course may be repeated for credit, with the permission of the Director of the University Honors Program, if the content of the course is substantially different. Class discussion and active student participation will be stressed. Open to University Honors freshmen or sophomores and to other students by permission of the Director of University Honors.

**HONR 158 Freshman Honors Colloquium: Interdisciplinary (3)** A colloquium on a variety of interdisciplinary topics of broad general interest. The course may be repeated for credit, with the permission of the Director of the University Honors Program, if the content of the course is substantially different. Class discussion and active student participation will be stressed. Open to University Honors freshmen or sophomores and to other students by permission of the Director of University Honors.

**HONR 318 Honors Seminar: Cultural and Historical (1-3)** A series of seminars, often interdisciplinary in character, and sometimes team-taught. The subjects will vary from semester to semester. The content will always be such that it includes the study of a culture or cultures from a comparative or historical perspective. The seminar may be repeated for credit, with the permission of the Director of the University Honors Program, if the content of the course is substantially different. Open to University and departmental honors students and to others with the permission of the instructor and the Director of University Honors.

**HONR 328 Honors Seminar: Natural Sciences and Mathematics (1-3)** A series of seminars in the natural sciences and mathematics, often interdisciplinary in character and sometimes team-taught. The subjects will vary from semester to semester. The seminar may be repeated for credit, with the permission of the Director of the University Honors Program, if the content of the course is substantially different. Open to University and departmental honors students and to others with the permission of the instructor and the Director of University Honors.

**HONR 338 Honors Seminar: Literature and the Arts (1-3)** A series of seminars in literature and the arts, often interdisciplinary and sometimes team-taught. The subjects will vary from semester to semester. The content will always be such that it includes a focus on the aesthetic from an analytic and evaluative viewpoint. The seminar may be repeated for credit, with the permission of the Director of the University Honors Program, if the content of the course is substantially different. Open to University and departmental honors students and to others with the permission of the instructor and the Director of University Honors.

**HONR 348 Honors Seminar: Social and Behavioral Sciences (1-3)** A series of seminars in the social and behavioral sciences, often interdisciplinary and sometimes team-taught. The subjects will vary from semester to semester. The seminar may be repeated for credit, with the permission of the Director of the University Honors Program, if the content of the course is substantially different. Open to University and departmental honors students and to others with the permission of the instructor and the Director of University Honors.

**HONR 358 Honors Seminar: Interdisciplinary (1-3)** A series of seminars on broad interdisciplinary topics of general interest. The subjects will vary from semester to semester. The seminar may be repeated for credit, with the permission of the Director of the University Honors Program, if the content of the course is substantially different. Open to University and departmental honors students and to others with the permission of the instructor and the Director of University Honors.

**HONR 368 Honors Seminar: Development of Knowledge (1-3)** A series of seminars, often interdisciplinary in character and sometimes team-taught. The creation, discovery, exploration, testing and

evaluation of knowledge in one or more disciplines. The seminar may be repeated for credit, with the permission of the Director of the University Honors Program, if the content of the course is substantially different. Open to University and departmental honors students and to others with permission of the Director of University Honors.

**HONR 370 Honors Thesis or Project (3-6)** The preparation and execution, under the direction of an individual faculty member, of a written thesis or a project of some other kind, such as a piece of creative work or a performance. The thesis or project must be of honors quality and must be outside the student's major. Open only to students in the University Honors Program.

**HONR 378 Honors Seminar: Analysis of Human Problems (1-3)** A series of seminars, often interdisciplinary in character and sometimes team-taught. The application of knowledge from one or more disciplines to the study of important human problems. The seminar may be repeated for credit, with the permission of the Director of the University Honors Program, if the content of the course is substantially different. Open to University honors students and to others with permission of the Director of University Honors.

**HONR 379 Honors Independent Study (1-6)** Honors independent study involves reading or research, directed by individual faculty, especially in areas outside of student's major. HONR 379 or 360 but not both, may be used once to fulfill the general honors seminar requirement. Graded pass/fail. May be repeated to a maximum of twelve hours. Open only to University honors students.

## HORT — Horticulture

**HORT 100 Introduction to Horticulture (3)** An introduction to the art and science of horticulture for the non-major. The technical and cultural bases for the selection, production, and maintenance of horticultural plants.

**HORT 160 Introduction to Landscape Architecture (3)** Theory and general principles of landscape architecture with their application to public and private areas.

**HORT 171 Elements of Forestry (3)** Prerequisite: BIOL 105. A general survey of the field of forestry, including timber values, conservation, protection, silviculture, utilization, mensuration, engineering, recreation and lumbering. Principles and practices of woodland management. Four all-day Saturday field trips are required.

**HORT 201 Environmental Factors and Horticultural Crop Production (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: BIOL 105. The first of a two semester sequence. The influence and interaction of light, mineral nutrition, water, temperature and gas exchange on growth, physiological responses, productivity and quality of horticultural crops.

**HORT 202 Management of Horticultural Crops (4)** Three lectures and one three-hour laboratory per week. Three hours of lecture and three hours of laboratory per week. Prerequisite: BIOL 105. A study of the principles and practices used in the production of horticultural crops. Management of soils and soilless media, vegetative and reproductive growth and development, pests, harvest, post-harvest environment and marketing will be presented for model commodities.

**HORT 260 Graphic Communications (2)** Two hour studio periods per week. Prerequisites: HORT 160 and EDIT 160. Graphic communication for landscape design presentation, supplemented by basic problems in landscape design.

**HORT 271 Plant Propagation (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: BIOL 105. A study of the principles and practices in the propagation of plants.

**HORT 274 Genetics of Cultivated Plants (3)** Prerequisite: BIOL 105. Credit will be granted for only one of the following: ZOOL 213, ANSC 201, BOTN 414, HORT 274. Principles of plant genetics in relation to plant breeding. Some of the topics presented are meiosis, simple Mendelian genetics, gene interaction, linkage and crossing over, cytoplasmic and quantitative inheritance, mutations, and the role of DNA.

**HORT 361 Principles of Landscape Design (3)** One lecture and two studio periods per week. Prerequisite: HORT 260; and APDS 101. A consideration of design criteria and procedure as applied to public and private landscape.

**HORT 398 Seminar (1)** Oral presentation of the results of investigational work by reviewing recent scientific literature in the various phases of horticulture.

**HORT 399 Special Problems (1-2)** For HORT and BOTN majors only. Repeatable to 4 credits if content differs. Credit arranged according to work done.

**HORT 432 Greenhouse Crop Production (3)** Prerequisite: HORT 201, and HORT 202. Pre- or corequisite: BOTN 441. The commercial production and marketing of ornamental plant crops under greenhouse, plastic houses and out-of-door conditions.

**HORT 433 Technology of Fruit and Vegetable Production (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: HORT 201; and HORT 202; and HORT 271, and AGRO 411. Corequisite: HORT 271 and BOTN 441. Recommended AGRO 302, 60 semester hours. Junior standing. Credit will be granted for only one of the following: HORT 411, HORT 422, or HORT 433. A critical analysis of research work and application of the principles of plant physiology, chemistry and botany to practical problems in the commercial production of fruit and vegetable crops.

**HORT 452 Principles of Landscape Establishment and Maintenance (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: HORT 201; and HORT 202; and HORT 453 or HORT 454. A study of the establishment and maintenance of woody plants stressing the physiological determinants of recommended practices. Topics covered will include site preparation, transplanting, staking, mulching, pruning, fertilizing and related topics.

**HORT 453 Woody Plant Materials I (3)** Prerequisite: BOTN 212. A field and laboratory study of trees, shrubs, and vines used in ornamental plantings. Major emphasis is placed on native deciduous plant materials.

**HORT 454 Woody Plant Materials II (3)** Prerequisite: BOTN 212. A field and laboratory study of trees, shrubs, and vines used in ornamental plantings. Major emphasis is placed on introduced and evergreen plant materials.

**HORT 456 Nursery Crop Production (3)** Two lectures a week and four all-day compulsory Saturday laboratories. Pre- or corequisites: HORT 201; and HORT 202; and HORT 271. The methods used for producing ornamental plants and an introduction to the different types of commercial nurseries.

**HORT 462 Urban Landscape Design (4)** Three hour lecture and one two-hour studio per week. Prerequisite: HORT 361 and either HORT 453 or HORT 454. Corequisite: HORT 452. Trends in the field of urban landscape design. Explore the two distinct areas of planting design and urban design and focus on the efforts to integrate them within the spectrum of landscape architectural studies.

**HORT 464 Principles of Landscape Construction (3)** One lecture and two two-hour studio periods per week. Prerequisite: HORT 361. Landscape development principles and construction practices as applied to grading, drainage, layout, and vehicular and pedestrian circulation.

**HORT 465 Landscape Structures and Materials (3)** One lecture and two two-hour studio periods per week. Prerequisite: HORT 464. Use and design of structures in the landscape.

**HORT 466 Advanced Landscape Design (3)** One lecture and two studio periods per week. Prerequisites: HORT 462; and HORT 465, and HORT 452. A synthesis of design, landscape development, construction and planting principles and procedures as applied to the comprehensive design of public and private landscapes.

**HORT 467 Landscape Contracting and Professional Practice (3)** Prerequisites: (AREC 306 or AREC 414); and HORT 452. Introduction to and comparative study of the business concerns of landscape contracting companies and landscape architectural firms. The legal, financial, marketing, and personnel management practices in both business realms.



**HORT 472 Advanced Plant Propagation (2)** Prerequisite: HORT 201, and HORT 202, and HORT 271. A study of the anatomy, morphology and physiology of the seed and plant as related to macro and micro forms of propagation. A review of research in propagation.

**HORT 474 Physiology of Maturation and Storage of Horticultural Crops (3)** Two hours of lecture and two hours of laboratory per week. Pre- or corequisite: BOTN 441. The physiological and biochemical changes occurring during storage of horticultural commodities. Application of scientific principles to handling and storage of fresh produce.

**HORT 489 Special Topics in Horticulture (1-3)** Credit according to time scheduled and organization of course. A lecture and/or laboratory series organized to study in depth a selected phase of horticulture not covered by existing courses.

## HSAD — Housing and Design

**HSAD 210 Presentation Techniques I (3)** Six hours of laboratory per week. Prerequisite: APDS 103 or equivalent. For interior design majors only. Basic techniques for making two-dimensional presentations of existing space utilizing technical skills to convey design solutions.

**HSAD 240 Design and Furnishings in the Home (3)** Prerequisite: APDS 101 or APDS 104. For non-majors only. Designed to meet need for basic information and competency in choice and arrangement of home furnishings.

**HSAD 246 Materials of Interior Design (3)** Prerequisite: APDS 103 or equivalent. For interior design majors only. Investigation of materials and construction characteristics of interior architecture and furnishings. Emphasis on use, limitations, sources. Directions in current research.

**HSAD 251 Housing Issues and Prospects (3)** Social and economic issues associated with the production, consumption and regulation of housing. Perceptions of the housing unit, factors affecting the cost and financing of housing; and the role of federal and local government in the distribution of the housing resource.

**HSAD 340 Period Homes and Their Furnishings (3)** Prerequisite: APDS 103 or permission of department. For interior design and advertising design majors only. A study of authentic interiors and furnishings. Exploration of style influences apparent in contemporarily produced items.

**HSAD 341 Contemporary Developments In Architecture, Interiors, Furnishings (3)** Prerequisite: HSAD 246 or permission of department. Style origins and development of twentieth century architecture as living space. Architects, designers, trends, philosophy of relationship of interior space to furnishings.

**HSAD 342 Space Development (3)** Prerequisites: HSAD 210, and HSAD 246. For interior design majors only. Observation and analysis of spaces and examination of their characteristics. Concepts of space quality, cultural context, symbolic content, person-environment relations, and functional aspects. Environmental representation through drawings, scale models, and photography.

**HSAD 343 Interior Design I (3)** Two three-hour lecture/discussion/studio periods. Prerequisite: HSAD 342. For interior design majors only. Development of the design process, include problem definition, performance specifications, program development, schematic alternatives, evaluation, design development, and construction documents. Application of the process to the design of residential spaces with emphasis on concepts of community and privacy.

**HSAD 344 Interior Design II (3)** One lecture-discussion, two studio periods. Prerequisite: HSAD 343. For interior design majors only. Continuation of HSAD 343 with emphasis on commercial and contract assignments.

**HSAD 345 Professional Aspects of Interior Design (3)** Prerequisite: HSAD 343. For interior design majors only. Examination and discussion of professional career opportunities, ethics, and practices. Contact negotiation and contract documents. Professional organizations. Portfolio evaluation.

**HSAD 362 Ideas in Design (3)** Junior standing. Key concepts in design, including style, type, rule, system,

meaning and model. Examination of historical and contemporary periods.

**HSAD 440 Interior Design III (4)** Prerequisite: HSAD 344. For interior design majors only. Eight hours studio periods. Preparation of complete presentation: work specifications, floor plans, purchase orders, renderings, etc. Portfolio preparation.

**HSAD 441 Interior Design IV (4)** Prerequisite: HSAD 440. For interior design majors only. Eight hours studio periods. Preparation of complete presentation work specifications, floor plans, purchase orders, renderings, etc. Portfolio preparation.

**HSAD 442 Barrier-free Interiors I (3)** Prerequisite: APDS 101A or equivalent and consent of instructor. An introduction to determinants of design decisions in relation to the handicapped, aging and disabled. Physical limitations and design support systems.

**HSAD 443 Barrier-free Interiors II (3)** Prerequisites: HSAD 343, HSAD 442. Three studio periods. Experience in solving problems related to interior space, both individual and congregate, and its use by the handicapped, aging and disabled.

**HSAD 451 Gaming Simulation in Design I (3)** Prerequisite: Two upper-division level courses in HSAD, FMCD, ARCH, URBIS, GVPT or permission of department. Simulation games as a means to model social interaction. Applications in the fields of urban, architectural, interior and graphic design; planning, housing, and community development. Mathematical gaming theory as it relates to simulation games.

**HSAD 452 Gaming Simulation in Design II (3)** Prerequisite: HSAD 451. The design and testing of student-developed simulation games in the fields of urban, architectural, interior and graphic design; planning, housing, and community development.

**HSAD 460 Housing Costs and Financing (3)** Prerequisite: MATH 110 and ECON 205 or equivalent. Effects of housing costs and financing on the ability of households to obtain satisfactory housing. Influence of public and private groups on the cost of housing and availability of financing. Basic quantitative techniques of housing cost analysis.

**HSAD 462 Seminar on Ideas in Design (3)** Pre- or corequisite: HSAD 362 or permission of department. Detailed examination and discussion of concepts presented in HSAD 362.

**HSAD 488 Selected Topics in Housing and Interior Design (1-6)** Offered on demand. May be repeated to a maximum of six hours if content differs.

**HSAD 499 Individual Study in Housing and/or Interior Design (3-4)** Guidance for the advanced student capable of independent subject matter investigation or creative work. Problem chosen with consent of instructor.

## ITAL — Italian

**ITAL 101 Elementary Italian I (4)** Credit will be granted for only one of the following: ITAL 101/ITAL 102 or ITAL 121. Introduction to basic grammar and vocabulary; written and oral work.

**ITAL 102 Elementary Italian II (4)** Prerequisite: ITAL 101 or permission of department. Credit will be granted for only one of the following: ITAL 101/ITAL 102 or ITAL 121. Continuation of study of basic grammar; written and oral work, with increased emphasis on spoken Italian.

**ITAL 121 Accelerated Italian I (3)** Credit will be granted for only one of the following: ITAL 101/ITAL 102 or ITAL 121. An intensive beginning course in Italian language skills; guided practice in reading, writing, understanding and conversation, to enable the student to move more quickly to advanced courses. Restricted to students already having a good background in at least one other foreign language. With ITAL 122, may be used to satisfy language requirement.

**ITAL 122 Accelerated Italian II (3)** Prerequisite: ITAL 121. Credit will be granted for only one of the following: ITAL 203 or ITAL 122. Completion of accelerated cycle. May be used to satisfy language requirement.

**ITAL 203 Intermediate Italian (4)** Prerequisite: ITAL 102. Credit will be granted for only one of the following:

ITAL 203 or ITAL 122. Completion of study of basic grammar, extensive reading, discussion, and composition. Completion of this course fulfills the Arts and Humanities language requirement.

**ITAL 204 Review Grammar and Composition (3)** Prerequisite: ITAL 203 or ITAL 122, or permission of department. An intensive review of major aspects of contemporary grammatical usage; training in comprehension, an introduction to guided composition.

**ITAL 211 Intermediate Conversation (3)** Prerequisite: ITAL 203 or permission of department. Not open to native speakers. Practice in spoken Italian with emphasis on contemporary Italian culture.

**ITAL 251 Introduction to Italian Literature (3)** Prerequisite: ITAL 203 or permission of department. Reading of selected literary texts; discussion and brief essays in Italian.

**ITAL 279 Readings in Italian Literature in Translation (3)** Repeatable to 6 credits if content differs. Topic to be determined each semester. All readings, discussions and examinations in English. No prerequisites.

**ITAL 301 Composition and Style (3)** Prerequisite: ITAL 204 or permission of department. Techniques of composition, grammatical analysis, elements of style, free composition.

**ITAL 311 Italian Conversation: Current Events (3)** Prerequisite: ITAL 211 or permission of department. Oral expression; development of idiomatic forms and vocabulary to level of the Italian press. Not open to students with native fluency.

**ITAL 351 Italian Literature From Dante to the Renaissance (3)** Prerequisites: ITAL 204 or ITAL 251 or permission of department. Basic survey of history of Italian literature.

**ITAL 352 Italian Literature From the Renaissance to the Present (3)** Prerequisite: ITAL 204 or ITAL 251 or permission of department. Basic survey of history of Italian literature.

**ITAL 370 Italian Civilization - in Translation (3)** Credit will be granted for only one of the following: ITAL 370 or ITAL 470. Political, social, intellectual, literary and artistic forces shaping contemporary Italy, from the late Middle Ages to the present. In English.

**ITAL 376 The Italian Opera Libretto in Translation (3)** Credit will be granted for only one of the following: ITAL 376 or ITAL 476. A history and analysis of Italian opera librettos from Monteverdi through Mozart to Verdi and Puccini. In English.

**ITAL 399 Directed Study in Italian (1-3)** Prerequisite: permission of department. Repeatable to 3 credits. Intended for undergraduates who wish to work on an individual basis with a professor of their choice.

**ITAL 411 Dante - in Translation (3)** Credit will be granted for only one of the following: ITAL 411 or ITAL 412. Dante's thought as expressed in his major writings: The Vita Nuova, De Monarchia and The Divine Comedy. In English.

**ITAL 412 Dante - in Italian (3)** Credit will be granted for only one of the following: ITAL 411 or ITAL 412. Dante's thought as expressed in his major writings: The Vita Nuova, De Monarchia and The Divine Comedy. In Italian.

**ITAL 421 The Italian Renaissance (3)** Credit will be granted for only one of the following: ITAL 421 or ITAL 422. Formerly ITAL 410. Major trends in Renaissance literature, art, and science. In English.

**ITAL 422 The Italian Renaissance - In Italian (3)** Credit will be granted for only one of the following: ITAL 421 or ITAL 422. A study of major trends of thought in Renaissance literature, art, and science. In Italian.

**ITAL 470 Italian Civilization - in Italian (3)** Credit will be granted for only one of the following: ITAL 470 or ITAL 370. Political, social, intellectual, literary and artistic forces shaping contemporary Italy, from the late Middle Ages to the present. In Italian.

**ITAL 471 Italian Cinema: A Cultural Approach (3)** Credit will be granted for only one of the following: ITAL 471 or ITAL 472. Formerly ITAL 475. The culture of Italy through the medium of film from the silent days up to the present. In English.

**ITAL 472 Italian Cinema: A Cultural Approach - in Italian (3)** Credit will be granted for only one of the following: ITAL 471 or ITAL 472. The culture of Italy through the medium of film from the silent days up to the present. In Italian.

**ITAL 476 The Italian Opera Libretto - in Italian (3)** Credit will be granted for only one of the following: ITAL 476 or ITAL 376. History and analysis of Italian opera librettos from Monteverdi through Mozart to Verdi and Puccini. In Italian.

**ITAL 498 Special Topics in Italian Literature (3)** Repeatable to 6 credits if content differs.

**ITAL 499 Special Topics in Italian Studies (3)** Repeatable to 6 credits if content differs

### IVSP — Individual Studies Program

**IVSP 318 Individual Studies (1-15)** Prior permission of the administrative dean for undergraduate studies required. This course may be used by students in the Individual Studies Program to establish credit in approved informal educational experiences such as independent studies, special problems, or work-study experience.

**IVSP 319 Tutorial Report (1)** A written analysis of progress toward completion of degree requirements. Limited to students in the Individual Studies Program.

**IVSP 320 Bachelor's Report (3)** Required of all students in the Individual Studies Program whose program includes 40% or more of informal educational experience (independent study, special problems, work internship, etc.) Strongly recommended for all students in the program. This paper is to be completed in the student's final semester and approved by the tutor and committee prior to certification for the degree.

### JAPN — Japanese

**JAPN 101 Elementary Japanese I (6)** Introduction to basic patterns of contemporary spoken Japanese and to the two phonetic syllabaries (Katakana and Hiragana).

**JAPN 102 Elementary Japanese II (6)** Prerequisite: JAPN 101 or equivalent. Continued introduction to the basic spoken patterns of contemporary Japanese.

**JAPN 201 Intermediate Spoken Japanese I (3)** Prerequisite: JAPN 102 or equivalent. Further study of grammar with emphasis on the spoken language.

**JAPN 202 Intermediate Written Japanese I (3)** Prerequisite: JAPN 102 or equivalent. Continued study of the written Japanese language.

**JAPN 203 Intermediate Spoken Japanese II (3)** Prerequisite: JAPN 201 or equivalent. Continuation of JAPN 201.

**JAPN 204 Intermediate Written Japanese II (3)** Prerequisite: JAPN 202 or equivalent. A continuation of JAPN 202.

**JAPN 217 Buddhism and Japanese Literature in Translation (3)** A study of the religious and philosophical traditions central to the Japanese imaginative life and literature from ancient to modern times.

**JAPN 301 Advanced Japanese I (3)** Prerequisites: JAPN 203; and JAPN 204 or equivalent. Advanced conversation, oral comprehension, and selected readings.

**JAPN 302 Advanced Japanese II (3)** Prerequisite: JAPN 301 or equivalent. Continued readings in varied modern texts and advanced conversation and oral comprehension.

**JAPN 303 Business Japanese I (3)** Prerequisite: JAPN 203; and JAPN 204 or equivalent. Conversation, reading, and writing applicable to Japanese business transactions, social meetings, and meetings with government organizations, with background material in English on professional business practices and social customs associated with business.

**JAPN 304 Business Japanese II (3)** Prerequisite: JAPN 303 or equivalent. Continuation of JAPN 303.

**JAPN 401 Readings in Modern Japanese I (3)** Prerequisite: JAPN 302 or equivalent. Development of translation techniques, vocabulary, grammar, and reading speed. Readings in history, social sciences, modern literature, and modern newspaper and periodical literature.

**JAPN 402 Readings in Modern Japanese II (3)** Prerequisite: JAPN 401 or equivalent. Continuation of more advanced readings.

**JAPN 403 Readings in Classical Japanese (3)** Prerequisite: JAPN 302 or equivalent. Classical Japanese grammar and the varied styles of classical Japanese. Readings in classical texts drawn from the Heian, Kamakura, Muromachi, and Edo periods.

**JAPN 414 Masterpieces of Classical Japanese Literature in Translation (3)** Major classics, with focus on philosophical, historical and cultural backgrounds.

**JAPN 415 Modern Japanese Fiction in Translation (3)** Major themes and literary developments in fiction from the late 19th century to the present. Emphasis on the works of Kawabata, Tanizaki, Mishima, and Abe.

**JAPN 418 Japanese Literature in Translation (3)** Repeatable to 9 credits if content differs. Representative works of Japanese literature in translation.

**JAPN 421 History of the Japanese Language (3)** Investigation of the origin of the Japanese language, its relationship with other languages, and its development. In English.

**JAPN 422 Introductory Japanese Linguistics (3)** An investigation of Japanese sound patterns and syntax through a comparison with English.

**JAPN 499 Directed Study in Japanese (1-3)** Prerequisite: permission of instructor. Repeatable to 6 credits if content differs.

### JOUR — Journalism

**JOUR 100 Introduction to Mass Communication (3)** Survey of the functions and effects of the mass media in the United States. A consumer's introduction to newspapers, television, radio, film, sound recording, books, magazines, and new media technology. Introduction to public relations, advertising, and news analysis.

**JOUR 101 Professional Orientation (1)** Formerly JOUR 001. Survey of journalism professions, emphasizing appropriate academic and career development strategies.

**JOUR 201 Writing For Mass Media (3)** Pre- or corequisite: JOUR 101. Prerequisite: 30 words per minute typing ability; provisional or direct admission to journalism major. Introduction to news, feature and publicity writing for the printed and electronic media, development of news concepts; laboratory in news gathering tools and writing skills.

**JOUR 202 Editing For the Mass Media (3)** Prerequisite: grade of C or better in JOUR 201. Basic editing skills applicable to all mass media: copy editing, graphic principles and processes, new media technology.

**JOUR 320 News Reporting (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: grade of C or better in JOUR 201. For JOUR majors only. Principles and practices of news reporting with special emphasis on news gathering for all the media, covering news beats and other news sources, including researching a news story for accuracy, comprehensiveness and interpretation.

**JOUR 321 Advanced Reporting: Public Affairs (3)** Prerequisite: JOUR 320. Advanced training in writing news for publication in specialized areas, particularly city, county, and federal news. Students meet in seminar with news sources and leading news reporters and work in Washington, D. C., Annapolis, and Baltimore covering news in depth for publication.

**JOUR 322 Advanced Reporting: Beats and Investigation (3)** Prerequisite: JOUR 320. Advanced training and practice in writing, interviewing, beat reporting

and investigative techniques. Students meet in weekly seminars and work with metropolitan-area newspapers covering beats and writing stories for publication.

**JOUR 323 Newspaper Editing (3)** Prerequisite: grade of C or better in JOUR 202. Principles and practices of editing for publication. Copy improvement, headline writing, news photos and cutlines, wire services, copy control and scheduling, page design and layout. Introduction to computerized editing with video display terminals.

**JOUR 326 News Commentary and Critical Writing (3)** Prerequisite: JOUR 320. Journalistic interpretation and analysis; editorial and critical writing.

**JOUR 328 Specialized News Reporting (3)** Prerequisite: JOUR 320. Repeatable to 6 credits if content differs. Advanced training and practice in writing and reporting news of one specialized field of interest.

**JOUR 330 Public Relations Theory (3)** Prerequisite: grade of C or better in JOUR 201. The historical development and contemporary status of public relations in business, government, associations and other organizations. Application of communication theory and social science methods to the research, planning, communication and evaluation aspects of the public relations process.

**JOUR 331 Public Relations Techniques (3)** Prerequisites: JOUR 330, and grade of C or better in JOUR 202. The techniques of public relations including news releases, publications and printed materials, audiovisual techniques, speeches and special events. Application of these techniques in laboratory and field projects.

**JOUR 332 Specialized Writing in Public Relations (3)** Prerequisite: grade of C or better in JOUR 201. Recommended: JOUR 330. Public Relations writing for science, technology, health, medicine, corporate finance, educational policy, law and government in broadcast and technical media as well as newspapers and magazines and also including proposals, speeches and correspondence.

**JOUR 333 Organizational Communication in Public Relations (3)** Prerequisites: JOUR 330; and grade of C or better in JOUR 202. Theory and techniques for planning and producing organizational publications and internal communication programs. Theories of organizational communication, principles of layout and design, non-print communication media, and methods of pretesting and evaluating communications programs.

**JOUR 334 Public Relations Programs (3)** Prerequisite: JOUR 330. Analysis of eight major programs typically carried out by public relations professionals: employee relations, media relations, financial relations, member relations, governmental relations, community relations, fundraising and dealing with activist public.

**JOUR 340 Advertising Communication (3)** Prerequisite: grade of C or better in JOUR 201. Advertising as a mass communication profession and its role in the public information system of the United States. Application of communication theory and research methods to the research, planning, communication, and evaluation aspects of advertising.

**JOUR 341 Advertising Techniques (3)** Prerequisites: JOUR 340; and grade of C or better in JOUR 202. Writing and production of print and broadcast advertisements; application of these techniques in laboratory and field projects.

**JOUR 342 Advertising Media Planning (3)** Prerequisite: JOUR 340. Principles of planning, placing and evaluating advertising media in U.S. media markets. Application of theory and methods to specific advertising situations.

**JOUR 350 Photojournalism (3)** Prerequisite: grade of C or better in JOUR 201. Not open to students who have completed JOUR 372. Fundamentals of camera operation, composition, developing and printing black and white still photographs for publication, history of photojournalism.

**JOUR 351 Advanced Photojournalism (3)** Prerequisite: JOUR 350. Analysis of the role of photography in mass communication, with emphasis on the photographic

essay, and use of the 35 mm camera. Students provide 35 mm equipment and supplies.

**JOUR 352 Special Topics in Photojournalism (3)** Prerequisites: JOUR 351 and permission of department. An analysis of the theory and application of advanced photographic processes to the communication of ideas, including direct audience communication, realistic and nonrealistic visual materials and media. **JOUR 360 Broadcast News I (3)** Prerequisite: grade of C or better in JOUR 201. Writing for the broadcast media and the production of news stories.

**JOUR 361 Broadcast News II (3)** Prerequisite: JOUR 360. Writing and editing for the broadcast media. Interpretive and documentary news stories.

**JOUR 365 Theory of Broadcast Journalism (3)** Descriptive and critical analysis of broadcast news practices; evaluation of news judgments; decision-making and organizational aspects of the broadcast news industry.

**JOUR 371 Magazine Article and Feature Writing (3)** Prerequisite: JOUR 320. Types of feature articles, particularly for the magazine market, analysis of the magazine medium and specialized audiences; practice in researching and writing the feature article; analysis of free-lance markets.

**JOUR 372 Magazine Photography and Illustration (3)** Prerequisite: grade of C or better in JOUR 201. Not open to students who have completed JOUR 350. Camera selection and operation; film selection and processing; print making, scaling and sizing of photographs; picture layout. Students must provide 35 mm camera plus supplies.

**JOUR 373 Graphics (3)** Prerequisite: grade of C or better in JOUR 202. Intensive analysis of the components of publication content and design. Type and typography, printing processes, illustration and production with emphasis on contemporary technology.

**JOUR 374 Magazine Production (3)** Prerequisites: JOUR 371; and JOUR 373. Publication of a laboratory magazine.

**JOUR 380 Science Writing for Magazines and Newspapers (3)** Prerequisite: JOUR 320 or permission of department. Writing of scientific and technical material for the general audience.

**JOUR 396 Supervised Internship (3)** Prerequisites: grade of C or better in JOUR 202; and first course of journalism sequence related to techniques [i.e. JOUR 320; or JOUR 331; or JOUR 341; or JOUR 350; or JOUR 360; or JOUR 380] and permission of department. Internship experience with communication professionals in newspapers, news broadcasting, public relations, advertising, magazines, photojournalism, and science communication. Relation of academic training to professional experience.

**JOUR 397 Professional Seminar (3)** Prerequisites: grade of C or better in JOUR 201; and permission of department. Projects and discussions relating professional work experience to study of journalism. Limited to students who participated in an advanced summer internship after their junior year.

**JOUR 398 Independent Study (1-3)** Repeatable to 3 credits. Individual projects in journalism.

**JOUR 400 Law of Mass Communication (3)** Legal rights and constraints of mass media; libel, privacy, copyright, monopoly, contempt, and other aspects of the law applied to mass communication. Previous study of the law not required.

**JOUR 410 History of Mass Communication (3)** Development of newspapers, magazines, radio, television and motion pictures as media of mass communication. Analysis of the influences of the media on the historical development of America.

**JOUR 420 Government and Mass Communication (3)** Relationship between news media and government; media coverage of government and politics; governmental and political information and persuasion techniques.

**JOUR 430 Comparative Mass Communication Systems (3)** Comparative analysis of the role of the press in different societies.

**JOUR 440 Readings in Journalism Literature (3)** Prerequisite: JOUR 320 or permission of department. Analysis of books by journalists highly regarded for writing style and/or the content of their reporting with an emphasis on understanding the books in the context of national and international affairs.

**JOUR 450 Mass Media in Society (3)** Ethical, moral, political, economic, and social consideration of mass communication.

**JOUR 451 Advertising and Society (3)** Advertising as an institution with manifest economic purposes and latent social effects. Influences of advertising on people, and related issues of ethics and social responsibility.

**JOUR 452 Women in the Media (3)** Participation and portrayal of women in the mass media from colonial to contemporary times.

**JOUR 459 Special Topics in Mass Communication (3)** Repeatable to 6 credits if content differs. Issues of special concern and current interest. Open to all students.

**JOUR 461 Newspaper Management (3)** Organization, operation, and administration of the departments of a newspaper: advertising, business-finance, circulation, news-editorial, personnel, production, and promotion.

**JOUR 471 Public Opinion Research (3)** Measurement of public opinion and media habits; role of the mass media in the formation of public opinion.

**JOUR 477 Mass Communication Research (3)** Prerequisite: MATH 110 or equivalent, students are encouraged to have completed the theory and technique courses in their major sequence. Communication research methods used in measuring public opinion and evaluating public relations, advertising, and mass media programs and materials.

**JOUR 481 Writing the Complex Story (3)** Pre- or corequisite: JOUR 371. Explanatory journalism technique applied to complex subjects (such as science, economics and large scale social change) for books, magazines and newspaper series.

**JOUR 483 Senior Seminar in Public Relations (3)** Prerequisite: JOUR 331; and JOUR 477. Integration of theory, techniques and research methods into the planning and execution of public relations campaigns for specific organizations. Analysis of research on the case studies of public relations.

**JOUR 484 Advertising Campaigns (3)** Prerequisite: JOUR 341; and JOUR 342. Planning and executing advertising campaigns in actual agency situations. Integration of advertising theories and techniques into a complete campaign.

**JOUR 486 Advanced Television Journalism (3)** Prerequisite: JOUR 361 or permission of department. A skills course in which students assume major responsibility for the production of a weekly TV news and public affairs program. Students will work on extended TV reporting assignments such as mini-series and news documentaries. Note: In addition to classroom time, students are required to devote time out of class in reporting and editing.

**JOUR 487 Literary Journalism (3)** Pre- or corequisite: JOUR 371. Practice in the use of literary techniques and especially of dramatic structure in modern newspaper series, magazine pieces and books. Analysis, researching and writing of nonfiction stories, usually with a focus on a specialized area chosen by the student.

**JOUR 490 Advising Student Publications (3)** Journalistic writing and editing in student newspapers, yearbooks, and magazines; libel and policy; curriculum and teaching procedures; role of student publications.

**JOUR 491 Policy, Censorship, and Legal Problems of Student Publications (3)** Censorship problems and court cases; legal rights of the student press; formulation of policy and legal guidelines.

**JOUR 492 Typography and Layout For Student Publications (3)** Type design, type families, graphics,

art, photography, and editorial and advertisement layout of school newspapers, yearbooks, and magazines.

**JOUR 493 Advanced Techniques For Student Publication Advisors (3)** Interpretive and investigative reporting interviewing and scientific survey methods; curriculum and courses for high school and community colleges; textbooks, teaching units, state of the art techniques and resource aids.

**JOUR 494 Yearbook Short Course (1)** Prerequisite: JOUR 201 or permission of department. Credit not applicable toward major in journalism. Intensive course dealing with the theme, content, copy, design, advertising, budget, finance, law and ethics of yearbook development and production.

**JOUR 498 Topics in Scholastic Journalism (1-3)** Repeatable if content differs. Seminars on specialized areas on the practice of scholastic journalism.

**KNES — Kinesiology**  
**KNES Activities Program Courses: 1-3 credits per course**

**KNES 100—114 Physical Education Activities - Men**

**KNES 115—127 Physical Education Activities - Women**

**KNES 130—177 Physical Education Activities - Coed**

**PHED 158 Adapted Physical Education - Coed**

**KNES Professional Program Courses:**

**KNES 180 Foundations of Physical Education (3)** Formerly PHED 180. Introduction to the study of physical education with attention to the foundations, content and practices of human movement as the focus. The course involves lecture, discussion, and laboratory components to explore, describe, and increase understanding of physical education as it is practiced and studied.

**KNES 181 Fundamentals of Movement (2)** Formerly PHED 181. Introduction to the scientific foundations of human movement including factual knowledge and application of content areas such as human growth and development, anatomy, physiology, neurology, biomechanics and motor learning to fundamental movement skills.

**KNES 182 Rhythmic Activities (2)** Six hours of laboratory per week. Formerly PHED 182. Development of rhythmic sensitivity through analysis of rhythm and its application to movement, skills in folk, square and social dance and teaching techniques for use in schools and recreational programs.

**KNES 183 Movement Content for Elementary School Children (3)** Formerly PHED 183. Participation in movement activities with a focus on educational dance, gymnastics and games. Observation and analysis of movement behavior in relation to specific aspects of movement. Examination of relationships among movement forms.

**KNES 200 Gymnastics Skills Laboratory (2)** Formerly PHED 200. Progressive techniques of teaching and practice of skills in gymnastics.

**KNES 202 Badminton Skills Laboratory (1)** Formerly PHED 202. Progressive techniques of teaching and practice of skills in badminton.

**KNES 204 Basketball Skills Laboratory (1)** Formerly PHED 204. Progressive techniques of teaching and practice of skills in basketball.

**KNES 206 Golf Skills Laboratory (1)** Formerly PHED 206. Progressive techniques of teaching and practice of skills in golf.

**KNES 210 Field Games Skills Laboratory (1)** Formerly PHED 210. Progressive techniques of teaching and practice of skills in field games such as flag football, soccer, speedball and speed-a-way.

**KNES 211 Field Hockey Skills Laboratory (1)** Formerly PHED 211. Progressive techniques of teaching and practice of skills in field hockey.

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**KNES 213 Lacrosse Skills Laboratory (1)** Formerly PHED 213 Progressive techniques of teaching and practice of skills in lacrosse.

**KNES 214 Soccer Skills Laboratory (1)** Formerly PHED 214 Progressive techniques of teaching and practice of skills in soccer.

**KNES 215 Softball Skills Laboratory (1)** Formerly PHED 215. Progressive techniques of teaching and practice of skills in softball

**KNES 217 Tennis Skills Laboratory (1)** Formerly PHED 217 Progressive techniques of teaching and practice of skills in tennis.

**KNES 218 Laboratory in Teaching (1)** Prerequisite: permission of department. Repeatable to 2 credits. Formerly PHED 218. The course is designed to prepare the student for the student teaching experience by assisting in a class

**KNES 220 Track and Field Skills Laboratory (2)** Formerly PHED 220. Progressive techniques of teaching and practice of skills in track and field

**KNES 221 Volleyball Skills Laboratory (1)** Formerly PHED 221. Progressive techniques of teaching and practice of skills in volleyball.

**KNES 222 Weight Training Skills Laboratory (1)** Formerly PHED 222. Progressive techniques of teaching and practice of skills in weight training.

**KNES 224 Aerobics Skills Laboratory (1)** Formerly PHED 224 Progressive techniques of teaching and practice of skills in aerobics.

**KNES 250 Advanced Volleyball Skills Laboratory (2)** Prerequisite: KNES 221. Formerly PHED 250. Progressive techniques of teaching coaching and practice of skills in volleyball at the advanced level.

**KNES 261 Development of Endurance and Strength Fitness (3)** Formerly PHED 261. An appraisal of various components of physical fitness and of a prescription exercise program. The parameters of physical fitness and the exercises to improve these parameters.

**KNES 287 Sport and American Society (3)** Formerly PHED 287. Sport will be related to such social problems as delinquency, segregation, collective behavior, and leisure; to social processes such as socialization, stratification, mobility, and social control; and to those familiar social institutions, the family, the school, the church, the military, the economy, the polity, and the mass media.

**KNES 289 Topical Investigations (1-6)** Repeatable to 6 credits. Formerly PHED 289. Independent study by an individual student or a group of students in special areas of knowledge not covered by regularly scheduled courses.

**KNES 293 History of Sport in America (3)** Formerly PHED 293. The growth and development of sport in America. The transformation of sport within the perspective of American history, including class sport, professionalization, amateurism, and international involvement.

**KNES 300 Biomechanics of Human Motion (4)** Three hours of lecture and two hours of laboratory per week. Prerequisites: ZOO 201; and ZOO 202. Formerly PHED 300. The study of human movement and the physical and physiological principles upon which it depends. Body mechanics, posture, motor efficiency, sports, the performance of a typical individual and the influence of growth and development upon motor performance

**KNES 314 Methods in Physical Education (3)** Formerly PHED 314 Application of educational philosophy and principles to class organization and techniques of teaching physical education.

**KNES 333 Physical Activity for the Handicapped (3)** Formerly PHED 333. Handicapped conditions, Federal and State regulations, implications for planning and implementing physical activity programs, evaluation strategies of assessing motor performance and the role of physical activity in educational programs for handicapped students.

**KNES 335 Swimming Pool Management (2)** Formerly PHED 335. Analysis of the position of the swimming pool manager. The systematic treatment of swimming pool water, swimming pool first aid, and laws pertaining to swimming pool operation. Qualifies the student for a pool operator's license in most Maryland counties

**KNES 340 Theory of Coaching Athletics (2)** Formerly PHED 340 General theory and practice of coaching selected competitive sports found in secondary schools and community recreation programs

**KNES 341 Theory of Coaching Basketball (2)** Formerly PHED 341. Philosophy preparation for season, practice organization, scouting, film analysis, and strategies.

**KNES 342 Theory of Coaching Baseball (2)** Formerly PHED 342. Philosophy preparation for season, practice organization, scouting, film analysis, and strategies.

**KNES 343 Theory of Coaching Football (2)** Formerly PHED 343. Philosophy, preparation for season, practice organization, scouting, film analysis, and strategies

**KNES 344 Theory of Coaching Swimming (2)** Formerly PHED 344. Philosophy preparation for season, practice organization, scouting, film analysis, and strategies

**KNES 345 Theory of Coaching Track and Field (2)** Formerly PHED 345. Philosophy preparation for season, practice organization, scouting, film analysis, and strategies.

**KNES 350 The Psychology of Sports (3)** Formerly PHED 350. An exploration of the personality factors, including but not limited to motivation, aggression and emotion, as they affect sports participation and motor skill performance.

**KNES 351 Contemporary Issues in American Sport (3)** Prerequisite: KNES 287. Formerly PHED 351. Seminar/discussion of theoretical and practical issues in contemporary sport.

**KNES 360 Physiology of Exercise (3)** Two hours of lecture and two hours of laboratory per week. Prerequisites: [ZOO 201; and ZOO 202]; or permission of department. Formerly PHED 360. A study of the physiology of exercise, including concepts of work, muscular contraction, energy transformation, metabolism, oxygen debt, and nutrition and athletic performance. Emphasis on cardiovascular and respiratory function in relation to physical activity and training.

**KNES 361 Weight Control Through Diet and Exercise (3)** Lecture and laboratory. Formerly PHED 361. The basic principles of weight control are given and the students participate in diet and exercise programs

**KNES 362 Philosophy of Sport (3)** Formerly PHED 362. Form and content of the philosophy of sport. The basis of knowledge in and about sport, the structure and theories of the discipline, the ontological and moral implications and dilemmas involving sport, and the interactions between philosophy and the scientific and humanistic aspects of sport.

**KNES 370 Motor Development (3)** Formerly PHED 370. Motor development across the life span. The developmental sequences of motor skills from birth to old age; neuromaturation of neuromuscular system, analysis of the underlying mechanisms of motor skill development, and correlates of motor development

**KNES 381 Prevention and Care of Athletic Injuries (3)** Prerequisites: ZOO 201; and ZOO 202. Formerly PHED 381. Theoretical and practical foundations of the prevention, recognition, and treatment of athletic injuries. Physical conditioning and re-conditioning, preventive taping, first aid, and various modalities are emphasized

**KNES 385 Motor Learning and Skilled Performance (3)** Formerly PHED 385. A study of the research dealing with motor learning and motor performance. Scientific methodology, individual differences, specificity, proprioceptive control of movement, motivation, timing, transfer, and retention.

**KNES 389 Topical Investigations (1-3)** Repeatable to 6 credits. Formerly PHED 389. Independent study by an individual student or a group of students in special areas of knowledge not covered by regularly scheduled courses

**KNES 390 Practicum in Teaching Physical Education (3)** Prerequisite: KNES 314. Formerly PHED 390. Teaching of children in a physical education setting. Specific emphasis on curriculum development, lesson planning, progressions and analysis of teacher behavior

**KNES 398 Honors Seminar (1)** One hour of discussion/recitation per week. Prerequisite: participation in honors program. Repeatable to 3 credits. Formerly PHED 398. Guided discussion of research topics of current interest

**KNES 399 Honors Thesis (3)** Prerequisites: KNES 398H, and candidacy for honors in physical education. Formerly PHED 399. Advisement will be on the individual basis. Thesis must be defended in the honors seminar

**KNES 402 Biomechanics of Sport (3)** Prerequisite: KNES 300. Formerly PHED 402. Mechanical determinants influencing sport techniques. A quantitative, scientific basis for sport analysis with emphasis on the application to numerous sport activities. Evaluation and quantification of the timed performance of athletes.

**KNES 406 Perceptual-Motor Development in the Young Child (3)** Formerly PHED 406. Analysis of perceptual-motor components, their progression, interrelationships, developmental activities and evaluation. Study of the growth and other factors that influence perceptual-motor development in the young child.

**KNES 421 Elementary School Physical Education: A Movement Approach (3)** Prerequisite: KNES 183. Formerly PHED 421. An analysis of movement philosophy and content, focusing upon cognitive, psychomotor and affective developmental characteristics in relation to progression and planning of games, educational dance and educational gymnastics for elementary school age children.

**KNES 450 Sport Psychology: Applications (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: KNES 350. Formerly PHED 450. Application of the principles of sport psychology to the competitive or recreational athlete, with an emphasis on the techniques that have been used with competitors to maximize skill acquisition and performance.

**KNES 451 Sport and the American Woman (3)** Formerly PHED 451. The expanding perception of the woman's role in American society, etiology of sex differences, socialization of sex roles in America, development of "masculinity" and "femininity" in children through early play experiences, competition and women; personality of the female athlete, and personal motivations of female athletes and projected future for sport and the American.

**KNES 455 Scientific Bases of Athletic Conditioning (3)** Prerequisite: KNES 360. Formerly PHED 455. An examination of physical fitness-athletic conditioning programs stressing the practical application of exercise physiology theory for enhancing athletic performance. Cardiovascular considerations, strength and power development, nutrition, speed, muscular endurance, environmental considerations and ergogenic aids.

**KNES 461 Exercise and Body Composition (3)** Prerequisite: KNES 360. Formerly PHED 461. Physiological concepts relating body composition factors to exercise and human performance. The scientific basis for the establishment and evaluation of conditioning programs where body composition may play an important role, such as weight control and athletics

**KNES 462 Neural Basis of Human Movement (3)** Prerequisites: [ZOO 201, and ZOO 202; and KNES 385] or permission of department. Formerly PHED 462. An introduction to the neural substrates which underlie postural and volitional movement. Neuroanatomical and neurophysiological basis of motor functioning, past and present conceptualizations of motor control and coordination; movement disorders, and maturation of the neuromuscular system.

**KNES 470 Seminar For Student Teachers (2)** Formerly PHED 470. A seminar held concurrently with student teaching in physical education. An intensive examination of current problems and issues in teaching physical education.

**KNES 480 Measurement in Physical Education (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: MATH 110. Formerly PHED 480. A

study of the principles and techniques of educational measurement as applied to teaching of physical education; study of the functions and techniques of measurement in the evaluation of student progress toward the objectives of physical education and in the evaluation of the effectiveness of teaching

**KNES 481 Biophysical Aspects of Human Movement (3)** Prerequisites: KNE 5300, and KNE 360; and KNE 370; and KNE 385 Formerly PHED 481 Scientific principles and research techniques in the investigation of the biophysical basis of human movement.

**KNES 482 Socio-behavioral Aspects of Human Movement (3)** Prerequisites: KNE 287; and KNE 293; and KNE 350. Formerly PHED 482. Derivation, formulation, and application of research in the socio-behavioral aspects of human movement

**KNES 486 Politics and Economics of Organized Contemporary Sport (3)** Prerequisite: KNE 287. Formerly PHED 486. Interdependence of sport, politics, and economics. The structure, organization, and uses of sport in contemporary societies

**KNES 487 Sports in World Society (3)** Prerequisite: SOCY 100. Formerly PHED 487. Impact and influence of sports are assessed from a sociopolitical frame of reference nationally and internationally

**KNES 488 Field Laboratory Projects and Workshop (1-6)** Repeatable to 6 credits. Formerly PHED 489. Workshops and research projects in special areas of knowledge not covered by regularly structured courses.

**KNES 490 Administration of Physical Education and Sport (3)** Prerequisite: KNE 180 or KNE 287. Formerly PHED 490. Principles and functions of administration in physical education and sport. Administrative duties in relation to financing, budgeting, staffing, planning, organizing, directing, coordinating, evaluating, reporting, and discipline.

**KNES 491 The Curriculum in Physical Education (3)** Formerly PHED 491. Curriculum sources, principles, and planning concepts, with emphasis on using valid criteria for the selection of content for physical education programs.

**KNES 492 History of the Sportswoman in American Organizations (3)** Prerequisite: KNE 293. Formerly PHED 492. Women's involvement in and contributions to America's sporting culture, especially in the 19th and 20th Centuries until enactment of Title IX. The interactions among historical perceptions of women's roles, responsibilities, and potential and their sporting lives; the effects of role stereotyping and opportunities for and directions taken in developing sport organizations. Other issues affecting women's involvement in institutional sport.

**KNES 493 History and Philosophy of Sport and Physical Education (3)** Formerly PHED 493. History and philosophical implications of sport and physical education through ancient, medieval, and contemporary periods in western civilization.

**KNES 496 Quantitative Methods (3)** Formerly PHED 496. Statistical techniques most frequently used in research pertaining to physical education. Effort is made to provide the student with the necessary skills, and to acquaint him with the interpretations and applications of these techniques.

**KNES 497 Independent Studies Seminar (3)** Formerly PHED 497. Discussions of contemporary issues vital to the discipline, critiques of research in the student's area/areas of special interest, completion of a major project where the student will be asked to demonstrate the ability to carry out investigative processes in problem solving and critical writing under faculty direction.

**KNES 498 Special Topics in Physical Education (3)** Prerequisite: permission of department. Repeatable when the subject matter is different. Formerly PHED 498. Topics of special interest in areas not covered by regularly scheduled courses.

#### LATN — Latin

**LATN 101 Elementary Latin (4)** Four hours of discussion/recitation per week. A student who has two units of Latin in high school may register for LATN 101 for the purposes of review, but ordinarily not for credit.

**LATN 102 Elementary Latin (4)** Four hours of discussion/recitation per week. A student who has two units of Latin in high school may register for LATN 102 for credit with departmental permission.

**LATN 120 Intensive Latin (4)** Prerequisite: permission of department. Not open for credit to students with credit for LATN 102. Elements of Latin grammar and vocabulary, elementary reading. The first year's study of Latin compressed into a single semester

**LATN 201 Intermediate Latin I (4)** Prerequisites: LATN 101; LATN 102 or equivalent. Formerly LATN 203.

**LATN 204 Intermediate Latin II (3)** Prerequisite: LATN 203 or equivalent.

**LATN 220 Intermediate Intensive Latin (4)** Prerequisite: LATN 102, or LATN 120, or equivalent. Not open to students with credit for LATN 204. Review of Latin grammar, reading in prose and poetry from selected authors.

**LATN 301 Plautus (3)** Plautine drama. Literary, linguistic and socio-cultural aspects.

**LATN 302 Ovid (3)** Major works of Ovidian poetry. Literary and moral atmosphere of Augustan age

**LATN 319 Special Topics in Latin Literature (3)** Repeatable to 6 credits if content differs.

**LATN 351 Horace (3)** Prerequisite: LATN 305 or equivalent.

**LATN 352 Livy (3)** Prerequisite: LATN 351 or equivalent.

**LATN 361 Pliny's Letters (3)** Prerequisite: LATN 352 or equivalent.

**LATN 400 level course prerequisite: LATN 361 or equivalent**

**LATN 401 Latin Lyric Poetry (3)** Latin lyric poetry. Emphasis on Horace and Catullus.

**LATN 402 Tacitus (3)**

**LATN 403 Roman Satire (3)**

**LATN 404 Roman Comedy (3)**

**LATN 405 Lucretius (3)**

**LATN 410 Latin Historians (3)** Latin historical writing as a literary genre. Influences, style, and literary techniques.

**LATN 411 Advanced Latin Grammar (3)** Prerequisite: three years of college Latin or equivalent. An intensive study of the morphology and syntax of the Latin language supplemented by rapid reading.

**LATN 415 Virgil's Aeneid (3)** Formerly LATN 305. Virgil's Aeneid; readings of selections in Latin and of the entire epic in English translation along with critical essays.

**LATN 420 Cicero and Caesar (3)** Reading and analysis of texts by M. Tullius Cicero and C. Julius Caesar, with emphasis on the relationships between them and on the period of the Civil War.

**LATN 424 Silver Latin (3)** Reading and analysis of selected texts. Emphasis on the role of Nero and Seneca in literary developments.

**LATN 472 Historical Development of the Latin Language (3)** Credit will be granted for only one of the following: LATN 472 or LING 431. An analysis of the development of the Latin language from archaic times to the Middle Ages.

**LATN 488 Latin Readings (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. The reading of one or more selected Latin authors from antiquity through the Renaissance. Reports.

**LATN 490 Survey of Latin Literature (3)** Survey of major authors and genres, with extensive readings from a variety of authors and review of grammar.

**LATN 499 Independent Study in Latin Language and Literature (3)** Prerequisite: permission of department. Repeatable to 6 credits.

#### LBSC — Library Science

**LBSC 381 Basic Reference and Information Sources (3)** Introduction to reference-information service and the sources, tools, and technology essential to the reference process. Selection, evaluation, and utilization of all types of reference tools for library media centers

**LBSC 383 Library Materials for Children and Youth (3)** Literature and media for children and youth, including fiction and information materials, books, periodicals, video, filmstrips, films, microforms, records, pictures, pamphlets. Introduction to reading, viewing, and listening guidance techniques

**LBSC 488 Recent Trends and Issues in Library and Information Services (1-3)** Repeatable to 9 credits. Discussions of recent trends and issues in library and information services. Designed for practicing professionals.

**LBSC 499 Workshops, Clinics, and Institutes (1-9)** Repeatable to 6 credits. Workshops, clinics, and institutes developed around specific topics or problems. Primarily for practicing librarians

#### LING — Linguistics

**LING 100 Study of Languages (3)** Credit will be granted for only one of the following: LING 100 or LING 200. The nature of languages and approaches to the study of languages. Discussion of sounds and forms, clarification of terminology relevant to the learning of a second language. Survey of language types and writing systems. Cannot be used to satisfy college foreign language requirement.

**LING 200 Introductory Linguistics (3)** Not open to students who have completed ANTH 371 or HESP 120. Credit will be granted for only one of the following: LING 100 or LING 200. Ways of studying human language; basic concepts of modern linguistic analysis (sound systems, word formation, syntax, meaning). The nature of human language; the social aspects of language; language change; dialects; writing systems; language universals, etc.

**LING 240 Language and Mind (3)** The study of language as a cognitive phenomenon. Ways of representing people's knowledge of their native language, ways in which that knowledge is attained naturally by children, and how it is used in speaking and listening. Relevant philosophical literature. Relationship to study of other cognitive abilities: reasoning, perception, sensory-motor development.

**LING 300 Concepts of Grammar (3)** Introduction to the basic units of language description. Nature of and reasons for constituent structure and syntactic categories. Fundamental tools for language description needed for teaching and learning foreign languages.

**LING 311 Syntax I (3)** Prerequisite: LING 240. Basic concepts, analytical techniques of generative syntax, relation to empirical limits imposed by viewing grammars as representations of a component of human mind. Aspects of current theories.

**LING 312 Syntax II (3)** Prerequisite: LING 311. Continuation of LING 311. Development of theories of syntax. Criteria for revising theories. Methods and strategies of "scientific" efforts to explain natural phenomena.

**LING 321 Phonology I (3)** Prerequisite: LING 240. Properties of sound systems of human languages, basic concepts and analytical techniques of generative phonology. Empirical limits imposed by viewing grammars as cognitive representations. Physiological properties and phonological systems; articulatory phonetics and distinctive feature theory.

**LING 322 Phonology II (3)** Prerequisite: LING 321. Continuation of LING 321. Development of theories of phonology. Criteria for revising theories.

**LING 330 Historical Linguistics (3)** A traditional presentation of language change. Language types and families, sounds and writing systems, grammatical categories. Reconstruction of proto-languages by internal and comparative methods.

**LING 350 Philosophy of Language (3)** Prerequisite: PHIL 170 or PHIL 173 or LING 371; or LING 311. The nature and function of language and other forms of symbolism from a philosophical perspective.

**LING 410 Grammar and Meaning (3)** Prerequisite: LING 312. The basic notions of semantic theory: reference, quantification, scope relations, compositionality, thematic relations, tense and time, etc. The role these notions play in grammars of natural languages. Properties of logical form and relationship with syntax.

**LING 411 Comparative Syntax (3)** Prerequisite: LING 312. Comparison of data from a variety of languages with respect to some aspect of current versions of syntactic theory in order to investigate how parameters of universal grammar are tested differently in different languages. Attempts to work out fragments of grammars for some languages.

**LING 419 Topics in Syntax (3)** Repeatable to 6 credits if content differs.

**LING 420 Word Formation (3)** Prerequisite: LING 322. Definition of shape and meaning of possible words, both across languages and within particular languages. Interaction between principles of word formation and other components of a grammar: syntax, logical form and phonology.

**LING 421 Advanced Phonology (3)** Prerequisite: LING 322. Topics in current phonological theory, as they relate to data from the sound systems of various languages. Segmental and prosodic analysis. Discussion of autosegmental theory, metrical theory, etc.

**LING 429 Topics in Phonology (3)** Repeatable to 6 credits if content differs.

**LING 430 Language Change (3)** Prerequisite: LING 240. Changes in grammars from generation to generation. Consequences for the theory of grammars. Traditional work on historical change.

**LING 431 Indo-European Studies (3)** Prerequisite: LING 330. Credit will be granted for only one of the following: LING 472 or LING 431. Reconstruction of Proto-Indo-European according to the theories of the Neo-grammarians and their followers. The development of Proto-Indo-European into its descendant languages.

**LING 439 Topics in Diachronic Linguistics (3)** Repeatable to 6 credits if content differs.

**LING 440 Grammars and Cognition (3)** Relationship between the structure, development and functioning of grammars and the structure, development and functioning of other mental systems. Interpretations of experimental and observational work on children's language, aphasia, speech production and comprehension.

**LING 445 Computer Models of Language (3)** Prerequisite: LING 240. The use of linguistic theory to improve psychological models of language comprehension. Formal and computer modelling of language processing systems.

**LING 451 Grammars and Variation (3)** Prerequisite: LING 311. Grammars and the use of language in a variety of styles: formal, casual, literary, etc. Consequences for concepts of grammars. Variation theory. Literary styles.

**LING 453 Mathematical Approaches to Language (3)** Prerequisite: LING 312. The aspects of mathematics used in linguistic discussions: recursion theory, Chomsky's hierarchy of grammars, set theory, Boolean algebra, finite state grammars, context-free grammars, etc. Applications to theories of grammars. Formalizations of grammatical theories.

**LING 455 Second Language Teaching (3)** Relationship between theories of grammars, and techniques used for teaching and learning second languages, and for the teaching and learning of English in schools.

**LING 457 Grammars and Discourse (3)** Prerequisite: LING 240. The use of a person's grammar in communication, sentence production. Speech act theory, pragmatics.

**LING 487 Computer Science for Cognitive Studies (3)** Also offered as PHIL 487. Credit will be granted for only one of the following: LING 487 or PHIL 487. List processing and discrete mathematics. Preparation for the study of artificial intelligence and other mathematically oriented branches of cognitive studies. Intended for

students of linguistics, philosophy, and psychology. LISP computer language, graphs and trees, the concept of computational complexity, search algorithms.

**LING 499 Directed Studies in Linguistics (1-3)** Prerequisite: permission of department. Repeatable to 6 credits. If content differs. Independent study or research on language under the supervision of a faculty member.

## MAPL — Applied Mathematics

**MAPL 460 Computational Methods (3)** Prerequisites: MATH 240; and MATH 241, and [CMSC 110 or CMSC 113] or equivalent. Also offered as CMSC 460. Credit will be granted for only one of the following: MAPL/CMSC 460 and MAPL/CMSC 466. Basic computational methods for interpolation, least squares, approximation, numerical quadrature, numerical solution of polynomial and transcendental equations, systems of linear equations and initial value problems for ordinary differential equations. Emphasis is on methods and their computational properties rather than their analytic aspects. Intended primarily for students in the physical and engineering sciences.

**MAPL 466 Introduction to Numerical Analysis I (3)** Prerequisites: [MATH 240; and MATH 241; and CMSC 110] or equivalent. Also offered as CMSC 466. Credit will be granted for only one of the following: MAPL/CMSC 460 and MAPL/CMSC 466. Floating point computations, direct methods for linear systems, interpolation, solution of nonlinear equations.

**MAPL 467 Introduction to Numerical Analysis II (3)** Prerequisite: MAPL/CMSC 466 or permission of department. Also offered as CMSC 467. Advanced interpolation, linear least squares, eigenvalue problems, ordinary differential equations, Fast Fourier Transforms.

**MAPL 472 Methods and Models in Applied Mathematics I (3)** Prerequisites: [MATH 241; and MATH 246; and MATH 240; and PHYS 161 or 171] or permission of department. Recommended: one of the following: MATH 410, MATH 414, MATH 415, MATH 462, MATH 463, PHYS 262, PHYS 273. Also offered as MATH 472. Credit will be granted for only one of the following: MATH 472 and MAPL 472. Mathematical models in fluid dynamics and elasticity, both linear and non-linear partial differential equations, variational characterizations in eigenvalue problems, numerical algorithms. Additional optional topics as time permits. Some examples are Hamiltonian systems, Maxwell's equations, non-linear programming.

**MAPL 477 Optimization (3)** Prerequisite: CMSC/ MAPL 460, 466, or 467. Also offered as CMSC 477. Credit will be granted for only one of the following: CMSC 477 or MAPL 477. Linear programming including the simplex algorithm and dual linear programs, convex sets and elements of convex programming, combinatorial optimization, integer programming.

**MAPL 498 Selected Topics in Applied Mathematics (1-3)** Repeatable to 6 credits if content differs. Topics in applied mathematics of special interest to advanced undergraduate students.

## MATH — Mathematics

**MATH 001 Review of High School Algebra (3)** Recommended for students who plan to take MATH 110 or MATH 002 but are not currently qualified to do so. Special fee required in addition to the regular tuition charge. This course does not carry credit towards any degree at the University. Review of the algebraic skills fundamental to any further study of mathematics. Exponents, polynomials, linear equations in one and two variables, quadratic equations.

**MATH 002 Advanced Review of High School Algebra (3)** Recommended for students who plan to take but who are not currently qualified for MATH 115. Prerequisite: MATH 001 or satisfactory score on the mathematics placement exam. Special fee required in addition to the regular tuition charge. This course does not carry credit towards any degree at the University. Review of high school algebra at a faster pace and at a more advanced level than MATH 001. Exponents; polynomials; linear equations in one and two variables; quadratic equations; and polynomial, rational, exponential and logarithmic functions.

**MATH 110 Elementary Mathematical Models (3)** Prerequisite: permission of department based on satisfactory score on the mathematics placement exam, or MATH 001. Not open to students majoring in

mathematics, engineering, and the physical sciences. Elementary introduction to models useful in the biological, management, and social sciences. Matrices, systems of linear equations, and linear inequalities in two or three variables are used to solve simple but representative problems in linear programming, stochastic processes, game theory, and the mathematics of mortgages and annuities.

**MATH 111 Introduction to Probability (3)** Prerequisite: permission of department based on satisfactory score on the mathematics placement exam, or MATH 110, or MATH 115. Not open to students majoring in mathematics, engineering or the physical sciences. Credit will be granted for only one of the following: MATH 111 or STAT 100. Logic, Boolean algebra, counting, probability, random variables, expectation applications of the normal probability distribution.

**MATH 115 Precalculus (3)** Prerequisite: permission of department based on satisfactory score on the mathematics placement exam or MATH 002. Preparation for MATH 220 or MATH 140. Elementary functions and graphs: polynomials, rational functions, exponential and logarithmic functions, trigonometric functions. Algebraic techniques preparatory for calculus.

**MATH 140 Calculus I (4)** Three hours of lecture and two hours of discussion/ recitation per week. Prerequisite: permission of department based on 3 1/2 years of college preparatory mathematics (including trigonometry) and satisfactory score on the mathematics placement exam or MATH 115. Credit will be granted for only one of the following: MATH 140 or MATH 220. Introduction to calculus, including functions, limits, continuity, derivatives and applications of the derivative, sketching of graphs of functions, definite and indefinite integrals, and calculation of area. The course is especially recommended for science and mathematics majors.

**MATH 141 Calculus II (4)** Three hours of lecture and two hours of discussion/ recitation per week. Prerequisite: MATH 140 or equivalent. Credit will be granted for only one of the following: MATH 141 or MATH 221. Continuation of MATH 140, including techniques of integration, improper integrals, applications of integration (such as volumes, work, arc length, moments), inverse functions, exponential and logarithmic functions, sequences and series.

**MATH 210 Elements of Mathematics (4)** Prerequisite: one year of college preparatory algebra. Required for majors in elementary education, and open only to students in this field. Topics from algebra and number theory, designed to provide insight into arithmetic, inductive proof, the natural number system based on the Peano axioms, mathematical systems, groups, fields, the system of integers; the system of rational numbers, congruence, divisibility; systems of numeration.

**MATH 211 Elements of Geometry (4)** Prerequisite: MATH 210 or equivalent. Structure of mathematics systems, algebra of sets, geometrical structures, logic, measurement, congruence, similarity, graphs in the plane, geometry on the sphere.

**MATH 220 Elementary Calculus I (3)** Prerequisite: permission of department based on 3 1/2 years of college preparatory mathematics (including trigonometry) and satisfactory performance on the mathematics placement exam, or MATH 115. Not open to students majoring in mathematics, engineering or the physical sciences. Credit will be granted for only one of the following: MATH 140 or MATH 220. Basic ideas of differential and integral calculus, with emphasis on elementary techniques of differentiation and applications.

**MATH 221 Elementary Calculus II (3)** Prerequisite: MATH 220, or MATH 140, or equivalent. Not open to students majoring in mathematics, engineering or the physical sciences. Credit will be granted for only one of the following: MATH 141 or MATH 221. Differential and integral calculus, with emphasis on elementary techniques of integration and applications.

**MATH 240 Introduction to Linear Algebra (4)** Prerequisite: MATH 141 or equivalent. Credit will be granted for only one of the following: MATH 240 or MATH 400 or MATH 461. Basic concepts of linear algebra: vector spaces, applications to line and plane geometry, linear equations and matrices, similar matrices; linear transformations, eigenvalues, determinants and quadratic forms.

**MATH 241 Calculus III (4)** Three hours of lecture and two hours of discussion/recitation per week. Prerequisites: MATH 141 and any one of the following: MATH 240, or ENES 110, or PHYS 171. Introduction to multivariable calculus, including vectors and vector-valued functions, partial derivatives and applications of partial derivatives (such as tangent planes and Lagrange multipliers), multiple integrals, volume, surface area and the classical theorems of Green, Stokes and Gauss.

**MATH 246 Differential Equations For Scientists and Engineers (3)** Prerequisite: MATH 141 or equivalent. An introduction to the basic methods of solving ordinary differential equations. Equations of first and second order, linear differential equations, Laplace transforms, numerical methods, and the qualitative theory of differential equations.

**MATH 250 Analysis I (Honors) (4)** Prerequisite: permission of department. First semester of a year course giving a rigorous treatment of calculus in one and several variables. Topics covered during the year: properties of the real and complex numbers, Euclidean spaces, basic set theory and topology, metric spaces, sequences and series, continuity, differentiability, uniform convergence, Riemann-Stieltjes integrals, multiple integrals, inverse and implicit function theorems, line integrals, theorems of Green, Gauss, and Stokes.

**MATH 251 Analysis II (Honors) (4)** Prerequisite: MATH 250. Continuation of MATH 250. Students successfully completing MATH 250 - MATH 251 will not need to take MATH 410 - MATH 411.

**MATH 256 Introduction to Numerical Analysis (3)** Prerequisite: MATH 141. Students will need to spend considerable time in the PC lab on campus or have access to a PC off campus. Numerical techniques implemented on microcomputers in the language True Basic. Problems in root finding, interpolation, numerical integration and differentiation, linear (algebraic) systems of equations, spline approximation, and ordinary differential equations. Examination of errors.

**MATH 299 Selected Topics in Mathematics (1-3)** Prerequisite: permission of department. Topics of special interest under the general guidance of the departmental committee on undergraduate studies.

**MATH 398 Honors Seminar (2)** Prerequisite: permission of the departmental honors committee. Repeatable to 4 credits if content differs. Reports by students on mathematical literature, solution of various problems.

**MATH 400 Vectors and Matrices (3)** Prerequisite: MATH 221 or equivalent. Not open to students in the CMPS College. Credit will be granted for only one of the following: MATH 240, MATH 400, or MATH 461. The essentials of matrix theory needed in the management, social and biological sciences. Main topics: systems of linear equations, linear independence, rank, orthogonal transformations, eigenvalues, the principal axes theorem. Typical applications: linear models in economics and in statistics, Markov chains, age-specific population growth.

**MATH 401 Applications of Linear Algebra (3)** Prerequisite: MATH 240 or MATH 400 or MATH 461. Various applications of linear algebra: theory of finite games, linear programming, matrix methods as applied to finite Markov chains, random walk, incidence matrices, graphs and directed graphs, networks, transportation problems.

**MATH 402 Algebraic Structures (3)** Prerequisite: MATH 240 or equivalent. Not open to mathematics graduate students. Credit will be granted for only one of the following: MATH 402 or MATH 403. For students having only limited experience with rigorous mathematical proofs. Parallels MATH 403. Students planning graduate work in mathematics should take MATH 403. Groups, rings, integral domains and fields, detailed study of several groups, properties of integers and polynomials. Emphasis is on the origin of the mathematical ideas studied and the logical structure of the subject.

**MATH 403 Introduction to Abstract Algebra (3)** Prerequisites: MATH 240 and MATH 241, or equivalent. Credit will be granted for only one of the following: MATH 402 or MATH 403. Integers; groups; rings; integral domains; fields.

**MATH 404 Field Theory (3)** Prerequisite: MATH 403. Algebraic and transcendental elements, Galois theory, constructions with straight edge and compass, solutions of equations of low degrees, insolubility of the Quintic. Sylow theorems, fundamental theorem of finite Abelian groups.

**MATH 405 Linear Algebra (3)** Prerequisite: MATH 240 or MATH 461. An abstract treatment of finite dimensional vector spaces. Linear transformations and their invariants.

**MATH 406 Introduction to Number Theory (3)** Prerequisite: MATH 141 or permission of department. Integers, divisibility, prime numbers, unique factorization, congruences, quadratic reciprocity, Diophantine equations and arithmetic functions.

**MATH 410 Advanced Calculus I (3)** Prerequisites: MATH 240, and MATH 241. First semester of a year course. Subjects covered during the year are: sequences and series of numbers, continuity and differentiability of real valued functions of one variable, the Riemann integral, sequences of functions, and power series. Functions of several variables including partial derivatives, multiple integrals, line and surface integrals. The implicit function theorem.

**MATH 411 Advanced Calculus II (3)** Prerequisites: MATH 410, and MATH 240 or MATH 400. Continuation of MATH 410.

**MATH 414 Differential Equations (3)** Prerequisites: MATH 410, and MATH 240 or equivalent. Existence and uniqueness theorems for initial value problems. Linear theory: fundamental matrix solutions, variation of constants formula, Floquet theory for periodic linear systems. Asymptotic orbital and Lyapunov stability with phase plane diagrams. Boundary value theory and series solutions.

**MATH 415 Introduction to Partial Differential Equations (3)** Prerequisites: MATH 246, and [MATH 411 or MATH 251]. MATH 411 and MATH 415 may be taken concurrently. Credit will be granted for only one of the following: MATH 415 or MATH 462. First order equations, linear second order equations in two variables, one dimensional wave equation and the method of separation of variables, and other topics such as harmonic functions, the heat equation, and the wave equation in space.

**MATH 417 Introduction to Fourier Analysis (3)** Prerequisite: MATH 410. Fourier series. Fourier and Laplace transforms.

**MATH 430 Euclidean and Non-Euclidean Geometries (3)** Prerequisite: MATH 141. Hilbert's axioms for Euclidean geometry. Neutral geometry, the consistency of the hyperbolic parallel postulate and the inconsistency of the elliptic parallel postulate with neutral geometry. Models of hyperbolic geometry. Existence and properties of isometries.

**MATH 432 Introduction to Point Set Topology (3)** Prerequisite: MATH 410 or equivalent. Connectedness, compactness, transformations, homeomorphisms; application of these concepts to various spaces, with particular attention to the Euclidean plane.

**MATH 433 Introduction to Algebraic Topology (3)** Prerequisites: MATH 403; and MATH 432, or equivalent. Chains, cycles, homology groups for surfaces, the fundamental group.

**MATH 436 Introduction to Differential Geometry (3)** Prerequisites: MATH 241; and [MATH 240 or MATH 461] or equivalent. The differential geometry of curves and surfaces, curvature and torsion, moving frames, the fundamental differential forms, intrinsic geometry of a surface.

**MATH 444 Elementary Logic and Algorithms (3)** Prerequisite: MATH 240. Also offered as CMSC 450. An elementary development of propositional logic, predicate logic, set algebra, and Boolean algebra, with a discussion of Markov algorithms, Turing machines and recursive functions. Topics include post productions, word problems, and formal languages.

**MATH 446 Axiomatic Set Theory (3)** Prerequisite: MATH 403 or MATH 450. Development of a system of

axiomatic set theory, choice principles, induction principles, ordinal arithmetic including discussion of cancellation laws, divisibility, canonical expansions, cardinal arithmetic including connections with the axiom of choice, Hartog's theorem, König's theorem, properties of regular, singular, and inaccessible cardinals.

**MATH 447 Introduction to Mathematical Logic (3)** Prerequisite: MATH 403 or MATH 410 or MATH 450. Formal propositional logic, completeness, independence, decidability of the system, formal quantificational logic, first-order axiomatic theories, extended Gödel completeness theorem, Löwenheim-Skolem theorem, model-theoretical applications.

**MATH 461 Linear Algebra for Scientists and Engineers (3)** Prerequisites: MATH 141 and one MATH STAT course for which MATH 141 is a prerequisite. This course cannot be used toward the upper level math requirements for MATH STAT majors. Credit will be granted for only one of the following: MATH 240, MATH 400 or MATH 461. Basic concepts of linear algebra. This course is similar to MATH 240, but with more extensive coverage of the topics needed in applied linear algebra: change of basis, complex eigenvalues, diagonalization, the Jordan canonical form.

**MATH 462 Partial Differential Equations For Scientists and Engineers (3)** Prerequisites: MATH 241; and MATH 246. Credit will be granted for only one of the following: MATH 462 or MATH 415. Linear spaces and operators, orthogonality, Sturm-Liouville problems and eigenfunction expansions for ordinary differential equations, introduction to partial differential equations, including the heat equation, wave equation and Laplace's equation, boundary value problems, initial value problems, and initial-boundary value problems.

**MATH 463 Complex Variables for Scientists and Engineers (3)** Prerequisite: MATH 241 or equivalent. The algebra of complex numbers, analytic functions, mapping properties of the elementary functions, Cauchy integral formula. Theory of residues and application to evaluation of integrals. Conformal mapping.

**MATH 464 Transform Methods For Scientists and Engineers (3)** Prerequisites: MATH 246, and MATH 463. Fourier series, Fourier and Laplace transforms. Evaluation of the complex inversion integral by the theory of residues. Applications to ordinary and partial differential equations of mathematical physics: solutions using transforms and separation of variables. Additional topics such as Bessel functions and calculus of variations.

**MATH 472 Methods and Models in Applied Mathematics I (3)** Prerequisite: [MATH 241; and MATH 246; and MATH 240; and PHYS 161 or PHYS 171] or permission of department. Recommended: one of: MATH 410, MATH 414, MATH 415, MATH 462, MATH 463 or PHYS 262, PHYS 273. Also offered as MAPL 472. Credit will be granted for only one of the following: MATH 472 and MAPL 472. Mathematical models in fluid dynamics and elasticity, both linear and non-linear partial differential equations, variational characterizations in eigenvalue problems, numerical algorithms. Additional optional topics as time permits. Some examples are Hamiltonian systems, Maxwell's equations, non-linear programming.

**MATH 473 Methods and Models In Applied Mathematics II (3)** Prerequisite: MATH 472 or permission of department. Also offered as MAPL 473. Credit will be granted for only one of the following: MATH 473 and MAPL 473. Continuation of the two semester sequence MATH 472 and MATH 473.

**MATH 475 Combinatorics and Graph Theory (3)** Prerequisites: MATH 240; and MATH 241. Also offered as CMSC 475. General enumeration methods, difference equations, generating functions. Elements of graph theory, matrix representations of graphs, applications of graph theory to transport networks, matching theory and graphical algorithms.

**MATH 478 Selected Topics For Teachers of Mathematics (1-3)** Prerequisite: one year of college mathematics or permission of department. (This course cannot be used toward the upper level math requirements for MATH STAT majors).

**MATH 498 Selected Topics in Mathematics (1-9)** Honors students register for reading courses under this

number. Repeatable to 9 credits; it content differs. Topics of special interest to advanced undergraduate students will be offered occasionally under the general guidance of the departmental committee on undergraduate studies

### MEES — Marine-Estuarine-Environmental Sciences

**MEES 400 Essentials of Toxicology (2)** Prerequisite: BCHM 261 or BCHM 461. Principles involved in the assessment of responses of organisms to toxic chemicals, including systemic and organ toxicology, carcinogenesis, teratogenesis, and consideration of the effects of major groups of toxicants

**MEES 498 Topics in Marine-Estuarine-Environmental Sciences (1-4)** Lecture and/or laboratory series organized to study a selected area of marine-estuarine-environmental sciences not otherwise considered in formal courses.

### METO — Meteorology

**METO 100 Weather and Life (3)** A study of weather, how it works, and how it affects human endeavors. The energy of weather systems and the physics of storms and atmospheric air circulations, weather observations from earth and space, air pollution and acid rain, clouds, storms and unusual weather phenomena, the problem of weather prediction, weather modification; and the relations between weather and human health, agriculture, economics, and world history. (METO 100 and METO 301 may not both be taken for credit)

**METO 301 Introduction to Meteorology (3)** Prerequisite: CHEM 113; and PHYS 263 or equivalent. A broad survey of the state of knowledge and problems of atmospheric science. Origin and structure of the atmosphere, meteorological observations, weather maps, forecasting, satellites, energetics, wind, general circulation, storms, severe weather, climate change, air pollution, and weather modification.

**METO 410 General Meteorology I (3)** Prerequisite: MATH 241. Pre- or corequisite: PHYS 273 or PHYS 263. An introduction to the broad range of theoretical and applied studies in meteorology to acquaint the student with the interaction of the physical and dynamic processes and the various scales of atmospheric phenomena. Introduction to radiational energy transfer in the atmosphere, earth-atmospheric energy budgets, atmospheric thermodynamics.

**METO 411 General Meteorology II (3)** Prerequisite: METO 410. METO 460 recommended corequisite. A continuation of METO 410 including an introduction to the concepts of vorticity and circulation in the atmosphere, properties of cold fronts and warm fronts, cyclones and anticyclones, air masses, thunderstorms, elements of dynamic weather forecasting, microphysics of cloud formation and precipitation, turbulence and diffusion in the atmosphere.

**METO 412 Physics and Thermodynamics of the Atmosphere (3)** Prerequisites: MATH 241; and PHYS 263. An introduction to atmospheric radiation, cloud physics, and basic thermodynamic processes, and applications to the atmosphere.

**METO 416 Introduction to Atmospheric Dynamics (3)** Prerequisites: MATH 241; and MATH 245; and PHYS 263. The equations of atmospheric motion; coordinate systems; balanced flows and elementary application; divergence; circulation and vorticity; the planetary boundary layer; diagnostic analysis with the quasi-geostrophic equations.

**METO 420 Physical and Dynamical Oceanography (3)** Prerequisite: METO 410 or a basic course in fluid dynamics such as ENME 340. Historical review of oceanography; physical, chemical, stratification and circulation properties of the ocean, dynamics of Inertial, frictional, wind driven and thermohaline circulation; air-sea interactions.

**METO 434 Air Pollution (3)** Prerequisites: CHEM 113; and MATH 141. Production, transformation, transport and removal of air pollutants. The problems of photochemical smog, the greenhouse effect, stratospheric ozone, acid rain, and visibility. Nuclear weapons effect on the atmosphere. Analytical techniques for gases and particles. Health and environmental effects of air pollution

**METO 460 Synoptic Meteorology I (3)** Two three-hour lecture/laboratory periods per week. Pre- or corequisite:

METO 411 or equivalent. The three-dimensional structure of synoptic scale systems and their relation to underlying dynamical principles. Weather mapping and analysis techniques. Satellite imagery interpretation. Meteorological data acquisition and use

**METO 461 Synoptic Meteorology II (3)** Prerequisite: METO 460. Synoptic meteorology applied to the modern weather forecast. The history of forecasting. Polar Front theory, surface and upper air analysis, baroclinic instability, numerical forecasting, interpreting computer forecasts, probability forecasting, forecast evaluation

**METO 499 Special Problems in Atmospheric Science (1-3)** Prerequisite: permission of department. Repeatable to 6 credits. Research or special study in the field of meteorology and the atmospheric and oceanic sciences.

### MICB — Microbiology

**MICB 100 Basic Microbiology (4)** Three hours of lecture and two hours of laboratory per week. Credit will be granted for only one of the following: MICB 100 or MICB 200. An introduction to the world of microorganisms that is designed for the general student. A survey of microscopic life forms and their activities that emphasizes their importance for human welfare. This course is not intended for students majoring in biological or allied health sciences, and it cannot be used to fulfill the 24 credits required for a major in microbiology

**MICB 200 General Microbiology (4)** Two hours of lecture and four hours of laboratory per week. Prerequisite: CHEM 113. Credit will be granted for only one of the following: MICB 100 or MICB 200. The biology of microorganisms, with special reference to the bacteria. Fundamental principles of microbiology as revealed through an examination of the structure, physiology, genetics, and ecology of microorganisms

**MICB 310 Applied Microbiology (4)** Two hours of lecture and four hours of laboratory per week. Prerequisite: MICB 200. The application of microorganisms and microbiological principles to industrial processes. Control of microorganisms, sterilization, disinfection, antibiotics.

**MICB 379 Honors Research (2-3)** Prerequisite: admission to departmental honors program. Repeatable to 12 credits. Research project carried out under guidance of faculty advisor

**MICB 380 Bacterial Genetics (4)** Two hours of lecture and four hours of laboratory per week. Prerequisites: CHEM 243 or CHEM 245 and 8 credits of microbiology. Organization, replication, expression, mutation and transfer of the genetic material of bacteria and bacteriophages. Techniques of study

**MICB 388 Special Topics in Microbiology (1-4)** Prerequisite: 8 credits in microbiology. Presentation and discussion of special subjects in the field of microbiology. A maximum of four credit hours of MICB 388 may be applied to a major in microbiology.

**MICB 399 Microbiological Problems (3)** Prerequisites: 16 credits in microbiology and permission of department. This course is arranged to provide qualified majors in microbiology and majors in applied fields an opportunity to pursue specific microbiological problems under the supervision of a member of the department

**MICB 400 Systematic Microbiology (2)** Prerequisite: 8 credits in microbiology. History and philosophy of classification. Alpha, numerical and molecular genetic taxonomy. Methods used in microbial identification and classification

**MICB 410 History of Microbiology (1)** Prerequisite: MICB major. History and integration of the fundamental discoveries of the science. Modern aspects of abiogenesis, fermentation, and disease causation in relation to early theories

**MICB 420 Epidemiology and Public Health (2)** Prerequisite: MICB 200. History, characteristic features of epidemiology, the important responsibilities of public health, vital statistics.

**MICB 430 Marine Microbiology (2)** Prerequisite: MICB 200. Morphology, biochemistry and ecology of marine microorganisms including fungi, yeasts, bacteria and viruses. Properties of marine bacteria, such as luminescence, metal ion requirements for growth,

production of ectocaine compounds, and sampling and culturing marine microorganisms

**MICB 431 Marine Microbiology Laboratory (3)** One lecture and two three-hour laboratory periods per week. Prerequisites: MICB 200 and permission of the instructor. Morphology, biochemistry and ecology of marine microorganisms. Properties of marine bacteria; luminescence, metal ion requirements, ectocaine compound production, sampling and culturing. Laboratory may include sampling trips in Chesapeake Bay and a deep sea research cruise

**MICB 440 Pathogenic Microbiology (4)** Two hours of lecture and four hours of laboratory per week. Prerequisite: MICB 200. The role of bacteria and fungi in the diseases of man with emphasis upon the differentiation and culture of microorganisms, types of disease, modes of disease transmission, prophylactic, therapeutic, and epidemiological aspects

**MICB 450 Immunology (4)** Two hours of lecture and four hours of laboratory per week. Prerequisite: MICB 200. Credit will be granted for only one of the following: ZOO 445 or MICB 450. Principles of immunity; hypersensitiveness. Fundamental techniques of immunology

**MICB 453 Recombinant DNA Laboratory (3)** Pre- or corequisite: course in "Recombinant DNA". Credit will be granted for only one of the following: MICB 453 or ZOO 453. An advanced course offering hands-on experience in performing recombinant DNA experiments. Techniques required for cloning prokaryotic genes in *Escherichia coli*.

**MICB 460 General Virology (3)** Prerequisite: MICB 440 or equivalent. Discussion of the physical and chemical nature of viruses, virus cultivation and assay methods, virus replication, viral diseases with emphasis on the oncogenic viruses, viral genetics, and characteristics of the major virus groups

**MICB 470 Microbial Physiology (3)** Prerequisite: MICB 200. Pre- or corequisite: BCHM 462. Microbial cellular and population growth. Fermentation metabolism, physiology of anaerobiosis, and energy conservation and transformation in bacterial membranes. Efficiency of energy utilization for growth. Membrane structure and transport. Bacterial chemotaxis. Regulation of bacterial chromosome replication, RNA and protein synthesis. Control of metabolic pathways.

**MICB 480 Microbial Ecology (3)** Prerequisites: MICB 200; and CHEM 243 or CHEM 245. Interaction of microorganisms with the environment, other microorganisms and with higher organisms. Roles of microorganisms in the biosphere. Microorganisms and current environmental problems

**MICB 490 Microbial Fermentations (3)** Prerequisite: MICB 470. Study of fermentative metabolism in bacteria and yeasts, primary and secondary metabolites; culture and medium development, mass cultivation of microorganisms, industrial processes for organic solvents, acids, amino acids, antibiotics, bioconversions; immobilized enzyme and cell reactors; special problems with genetically engineered cultures

**MICB 491 Microbial Fermentations Laboratory (2)** Four hours of laboratory per week. Pre- or corequisite: MICB 490. Second semester. Methods for the conduct, control and analysis of fermentation processes.

### MUED — Music Education

**MUED 197 Pre-Professional Experiences (1)** Limited to music education majors. An orientation into the role of the music teacher in the school and community. Class meets one hour a week for planning and discussion. Students spend one afternoon a week assigned to various music education activities

**MUED 410 Instrumental Arranging (2)** Prerequisites: MUSC 250 and permission of department. Arranging for school bands and orchestras from the elementary through high school levels

**MUED 411 Instrumental Music: Methods and Materials For the Elementary School (3)** A comprehensive study of instructional materials and teaching techniques for beginning instrumental classes—winds, strings and percussion



**MUED 420 Instrumental Music: Methods, Materials and Administration for Secondary School (2)** A comprehensive study of instructional and program materials, rehearsal techniques and program planning for junior and senior High School bands and orchestras Organization, scheduling budgeting and purchasing are included

**MUED 438 Special Problems in the Teaching of Instrumental Music (2-3)** Prerequisite: MUSC 113-213 or the equivalent. A study, through practice on minor instruments, of the problems encountered in public school teaching of orchestral instruments. Literature and teaching materials, minor repairs, and adjustment of instruments are included. The course may be taken for credit three times since one of four groups of instruments: strings, woodwind, brass or percussion will be studied each time the course is offered

**MUED 450 Music in Early Childhood Education (3)** Prerequisite: MUSC 155 or equivalent. Creative experiences in songs and rhythms, correlation of music and everyday teaching with the abilities and development of each level; study of songs and materials; observation and teaching experience with each age level

**MUED 470 General Concepts For Teaching Music (1)** Corequisite: MUED 411 or MUED 471. Basic philosophical, psychological, educational considerations for a total music program K-12; strategies for teaching tonal and rhythmic concepts, evaluation techniques and field experiences in designated schools

**MUED 471 Methods For Teaching Elementary General Music (3)** A study of curriculum, materials, and teaching techniques for the development of meaningful music experiences which contribute to a sequential musical growth for children in the elementary schools

**MUED 472 Choral Techniques and Repertoire (2)** Prerequisites: MUED 470 and MUSC 490. Rehearsal techniques for developing appropriate diction, tone, production, intonation, phrasing, and interpretation of choral music; examination of a wide variety of repertoire for use by choral performing groups on the elementary and secondary levels.

**MUED 478 Special Topics in Music Education (1-2)** Prerequisite: MUED 470 or permission of department. Repeatable to 5 credits. Each topic focuses on a specific aspect of the music instructional program, collectively, the topics cover a wide range of subject matter relevant to today's schools

**MUED 499 Workshops, Clinics, Institutes (2-6)** Innovative and experimental dimensions of music education will be offered to meet the needs of music teachers and music supervisors and to allow students to individualize their programs. The maximum number credits that may be earned under this course symbol toward any degree is six semester hours; the symbol may be used two or more times until six semester hours have been reached.

## MUSC — Music

**MUSC 100 Beginning Class Voice (2)** Four hours of laboratory per week. A laboratory course involving a variety of voices and vocal problems. Principles of correct breathing as applied to singing; fundamentals of tone production and diction. Repertoire of folk songs and songs of the Classical and Romantic periods. Development of students' voices.

**MUSC 102 Beginning Class Piano I (2)** Four hours of laboratory per week. Functional piano training for beginners. Development of techniques for school and community playing. Basic piano techniques; chord, arpeggio, and scale techniques; melody and song playing; simple accompaniments, improvisation for accompaniments and rhythms; sight reading and transposition, and playing by ear.

**MUSC 103 Beginning Class Piano II (2)** Four hours of laboratory per week. Prerequisite: MUSC 102 or permission of department. Functional piano training for beginners. Development of techniques useful for school and community playing. Basic piano techniques; chord, arpeggio, and scale techniques; melody and song playing; simple accompaniments, improvisation for accompaniments and rhythms; sight reading and transposition, and playing by ear. MUSC 103 is a continuation of MUSC 102, elementary repertoire is begun.

**MUSC 104 Beginning Folk Guitar Class (2)** Basic techniques of folk guitar. Emphasis on performance of traditional and contemporary folk music literature

**MUSC 106 Beginning Classical Guitar Class (2)** Basic techniques of classical guitar. Music reading skills and musical interpretation, exercises to develop technical competency

**MUSC 110 Class Study of String Instruments (2)** Four hours of laboratory per week. Open only to majors in music education (vocal option). Basic principles of string playing and a survey of all string instruments

**MUSC 111 Class Study of Wind and Percussion Instruments (2)** Four hours of laboratory per week. Open only to majors in music education (vocal option). A survey of wind and percussion instruments with emphasis on ensemble training. The student will acquire an adequate playing technique on one instrument and gain an understanding of the acoustical and construction principles of the others

**MUSC 113 Class Study: Violin (2)** Four hours of laboratory per week. Open only to majors in music (instrumental option). A study of the violin with emphasis on ensemble training. The student will acquire an adequate playing technique.

**MUSC 114 Class Study: Cello and Bass (2)** Four hours of laboratory per week. Open only to majors in music education (instrumental option). A study of the instruments with emphasis on ensemble training. The student will acquire an adequate playing technique.

**MUSC 116 Class Study: Clarinet (2)** Four hours of laboratory per week. Open only to majors in music education (instrumental option). A study of the clarinet with emphasis on ensemble training. The student will acquire an adequate playing technique.

**MUSC 117 Class Study: Flute, Oboe, Bassoon, and Saxophone (2)** Four hours of laboratory per week. Open only to majors in music education (instrumental option). A study of the instruments with emphasis on ensemble training. The student will acquire an adequate playing technique on two to four instruments, and an understanding of the acoustical and construction principles of the others.

**MUSC 120 Class Study: Cornet (2)** Four hours of laboratory per week. Open only to majors in music education (instrumental option). A study of the cornet with emphasis on ensemble training. The student will acquire an adequate playing technique.

**MUSC 121 Class Study: Horn, Trombone, Euphonium, and Tuba (2)** Four hours of laboratory per week. Open only to majors in music education (instrumental option). A study of the instruments with emphasis on ensemble training. The student will acquire an adequate playing technique on two to four instruments, and an understanding of the acoustical and construction principles of the others.

**MUSC 122 Class Study: Percussion (2)** Four hours of laboratory per week. Open only to majors in music education (instrumental option). A study of the instruments with emphasis on ensemble training. The student will acquire an adequate playing technique on two to four instruments, and an understanding of the acoustical and construction principles of the others.

**MUSC 123 Movement for Singers (1)** Systematic exercises, improvisations and dances in conjunction with artistic vocal expression. Performance and critique of stage department, gestures and recital techniques.

**MUSC 126 Vocal Diction: English and Latin (1)** Augmentation of private voice study. Phonetics and diction for singers of English and Latin vocal literature.

**MUSC 127 Vocal Diction: Italian and Spanish (1)** Augmentation of private voice study. Phonetics and diction for singers of Italian and Spanish vocal literature.

**MUSC 128 Sight Reading For Pianists (2)** Repeatable to 4 credits. A course to give the piano major an opportunity to develop proficiency in sight reading at the keyboard.

**MUSC 129 Ensemble (1)** Three hours of laboratory per week. Rehearsal and performance of selected works for

small ensembles of instruments, piano, or small vocal groups. After two registrations in MUSC 129, the student will elect MUSC 229 for two additional semesters and MUSC 329 thereafter

**MUSC 130 Survey of Music Literature (3)** Three hours of lecture and one hour of laboratory per week. Open to all students except music and music education majors. A study of the principles upon which music is based, and an introduction to the musical repertory performed in America today

**MUSC 135 Basic Notational Skills (2)** Two hours of lecture and one hour of laboratory per week. An introductory course in fundamentals of music notation and the development of aural skills. May not be used in fulfillment of degree requirements by majors in music

**MUSC 140 Music Fundamentals I (3)** Limited to non-music majors. Introductory theory course. Notation, scales, intervals, triads, rhythm, form, and basic aural skills

**MUSC 141 Music Fundamentals II (3)** Prerequisite: MUSC 140 or permission of department. Continuation of MUSC 140. Introduction to counterpoint, contemporary idioms, improvisation and student compositions

**MUSC 150 Theory of Music I (3)** Prerequisite: departmental audition and entrance examination. For MUSC majors only. A study of basic concepts and skills in tonal melody and harmony through analysis and composition.

**MUSC 151 Theory of Music II (3)** Prerequisite: a grade of C or better in MUSC 150. A continuation of MUSC 150, including study of more advanced harmonic techniques of the eighteenth century, such as modulation and chromatic harmonies. Emphasis on sight singing, ear training, analysis, and compositional skills

**MUSC 155 Fundamentals for the Classroom Teacher (3)** Open to students majoring in elementary education or childhood education, other students take MUSC 150. Credit will be granted for only one of the following: MUSC 150 or MUSC 155. The fundamentals of music theory and practice, related to the needs of the classroom and kindergarten teacher, and organized in accordance with the six-area concept of musical learning

**MUSC 200 Intermediate Class Voice I (2)** Four hours of laboratory per week. Prerequisite: MUSC 100 or equivalent vocal training. Continuation of MUSC 100, with more advanced repertory for solo voice and small ensembles. A special section for music education majors will include the study of methods and materials for teaching class voice.

**MUSC 201 Intermediate Class Voice II (2)** Four hours of laboratory per week. Prerequisite: MUSC 200 or equivalent vocal training. Continuation of MUSC 200.

**MUSC 202 Intermediate Class Piano I (2)** Four hours of laboratory per week. Prerequisite: MUSC 103 or equivalent piano training. Advanced keyboard techniques. Continuation of skills introduced in MUSC 103. Transposition, modulation, and sight reading; methods of teaching functional piano.

**MUSC 203 Intermediate Class Piano II (2)** Four hours of laboratory per week. Prerequisite: MUSC 202 or equivalent piano training. Advanced keyboard techniques. Continuation of skills introduced in MUSC 202. Transposition, modulation, and sight reading; methods of teaching functional piano. Development of style in playing accompaniments and in playing for community singing. More advanced repertory.

**MUSC 204 Intermediate Folk Guitar Class (2)** Prerequisite: MUSC 104 or equivalent. Continuation of skills introduced in MUSC 104.

**MUSC 206 Intermediate Classical Guitar Class (2)** Prerequisite: MUSC 106 or permission of department. Continuation of skills introduced in MUSC 106, including transcribing music for the guitar.

**MUSC 213 Advanced Class Strings (2)** Four hours of laboratory per week. Open only to majors in music education (instrumental option). A study of the instruments with emphasis on ensemble training.

**MUSC 215 The Art of the Performer (3)** A study of music as recreated and communicated by one or more performers through recital-lecture programs. The soloist, the ensemble performer, the conductor; style, technique,

and interpretation, programming, listener, audience, and media. Presentations by Department of Music performance faculty, students, and, when possible, visiting artists. Open to non-music majors.

**MUSC 217 Class Composition I (2)** Prerequisite: MUSC 151 and permission of department. Principles of musical composition and their application to the smaller forms. Original writing in nineteenth and twentieth century musical idioms for various media.

**MUSC 218 Class Composition II (2)** Prerequisite: MUSC 217 and permission of department. Continuation of MUSC 217. May be repeated for credit, but only one successful attempt may be applied towards baccalaureate degree requirements.

**MUSC 226 Vocal Diction: French (1)** Augmentation of private voice study. Phonetics and diction for singers of French vocal literature.

**MUSC 227 Vocal Diction: German (1)** Augmentation of private study. Phonetics and diction for singers of German vocal literature.

**MUSC 228 Accompanying For Pianist (2)** Prerequisite: MUSC 228. Repeatable to 4 credits. A course to give the piano major experience in dealing with the problems of accompanying at an intermediate stage of difficulty. Guidance and instruction in class will be supplemented by extensive experience working as an accompanist in applied studios.

**MUSC 229 Ensemble (1)** Three hours of laboratory per week. Rehearsal and performance of selected works for small ensembles of instruments, piano, or small vocal groups. After two registrations in MUSC 129, the student will elect MUSC 229 for two additional semesters and MUSC 329 thereafter.

**MUSC 230 History of Music I (3)** Prerequisite: MUSC 250 or equivalent. A historical study of western music from Corelli through Beethoven.

**MUSC 248 Special Problems in Music (2-3)** Prerequisite: permission of department. Repeatable to 6 credits. Designed to allow a student of theory or music history to pursue a specialized topic or project under the supervision of a faculty member.

**MUSC 250 Advanced Theory of Music I (4)** Prerequisite: MUSC 151 with a minimum grade of C. A continuation of MUSC 151, with further study of chromatic and modulatory techniques of the nineteenth century. Emphasis on sight singing, ear training, analysis, and compositional skills.

**MUSC 251 Advanced Theory of Music II (4)** Prerequisite: a grade of C or better in MUSC 250. A continuation of MUSC 250, concentrating on late nineteenth-century chromatic harmony and an introduction to twentieth-century melody and harmony. Emphasis on sight singing, ear training, analysis, and compositional skills.

**MUSC 328 Chamber Music Performance for Pianists (2)** Repeatable to 4 credits. A course to give the piano major experience in dealing with the problems of playing chamber music at a moderately difficult level. Class instruction will center around actual rehearsal and performance situations and will be supplemented by further experience working in chamber ensemble in applied studios.

**MUSC 329 Ensemble (1)** Three hours of laboratory per week. Rehearsal and performance of selected works for small ensembles of instruments, piano, or small vocal groups. After two registrations in MUSC 129, the student will elect MUSC 229 for two additional semesters and MUSC 329 thereafter.

**MUSC 330 History of Music II (3)** Prerequisite: MUSC 250 or equivalent. A historical study of western music from the Romantic era to the present.

**MUSC 331 History of Music III (3)** Prerequisite: MUSC 230 and MUSC 330. A historical study of western music from Antiquity through the Baroque, ending with a review of all periods of music history.

**MUSC 338 Special Topics in Music and Art (3)** Repeatable to 6 credits. Credit will be granted for only one of the following: MUSC 338 or ARTH 338. Variable topics as announced.

**MUSC 339 Honors in Music (3)** Prerequisite: permission of department. Corequisite: MUSC 349. Repeatable to 6 credits. The production of one or more recitals or lecture recitals; one or more compositions; or one or more honors theses in addition to regular degree requirements. Two semesters required.

**MUSC 340 Music Literature Survey I (3)** Prerequisite: MUSC 130 or equivalent. Limited to non-music majors. Masterpieces of the symphonic and operatic repertory including works selected from Bach, Mozart, Beethoven, Brahms, Wagner, Verdi, and Debussy.

**MUSC 341 Music Literature Survey II (3)** Prerequisite: MUSC 130 or equivalent. Limited to non-music majors. Specialized music repertory, including medieval, liturgical drama, Handel trio sonatas, Schubert Lieder, Bartok string quartets, electronic music.

**MUSC 345 Jazz Theory and Improvisation I (3)** Prerequisite: MUSC 251 or permission of department. Jazz theory, notational conventions, improvisation techniques, reading and analysis of music, and performance in small combo format.

**MUSC 346 Jazz Theory and Improvisation II (3)** Prerequisite: MUSC 345 or permission of department. Continuation of MUSC 345 including scoring and transcription.

**MUSC 349 Honors Seminar in Music (1)** Corequisite: MUSC 339. Repeatable to 2 credits. Group discussion of projects undertaken in MUSC 339. Two semesters required.

**MUSC 355 Music in Recreation (3)** Prerequisite: MUSC 155 or equivalent. An advanced course in music programs, materials and skills for the program specialist involved with planning music activities for leisure and recreation in community and clinical settings.

**MUSC 358 Aural Musical Skills (2)** Repeatable to 4 credits. Advanced skills in perceiving pitch, melody, rhythm, harmony, texture, and timbre in a variety of media.

**MUSC 379 Opera Workshop (2)** 10 hours of laboratory per week. Repeatable to 8 credits. Open to music and non-music majors (by audition). Operatic production and performance, performance techniques and coaching, stage direction, set design, costume design, and makeup. Repertory will include smaller operatic works, excerpts, or scenes.

**MUSC 388 Music Internship (3)** Prerequisite: permission of department. Corequisite: MUSC 389. Repeatable to 6 credits. Pre-professional field work in music.

**MUSC 389 Music Internship Analysis (1)** Corequisite: MUSC 388. Repeatable to 2 credits. Documentation and evaluation of field work experience.

**MUSC 400 Music Pedagogy (3)** Pre- or corequisite: MUSC 418 or a more advanced course in applied music. Conference course. A study of major pedagogical treatises in music, and an evaluation of pedagogical techniques, materials, and procedures.

**MUSC 415 Music Management (3)** Prerequisite: permission of department. Application of management concepts to music administration.

**MUSC 428 Repertoire Coaching of Vocal or Chamber Music (2)** Pre- or corequisite: MUSC 328. A course for piano students who wish to go further than the work offered in MUSC 128, MUSC 228, and MUSC 328 by becoming specialists in the areas of vocal coaching or chamber music coaching. Elements of pedagogy, conducting, and responsible artistic decision-making for the entire musical production.

**MUSC 429 Opera Theater (2-3)** 10 hours of laboratory per week. Open to music and non-music majors with permission of department. Repeatable to 12 credits. Advanced techniques of operatic production, preparation, rehearsal, and performance of operatic works from both the traditional and contemporary repertory.

**MUSC 432 Music in World Cultures I (3)** Prerequisite: MUSC 130 or permission of department. Asian music from Japan to the Arab countries analyzed in terms of musical, social and aesthetic approaches.

**MUSC 433 Music in World Cultures II (3)** Prerequisite: MUSC 130 or permission of department. Music of the Balkans, Africa, South and North America analyzed in terms of musical, social and aesthetic interrelationships.

**MUSC 436 Jazz: Then and Now (3)** Major styles and influential artists of the past 75 years of jazz.

**MUSC 438 Area Studies in Ethnomusicology (3)** Prerequisite: MUSC 432 or MUSC 433 or equivalent. Repeatable to 9 credits if content differs. Advanced study of musics in selected regions of the world.

**MUSC 439 Collegium Musicum (1)** Prerequisite: permission of department. Repeatable to 5 credits. Open to undergraduates and graduates, music majors and non-majors. Procurement, edition, and performance of music not belonging to a standard repertory: early music, compositions for unusual performing media, works which demand reconstruction of their original circumstances of performance. Outcome of a semester's work may be one or more performances for the public.

**MUSC 443 Solo Vocal Literature (3)** Prerequisite: MUSC 330, MUSC 331 or equivalent. The study of solo vocal literature from the Baroque Cantata to the Art Song of the present. The Lied, Melodie, vocal chamber music, and the orchestral song are examined.

**MUSC 445 Survey of the Opera (3)** Prerequisite: MUSC 330, MUSC 331 or equivalent. A study of the music, librettos and composers of the standard operas.

**MUSC 448 Selected Topics in Music I (1-3)** Prerequisite: permission of department. A maximum of three credits may be applied to music major requirements. 56 semester hours. Repeatable to 6 credits if content differs.

**MUSC 450 Musical Form (3)** Prerequisite: MUSC 251. A study of the principles of organization in music with emphasis on eighteenth and nineteenth century European music. Reading and analysis of scores exemplifying the musical forms.

**MUSC 451 Analysis of Music (3)** Prerequisite: MUSC 450 or permission of department. An advanced course in the analysis of tonal music. Discussion of individual works, with emphasis on their unique characteristics and on the relation of analysis to performance.

**MUSC 452 Keyboard Harmony (2)** Prerequisite: MUSC 251. Keyboard performance of musical scores for vocal and instrumental ensembles and keyboard realization of basso continuo parts.

**MUSC 453 Class Study of Guitar and Recorder (2)** Three hours of laboratory per week. Prerequisite: permission of department. Study and development of instrumental technique, pedagogical practices, and materials relating to group performance.

**MUSC 457 Electronic Music Composition (2)** Prerequisite: MUSC 250 and permission of department. Theory and practice of electronic music, electronically-generated sound, and its modulation in the voltage-controlled studio.

**MUSC 460 Tonal Counterpoint I (2)** Prerequisite: MUSC 251 or permission of department. A course in eighteenth-century contrapuntal techniques, analysis and original composition of two-voice dances, preludes, and inventions.

**MUSC 461 Tonal Counterpoint II (2)** Prerequisite: MUSC 460. A continuation of MUSC 460. Analysis and original composition of larger works displaying imitation in more than two voices, including the chorale prelude and fugue.

**MUSC 462 Modal Counterpoint (2)** Prerequisite: MUSC 251 or equivalent. An introduction to the contrapuntal techniques of the sixteenth century: the structure of the modes, composition of modal melodies, and contrapuntal writing for two, three and four voices.

**MUSC 465 Canon and Fugue (3)** Prerequisite: MUSC 461 or equivalent. Composition and analysis of the canon and fugue in the styles of the eighteenth, nineteenth and twentieth centuries.

**MUSC 466 Structural Counterpoint (3)** Prerequisite: MUSC 461 or permission of department. A study of counterpoint and its role in articulating large-scale tonal structures with emphasis on analysis and written exercises.

**MUSC 467 Piano Pedagogy I (3)** A study of major pedagogical treatises in music, and an evaluation of pedagogical techniques, materials, and procedures.

**MUSC 468 Piano Pedagogy II (3)** Prerequisite: MUSC 467. Repeatable to 6 credits. Application of the studies begun in MUSC 467 to the actual lesson situation. Evaluation of results.

**MUSC 470 Harmonic and Contrapuntal Practices of the Twentieth Century (2)** Prerequisite: MUSC 251 or equivalent. A theoretical and analytical study of twentieth century materials.

**MUSC 471 Contemporary Compositional Techniques (2)** Prerequisite: MUSC 470 or permission of department. Continuation of MUSC 470, with emphasis on the analysis of individual works written since 1945.

**MUSC 480 Music in Antiquity and the Middle Ages (3)** Survey of western music from Hellenic times to 1450.

**MUSC 481 Music in the Renaissance (3)** Survey of western music from 1450 to 1600.

**MUSC 482 Music in the Baroque Era (3)** Survey of western music from 1600 to 1750.

**MUSC 483 Music in the Classic Era (3)** Survey of western music from 1750 to 1820.

**MUSC 484 Music in the Romantic Era (3)** Survey of western music from 1820 to 1900.

**MUSC 485 Music in the 20th Century (3)** Survey of western music from 1900 to the present.

**MUSC 486 Orchestration I (2)** Prerequisite: MUSC 251. A study of the ranges, musical functions and technical characteristics of the instruments and their color possibilities in various combinations. Practical experience in orchestrating for small and large ensembles.

**MUSC 487 Orchestration II (2)** Prerequisite: MUSC 486. A study of orchestration in the various historical periods, with emphasis upon stylistic writing projects.

**MUSC 490 Conducting (2)** Prerequisite: MUSC 251. Vocal and instrumental baton techniques.

**MUSC 491 Conducting II (2)** Prerequisite: MUSC 490 or equivalent. Baton techniques applied to score reading, rehearsal techniques, tone production, style and interpretation.

**MUSC 492 Keyboard Music I (3)** The history and literature of harpsichord and solo piano music from its beginning to the romantic period. Emphasis is placed on those segments of repertory which are encountered in performance and teaching situations at the present time.

**MUSC 493 Keyboard Music II (3)** Prerequisite: MUSC 492. The history and literature of harpsichord and solo piano music from the Romantic period to the present. Emphasis is placed on those segments of repertory which are encountered in performance and teaching situations at the present time.

**MUSC 494 Survey of Theory (3)** Prerequisite: MUSC 251. A study of the major contributions of music theorists from Greek antiquity through the twentieth century.

**MUSC 495 Acoustics For Musicians (3)** Prerequisite: MUSC 251 or equivalent; and senior or graduate standing in music. The basic physics of music, acoustics of musical instruments and music theory, physiological acoustics, and musico-architectural acoustics.

**MUSC 499 Independent Studies (2-3)** Prerequisite: permission of department. May be repeated once for credit. Independent research on a topic chosen in consultation with the instructor, which may culminate in a paper or appropriate project.

## MUSP — Music Performance

Undergraduate Music Performance Courses are available in three series:

**Minor Series:** 2-credits each course. Prerequisite: permission of department chairperson. Limited to music majors studying a secondary instrument and to non-music majors. Each course in the series must be taken in sequence. The initial election for all new students, both freshman and transfer, is 102. Transfer students

are evaluated for higher placement after one semester of study. One-half hour private lesson per week plus assigned independent practice.

**MUSP 102, 103 Freshman Courses.**

**MUSP 202, 203 Sophomore Courses.**

**MUSP 302, 303 Junior Courses.**

**MUSP 402, 403 Senior Courses.**

**Principal Series:** 2 or 4 credits each course. Prerequisites: departmental audition, entrance examination, and permission of department chairperson. Limited to majors in music programs other than performance and composition. Each course in the series must be taken in sequence. The initial election for all new students, both freshman and transfer, is 102. Transfer students are evaluated for higher placement after one semester of study. One-hour private lesson per week plus assigned independent practice. Courses 109, 208, and 409 may be repeated once for credit, but only one successful attempt in each course may be applied towards baccalaureate degree requirements.

**MUSP 109, 110, Freshman Courses.**

**MUSP 207, 208 Sophomore Courses.**

**MUSP 305, 306 Junior Courses.**

**MUSP 409, 410 Senior Courses. Recital required in MUSP 410.**

**Major Series:** 2 or 4 credits each course. Prerequisites: departmental audition, entrance examination, and permission of department chairperson. Limited to majors in performance and composition. Each course in the series must be taken in sequence. The initial election for all new students, both freshman and transfer, is 119. Transfer students are evaluated for higher placement after one semester of study. One-hour private lesson per week plus assigned independent practice. Courses 119, 218, and 419 may be repeated once for credit, but only one successful attempt in each course may be applied towards baccalaureate degree requirements.

**MUSP 119, 120 Freshman Courses.**

**MUSP 217, 218 Sophomore Courses.**

**MUSP 315, 316 Junior Courses.**

**MUSP 419, 420 Senior Courses. Recital required in MUSP 420.** Instrument designation; each student taking a music performance course must indicate the instrument chosen by adding a suffix to the proper course number, such as: MUSP 102a music performance—piano. A—piano; B—voice; C—violin; D—viola; E—cello; F—bass; G—flute; H—oboe; J—clarinet; J—bassoon; K—saxophone; L—horn; M—trumpet; N—trombone; O—tuba; P—euphonium; Q—percussion; R—organ; S—guitar; T—composition; U—wood instruments; V—harp; W—electronic composition; X—hist inst - keyboard; Y—hist inst - strings; Z—hist inst - winds.

## NRMT — Natural Resources Management

**NRMT 314 Biology and Management of Fish (4)** Two hours of lecture and six hours of laboratory per week. Prerequisite: one year of biology or zoology. Formerly AGRI 314. Fundamentals of individual and population dynamics; theory and practice of sampling fish populations; management schemes.

**NRMT 389 Internship (3)** Prerequisite: permission of department. Repeatable to 6 credits. Formerly AGRI 389. Students are placed in work experiences related to their stated career goals for a minimum of eight hours a week for a semester. Each student must do an in-depth study in some portion of the work experience and produce a special project and report related to this study. A student work log is also required. An evaluation from the external supervisor of the project will be required.

**NRMT 411 Biology and Management of Shellfish (4)** Two hours of lecture and six hours of laboratory per week. Prerequisite: one year of biology or zoology. Formerly AGRI 411. Identification, biology, management, and culture of commercially important molluscs and crustacea. The shellfisheries of the world, with emphasis on those of the northwestern Atlantic Ocean and the Chesapeake Bay. Field trips.

**NRMT 460 Principles of Wildlife Management (3)** Three hours of lecture per week. Three Saturday field trips are scheduled. Prerequisite: two semesters of laboratory biology. Ecological principles and requirements of wildlife as bases for management, and introduction to the scientific literature. Conflicts in wildlife management, government administration of wildlife resources, legislation, and history of the wildlife management profession.

**NRMT 461 Urban Wildlife Management (3)** Two lectures per week. Two Saturday field trips are scheduled. Ecology and management of wildlife in urban areas. For students in biological sciences, geography, landscape design, natural resources management, recreation and urban studies. Planning, design, and wildlife conservation in landscape ecology. Public attitudes, preferences, and values, reviews of private conservation organizations.

**NRMT 470 Natural Resources Management (4)** Senior standing. For NRMT majors only. Field work, and independent research on watersheds. Intensive seminar on resource management planning and report preparation.

**NRMT 487 Conservation of Natural Resources I (3)** Formerly AEED 487. Designed primarily for teachers. Study of state's natural resources: soil, water, fisheries, wildlife, forests and minerals; natural resources problems and practices. Extensive field study. Concentration on subject matter. Taken concurrently with NRMT 497 in summer season.

**NRMT 489 Field Experience (1-4)** Prerequisite: permission of department. Repeatable to 6 credits. Formerly AEED 489. Planned field experience for both major and non-major students.

**NRMT 497 Conservation of Natural Resources II (3)** Formerly AEED 497. Designed primarily for teachers. Study of state's natural resources: soil, water, fisheries, wildlife, forests and minerals; natural resources problems and practices. Extensive field study. Methods of teaching conservation included. Taken concurrently with NRMT 487 in summer season.

**NRMT 499 Special Problems (3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs.

## NUSC — Nutritional Sciences

**NUSC 402 Fundamentals of Nutrition (3)** Prerequisites: CHEM 104; and ANSC 212. Recommended: BCHM 261. A study of the fundamental role of all nutrients in the body including their digestion, absorption, and metabolism. Dietary requirements and nutritional deficiency syndromes of laboratory and farm animals and man.

**NUSC 425 International Nutrition (3)** Prerequisite: course in basic nutrition. Nutritional status of world population and local, national, and international programs for improvement.

**NUSC 450 Advanced Human Nutrition II (4)** Two hours of lecture and three hours of laboratory per week. Prerequisites: permission of department; NUTR 300; and BCHM 261 or concurrent registration in BCHM 462. A critical study of physiological and metabolic influences on utilization of water soluble vitamins and minerals. Consideration of nutrition and the life cycle, with emphasis on current problems in human nutrition.

**NUSC 460 Therapeutic Human Nutrition (4)** Three hours of lecture and two hours of laboratory per week. Prerequisite: NUTR 440 and NUTR 450. Also offered as NUTR 460. Modifications of the normal adequate diet to meet human nutritional needs in acute and chronic diseases and metabolic disorders.

## NUTR — Nutrition

**NUTR 100 Elements of Nutrition (3)** Fundamentals of human nutrition. Nutrient requirements related to changing individual and family needs.

**NUTR 200 Nutrition for Health Services (3)** Two hours of lecture and two hours of laboratory per week. Prerequisites: CHEM 104 or CHEM 233; and ZOOL 201 or ZOOL 202 or ZOOL 211. Nutrition related to maintenance of normal health and prevention of disease; nutritional requirements for individuals in different stages of development; current concerns in nutrition for the professional in health services.

**NUTR 315 Maternal, Infant and Child Nutrition (3)** Prerequisite: NUTR 100 or NUTR 200 Nutritional needs of the mother, infant and child and the relation of nutrition to physical and mental growth. Intended primarily for non-majors.

**NUTR 330 Nutritional Biochemistry (3)** Prerequisites: CHEM 104 or CHEM 233 or CHEM 235; NUTR 100 or NUTR 200. This course is designed to meet the needs of departmental majors in the area of nutritional biochemistry.

**NUTR 335 History of Nutrition (3)** Prerequisite: course in basic nutrition. The development of knowledge in nutrition, including the biographies of creative nutrition researchers and the nature of the discovery process. The use of hypotheses to focus exploration and the testing and evaluation of important hypotheses in nutrition.

**NUTR 425 International Nutrition (3)** Prerequisite: course in basic nutrition. Nutritional status of world populations; consequences of malnutrition on health and mental development, and local, national, and international programs for nutritional improvement.

**NUTR 440 Advanced Human Nutrition I (4)** Three hours of lecture and three hours of laboratory per week. Prerequisites: (NUTR 330; and ZOOL 202, and NUTR 100 or NUTR 200) or permission of department. A critical study of physiological and metabolic influences on utilization of carbohydrates, lipids, protein and fat soluble vitamins, with particular emphasis on current problems in human nutrition.

**NUTR 450 Advanced Human Nutrition II (4)** Three hours of lecture and three hours of laboratory per week. Prerequisites: NUTR 440 or permission of department. A critical study of physiological and metabolic influences on utilization of water soluble vitamins and minerals. Consideration of nutrition and the life cycle, with emphasis on current problems in human nutrition.

**NUTR 460 Therapeutic Human Nutrition (4)** Three hours of lecture and two hours of laboratory per week. Prerequisites: NUTR 440 and NUTR 450. Also offered as NUISC 460. Modifications of the normal adequate diet to meet human nutritional needs in acute and chronic diseases and metabolic disorders.

**NUTR 468 Practicum in Nutrition (1-6)** Prerequisite: permission of department. Repeatable to 6 credits. Inservice training and practical experience in the application of the principles of normal and/or therapeutic nutrition in an approved community agency, clinical facility or nutrition research laboratory.

**NUTR 470 Community Nutrition (3)** Prerequisites: NUTR 440 or permission of department. A study of nutrition education principles and techniques for use with children and adults; program development, implementation, and evaluation; community nutrition programs and problems.

**NUTR 475 Dynamics of Community Nutrition (3)** Prerequisite: NUTR 470 or permission of department. The practice of community nutrition. Community assessment; nutrition program planning, implementation and evaluation; nutrition education and counseling; grantsmanship; and the legislative process.

**NUTR 490 Special Problems in Nutrition (2-3)** Prerequisite: NUTR 440 and permission of department. Individual selected problems in the area of human nutrition.

**NUTR 498 Selected Topics (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Selected current aspects of nutrition.

## PERH — Physical Education, Recreation, and Health

**PERH 488 Children's Health and Development Clinic (1-4)** Prerequisite: permission of department. Repeatable to 4 credits. An opportunity to acquire training and experience in a therapeutically oriented physical education—recreation program for children referred by various education, special education, medical or psychiatric groups.

## PHIL — Philosophy

**PHIL 100 Introduction to Philosophy (3)** An introduction to the literature, problems, and methods of philosophy either through a study of some of the main figures in philosophic thought or through an examination of some of the central and recurring problems of philosophy.

**PHIL 110 Plato's Republic (3)** Plato's Republic as a framework for examining philosophical issues pertaining to art, education, immortality, love, marriage, the mind, morality, the state, and the universe and our knowledge of it. The arguments Plato uses to support his views on these issues, his fusion of these views into a single comprehensive philosophy, and the influence of this philosophy on western thought and culture. Readings from other Platonic dialogues and from secondary material.

**PHIL 140 Contemporary Moral Issues (3)** The uses of philosophical analysis in thinking clearly about such widely debated moral issues as abortion, euthanasia, homosexuality, pornography, reverse discrimination, the death penalty, business ethics, sexual equality, and economic justice.

**PHIL 170 Introduction to Logic (3)** A general introduction to the discipline of logic. Traditional and modern deductive techniques, informal fallacies.

**PHIL 173 Logic and the English Language I (3)** Basic techniques for analyzing deductive arguments. The uses of these techniques to illuminate the grammar and the logic of English sentences. The capacity of the English language to express logical distinctions. Exercises in analyzing the logical structure of published writings of varied style and content.

**PHIL 174 Logic and the English Language II (3)** Prerequisite: PHIL 173 or permission of department. Basic techniques of conceptual analysis and nondeductive reasoning examined against the capacity of the English language for exact expression. Exercises in critical analysis of published writings of varied style and content.

**PHIL 206 Chinese Philosophy: Social and Political Thought (3)** An introductory survey of Confucian philosophy and of other Chinese social and political philosophy from ancient times to the present day. The Chou Dynasty (1122-222 BC) and the many schools of thought produced during that period. The reemergence of Confucian philosophy in the Sung Dynasty (960-1279 AD) and trace developments down to the contemporary period. Contemporary thought in the context of earlier Chinese traditions.

**PHIL 209 Philosophical Issues (3)** Repeatable to 6 credits if content differs. An examination of selected philosophical issues of general interest.

**PHIL 233 Philosophy in Literature (3)** Reading and philosophical criticism of fiction, poetry, and drama, dealing with issues of moral, religious, and metaphysical significance.

**PHIL 236 Philosophy of Religion (3)** A philosophical study of some of the main problems of religious thought, the nature of religious experience, the justification of religious belief, the conflicting claims of religion and science, and the relation between religion and morality.

**PHIL 243 Philosophy of Rural Life (3)** An examination of traditional and contemporary rural values and philosophies of life, with an emphasis on southern agrarian philosophies: Jefferson, Emerson, Thoreau, Populism, the Country Life Movement, the Vanderbilt Agrarians, and contemporary views.

**PHIL 245 Political and Social Philosophy I (3)** A critical examination of such classical political theories as those of Plato, Hobbes, Locke, Rousseau, Mill, Marx, and such contemporary theories as those of Hayek, Rawls, and recent Marxist thinkers.

**PHIL 250 Philosophy of Science I (3)** Credit will be granted for only one of the following: HIST 174 or PHIL 250. Main issues in the philosophy of science. Special attention to the ways scientific developments have influenced the philosophy of science and how philosophy of science has influenced scientific progress. Case studies of selected historical episodes in which science

and philosophy have interacted significantly, focusing on the physical, biological, or social sciences.

**PHIL 252 Moral Dilemmas in Science and Technology (3)** The uses of philosophical analysis in thinking clearly about some of the moral dilemmas that have been created by modern science and technology, focusing on such issues as sociobiology, race and IQ, genetic engineering, techniques of behavior modification, nuclear power, experimentation with human subjects, ecology, and population control.

**PHIL 271 Symbolic Logic I (3)** The formal analysis of deductive reasoning providing familiarity with techniques of formal deduction in propositional logic and quantification theory, as well as some knowledge of basic concepts of formal semantics (truth tables, models).

**PHIL 308 Studies in Contemporary Philosophy (3)** Prerequisite: six hours in philosophy. Repeatable to 6 credits if content differs. Problems, issues, and points of view of current interest in philosophy.

**PHIL 310 Ancient Philosophy (3)** Prerequisite: six credits in philosophy or classics. A study of the origins and development of philosophy and science in Ancient Greece, focusing on the pre-Socratics, Socrates, Plato, and Aristotle.

**PHIL 320 Modern Philosophy (3)** Prerequisite: six credits in philosophy. A study of major philosophical issues of the 16th, 17th, and 18th centuries through an examination of such philosophers as Descartes, Newton, Hume, and Kant.

**PHIL 326 Twentieth Century Analytic Philosophy (3)** Prerequisite: six credits in philosophy. Recommended: PHIL 320. A study of major issues in twentieth century analytic philosophy through an examination of such philosophers as Frege, Russell, Carnap, Moore, and Wittgenstein.

**PHIL 328 Studies in the History of Philosophy (3)** Prerequisite: six hours of philosophy. Repeatable to 6 credits if content differs. Problems, issues, and points of view in the history of philosophy.

**PHIL 331 Philosophy of Art (3)** Concepts central to thought about art, including the concept of the fine arts both in its historical development and in its present problematic situation.

**PHIL 332 Philosophy of Beauty (3)** Prerequisites: two courses in philosophy, literature, or the arts. Philosophical theories, historical and contemporary, of beauty, sublimity, and other aesthetic qualities, of aesthetic experience, and of aesthetic judgment.

**PHIL 334 Philosophy of Music (3)** Prerequisite: one course in philosophy or music. The nature, meaning, and purpose of music. Analysis of the concepts of creativity, form, expression, and representation as they relate to music. Theories of music listening and of musical evaluation. Readings from philosophers, composers, critics, and psychologists.

**PHIL 340 Making Decisions (3)** Prerequisite: three credits in philosophy. An examination of various approaches to decision making in personal, professional, and public life. Conflict resolution, the logic of decision, moral aspects of decision making, and standard biases in judgment.

**PHIL 341 Introduction to Ethical Theory (3)** Not open to students who have completed PHIL 142. Formerly PHIL 142. A critical examination of classical and contemporary systems of ethics, such as those of Aristotle, Kant, Mill, and Rawls.

**PHIL 342 Moral Problems in Medicine (3)** Prerequisite: PHIL 100, PHIL 140, or permission of department. A critical examination of the moral dimensions of decision-making in health related contexts. Readings are drawn from philosophical, medical, and other sources.

**PHIL 343 Sexual Morality (3)** A critical examination of practical moral issues bearing on sexual conduct, using the resources of moral and social philosophy.

**PHIL 344 Persons (3)** Prerequisite: one course in philosophy or permission of department. Demands of moral theories on the notion of a person regarding identity, consciousness, and freedom.

**PHIL 360 Philosophy of Language (3)** Prerequisite: PHIL 170, PHIL 173, or PHIL 271. An inquiry into the nature and function of language and other forms of symbolism

**PHIL 373 Analytical Writing (3)** Prerequisite: PHIL 170, PHIL 173, or PHIL 271. Review of techniques of deductive and nondeductive reasoning, and of conceptual analysis. The development of a prose style for writing clearly and critically about ideas

**PHIL 380 Philosophy of Psychology: Introduction (3)** Prerequisite: one course in philosophy or permission of department. Not open to students who have completed PHIL 465. Formerly PHIL 465. Dualism, behaviorism, functionalism and basic ideas of the computational-representational theory of thought

**PHIL 385 Philosophy and Computers (3)** Prerequisite: one course in logic or computer science or satisfaction of junior level English composition requirement or permission of department. Philosophical issues concerning computers. Non-quantitative treatment of major results in computation theory regarding absolute limits on computers. Fundamental problems concerning computers used as models of human intelligence.

**PHIL 399 Honors Seminar (3)** Prerequisite: open to honors students in philosophy and, by permission of department, to honors students in other departments. Repeatable if content differs. Research in selected topics, with group discussion.

**PHIL 408 Topics in Contemporary Philosophy (3)** Prerequisite: PHIL 320. Repeatable if content differs. An intensive examination of contemporary problems and issues. Source material will be selected from recent books and articles.

**PHIL 412 The Philosophy of Plato (3)** Prerequisite: six credits in philosophy. A critical study of selected dialogues.

**PHIL 414 The Philosophy of Aristotle (3)** Prerequisite: six credits in philosophy. A critical study of selected portions of Aristotle's writings.

**PHIL 416 Medieval Philosophy (3)** Prerequisite: six credits in philosophy. A study of philosophical thought from the fourth to the fourteenth centuries. Readings selected from Christian, Islamic, and Jewish thinkers.

**PHIL 421 The Continental Rationalists (3)** Prerequisite: six credits in philosophy. A critical study of selected writings of one or more of the continental rationalists.

**PHIL 422 The British Empiricists (3)** Prerequisite: six credits in philosophy. A critical study of selected writings on one or more of the British Empiricists.

**PHIL 423 The Philosophy of Kant (3)** Prerequisite: six credits in philosophy. A critical study of selected portions of Kant's writings.

**PHIL 425 19th Century Philosophy (3)** Prerequisite: six credits in philosophy. A study of philosophy in the nineteenth century through an examination of such figures as Hegel, Marx, Kierkegaard, Nietzsche, and Mill.

**PHIL 427 Wittgenstein (3)** Prerequisites: two courses in philosophy or permission of department. The early and late works of Wittgenstein: atomism, logic, and the picture theory in the *Tractatus*; roles, meaning, criteria, and the nature of mental states in the *Philosophical Investigations* and other posthumous writings.

**PHIL 428 Topics in the History of Philosophy (3)** Prerequisites: PHIL 310 and PHIL 320; or permission of department. Repeatable if content differs.

**PHIL 431 Aesthetic Theory (3)** Prerequisite: six credits in philosophy or permission of department. Study of the theory of the aesthetic as a mode of apprehending the world and of the theory of criticism, its conceptual tools and intellectual presuppositions.

**PHIL 438 Topics in Philosophical Theology (3)** Prerequisite: PHIL 236 or consent of instructor. An examination of a basic issue discussed in theological writings, with readings drawn from both classical and contemporary theologians and philosophers. May be repeated to a maximum of six credits when the topics are different.

**PHIL 440 Contemporary Ethical Theory (3)** Prerequisite: PHIL 341. Contemporary problems having to do with the meaning of the principal concepts of ethics and with the nature of moral reasoning

**PHIL 441 History of Ethics: Hobbes to the Present (3)** Prerequisite: one course in ethics. The history of ethical thought from the seventeenth century to the present, including such philosophers as Hobbes, Butler, Hume, Kant, Bentham, Mill, Bradley, Sidgwick, Moore, and Stevenson

**PHIL 442 Normative Ethical Theory (3)** Prerequisite: PHIL 341. A consideration of some of the main normative ethical theories.

**PHIL 445 Political and Social Philosophy II (3)** Prerequisite: PHIL 245 or PHIL 341. A study of the main issues encountered in the philosophical analysis and evaluation of social and political institutions.

**PHIL 446 Law, Morality, and War (3)** Prerequisite: GVPT 300, GVPT 401, PHIL 341, or permission of department. Also offered as GVPT 403. An exploration of fundamental moral and legal issues concerning war.

**PHIL 447 Philosophy of Law (3)** Prerequisite: one course in philosophy. Examination of fundamental concepts related to law, e.g., legal system, law and morality, justice, legal reasoning, responsibility.

**PHIL 450 Scientific Thought I (3)** Prerequisite: one course in philosophy or a major in science. The development of science, its philosophical interpretations and implications, and views of its methods, from the ancients through Newton and Leibniz.

**PHIL 451 Scientific Thought II (3)** Prerequisite: one course in philosophy or a major in science. The development of science, its philosophical interpretations and implications, and views of its methods, from the death of Newton to the early twentieth century.

**PHIL 452 Philosophy of Physics (3)** Prerequisite: three credits in philosophy or three credits in physics. Implications of 20th century physics for such problems as operationalism, the structure and purpose of scientific theories, the meaning of "probability," the basis of geometrical knowledge, the nature of space and time, the Copenhagen interpretation of quantum mechanics, the nature and limits of measurement. Emphasis on the interaction between physics and philosophy.

**PHIL 453 Philosophy of Science II (3)** Prerequisite: PHIL 250, an upper-level course in philosophy, or a major in science. A comprehensive survey of developments in the main problems of the philosophy of science from logical positivism to the present. The nature of theories, models, laws, and counterfactuals, testing, inductive logic, and confirmation theory, experimental methodology, measurement, explanation, concept formation, growth of scientific knowledge, and scientific realism.

**PHIL 455 Philosophy of the Social Sciences (3)** Prerequisite: PHIL 250, six hours in a social science, or permission of department. A consideration of philosophical issues arising in the social sciences, with particular emphasis on issues of practical methodological concern to social scientists.

**PHIL 456 Philosophy of Biology (3)** Prerequisite: PHIL 250 or permission of department. Questions about concepts, reasoning, explanation, etc., in biology, and their relations to those of other areas of science. Case studies of selected aspects of the history of biology, especially in the twentieth century.

**PHIL 457 Philosophy of History (3)** An examination of the nature of historical knowledge and historical explanation.

**PHIL 458 Topics in the Philosophy of Science (3)** Prerequisite: PHIL 250 or permission of department; when the topic for a given semester demands, additional philosophical or scientific prerequisites may be required by the instructor. Repeatable to 6 credits if content differs. A detailed examination of a particular topic or problem in philosophy of science.

**PHIL 461 Theory of Meaning (3)** Prerequisite: six credits in philosophy. Theories about the meaning of linguistic expressions, including such topics as sense and reference, intentionality and necessity, and possible

world semantics, through an examination of such writers as Mill, Frege, Wittgenstein, Quine, and Kripke

**PHIL 462 Theory of Knowledge (3)** Prerequisite: six credits in philosophy. Some central topics in the theory of knowledge, such as perception, memory, knowledge and belief, skepticism, other minds, truth, and the problems of induction

**PHIL 464 Metaphysics (3)** Prerequisite: six credits in philosophy. A study of some central metaphysical concepts such as substance, identity, relations, causality, and time, and of the nature of metaphysical thinking

**PHIL 466 Philosophy of Mind (3)** Prerequisite: six credits in philosophy. An inquiry into the nature of mind through the analysis of such concepts as consciousness, thought, sensation, emotion, and desire. Consideration of mind-brain identity thesis.

**PHIL 468 Topics in Philosophy of Language and Logic (3)** Prerequisite: one course in symbolic logic or permission of department. Repeatable to 9 credits if content differs. Problems in philosophy of language and/or philosophy of logic.

**PHIL 471 Symbolic Logic II (3)** Prerequisite: PHIL 271 or permission of department. Axiomatic development of the propositional calculus and the first-order functional calculus, including the deduction theorem, independence of axioms, consistency, and completeness.

**PHIL 472 Philosophy of Mathematics (3)** Prerequisite: PHIL 271 or permission of department. A study of results in foundations of mathematics and of philosophical views of the nature of mathematics and of mathematical knowledge.

**PHIL 474 Induction and Probability (3)** Prerequisite: permission of department. A study of inferential forms, with emphasis on the logical structure underlying such inductive procedures as estimating and hypothesis-testing. Decision-theoretic rules relating to induction will be considered, as well as classic theories of probability and induction.

**PHIL 478 Topics in Symbolic Logic (3)** Prerequisite: PHIL 471. Repeatable if content differs

**PHIL 480 Philosophy of Psychology: Knowledge and Reasoning (3)** Prerequisite: PHIL 380 or graduate status or permission of department. Cognitive science approaches to traditional problems in epistemology: rationality, reliability, computational models of belief revision.

**PHIL 481 Philosophy of Psychology: Representation (3)** Prerequisite: PHIL 380 or graduate status or permission of department. Semantics and representations within computational framework: intentionality, explicit vs. implicit representation, syntax vs. semantics of thought, connectionist approaches, images, classical vs. prototype theories of concepts.

**PHIL 482 Philosophy of Psychology: Subjectivity (3)** Prerequisite: PHIL 380 or graduate status or permission of department. The nature of subjectivity: problems of "point of view," the "qualities" or "feel" of things, emotions, consciousness — whether these phenomena can be captured by a computational theory of mind.

**PHIL 485 Philosophy of Neuroscience (3)** Prerequisite: (PHIL 250, or PHIL 380, or PHIL 455, or PHIL 456) or permission of department. Philosophical and methodological issues relating to brain science, including: the place of neuroscience in cognitive science, the nature of mental representation and processing in brains, bounded-resonance models in neuroanatomy and neurophysiology.

**PHIL 487 Computer Science for Cognitive Studies (3)** Also offered as LING 487. Credit will be granted for only one of the following: PHIL 487 or LING 487. List processing and discrete mathematics. Preparation for the study of artificial intelligence and other mathematically oriented branches of cognitive studies. Intended for students of linguistics, philosophy, and psychology. LISP computer language, graphs and trees, the concept of computational complexity, search algorithms.

**PHIL 488 Topics in Philosophy of Cognitive Studies (3)** Prerequisite: one course in philosophy or permission

of department. Repeatable to 9 credits if content differs  
Examination of a particular topic or problem in philosophy of cognitive studies.

#### PHIL 498 Topical Investigations (1-3)

### PHYS — Physics

**PHYS 101 Contemporary Physics (3)** Prerequisite: high school algebra. Not open to students who have completed PHYS 111 or PHYS 112. For non-science students who are interested in the evolution of scientific thought and its present day significance. Historical, philosophic, experimental and theoretical aspects of physics are presented. Topics in mechanics, relativity, electricity and magnetism, and nuclear physics are covered.

**PHYS 102 Physics of Music (3)** Prerequisite: high school algebra. Credit not applicable towards the minimum requirements for a major in physics and astronomy. A study of the physical basis of sound, acoustical properties of sound, the human ear and voice, reproduction of sound, electronic music, acoustical properties of auditoriums, and other selected topics.

**PHYS 103 Physics of Music Laboratory (1)** Two hours of laboratory per week. Pre- or corequisite: PHYS 102. Credit not applicable towards the minimum requirements for a major in physics and astronomy. Optional laboratory to accompany PHYS 102. Laboratory experiments, including the velocity of sound, sound quality and wave shape, traveling and standing waves, Fourier synthesis and analysis, musical synthesizer, psychoacoustics, and audio equipment.

**PHYS 106 Light, Perception, Photography, and Visual Phenomena (3)** Credit not applicable towards the minimum requirements for a major in physics and astronomy. Intended for the general student, this course will cover topics in optics which require minimal use of mathematics. Principles of optics, lenses, cameras, lasers and holography, physics of the eye, color vision and various visual phenomena such as rainbows.

**PHYS 107 Light, Perception, Photography and Visual Phenomena Laboratory (1)** Two hours of laboratory per week. Pre- or corequisite: PHYS 106. Credit not applicable towards the minimum requirements for a major in physics and astronomy. Optional laboratory to accompany PHYS 106. Laboratory experiments include geometrical optics (lenses, cameras, eye), optical instruments (telescope, binoculars), photography, perception, color phenomena, and wave phenomena.

**PHYS 111 Physics in the Modern World (3)** The first semester of a survey course in general physics emphasizing the role that physics plays in science, technology, and society today. The course is concept oriented and minimal use of mathematics is made. Intended for the general student; does not satisfy the requirements of the professional schools.

**PHYS 112 Physics in the Modern World (3)** The second semester of a survey course in general physics emphasizing the role that physics plays in science, technology, and society today. The course is concept oriented and minimal use of mathematics is made. Intended for the general student; does not satisfy the requirements of the professional school.

**PHYS 117 Introduction to Physics (4)** Three hours of lecture and two hours of laboratory per week. Prerequisite: qualification to enter MATH 110. Intended for students majoring in neither the physical nor biological sciences. A study of the development of some of the basic ideas of physical science.

**PHYS 121 Fundamentals of Physics I (4)** Three hours of lecture, two hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: previous course work in trigonometry or MATH 115. The first part of a two-semester course in general physics treating the fields of mechanics, heat, sound, electricity, magnetism, optics, and modern physics. Together with PHYS 122, this generally satisfies the minimum requirement of medical and dental schools.

**PHYS 122 Fundamentals of Physics II (4)** Three hours of lecture, two hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: PHYS 121 or equivalent. A continuation of PHYS 121, which together with it, generally satisfies the minimum requirement of medical and dental schools.

**PHYS 141 Principles of Physics (4)** Three hours of lecture, two hours of laboratory and one hour of discussion/recitation per week. Corequisite: MATH 141. Credit will not be granted for PHYS 171 and PHYS 161 or PHYS 141 or former PHYS 191. The first of a two-semester series in general physics. The first semester covers the fields of mechanics, thermodynamics, and special relativity. This survey course will use calculus and is recommended for chemistry and zoology majors. It also satisfies the requirements of medical and dental schools.

**PHYS 142 Principles of Physics (4)** Credit will not be granted for PHYS 272 and PHYS 142 or former PHYS 192 or PHYS 262. A continuation of PHYS 141. The second semester covers the fields of waves, electricity and magnetism, optics, and modern physics.

**PHYS 161 General Physics: Mechanics and Particle Dynamics (3)** Three hours of lecture and one hour of discussion/recitation per week. Pre- or corequisite: MATH 141. Credit will not be granted for PHYS 171 and PHYS 161 or PHYS 141 or former PHYS 191. First semester of a three-semester calculus-based general physics course. Laws of motion, force, and energy; principles of mechanics, collisions, linear momentum, rotation, and gravitation.

**PHYS 171 Introductory Physics: Mechanics (3)** Prerequisite: MATH 140 and a high school physics course or permission of department. Corequisite: MATH 141. Credit will not be granted for PHYS 171 and PHYS 161 or PHYS 141 or former PHYS 191. First semester of a three semester sequence for physics majors and those desiring a rigorous preparation in the physical sciences: kinematics, Newton's laws, energy and work, linear and angular momenta, rigid bodies, gravitation and planetary motion.

**PHYS 221 General Physics For Science Teachers I (4)** Three hours of lecture, two hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: a high school physics course. Pre- or corequisite: MATH 140 or MATH 220. The first part of a two-semester sequence in physics, stressing physical insight, for prospective secondary school science and mathematics teachers.

**PHYS 222 General Physics for Science Teachers II (4)** Three hours of lecture, two hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: PHYS 221. A continuation of PHYS 221.

**PHYS 262 General Physics: Vibrations, Waves, Heat, Electricity and Magnetism (4)** Three hours of lecture, three hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: PHYS 161. Corequisite: PHYS 262A. Credit will not be granted for PHYS 272 and PHYS 142 or former PHYS 192 or PHYS 262. Second semester of a three-semester calculus-based general physics course. Vibrations, waves, fluids, heat, kinetic theory, and thermodynamics; electrostatics, circuits, and magnetism. PHYS 262A is the lab for this course.

**PHYS 263 General Physics: Electrodynamics, Light, Relativity and Modern Physics (4)** Three hours of lecture, three hours of laboratory, and one hour of discussion/recitation per week. Prerequisite: PHYS 262. Corequisite: PHYS 263A. Credit will not be granted for PHYS 273 and PHYS 263 or former PHYS 293. Third semester of a three-semester calculus-based general physics course. Electrodynamics, Maxwell's equations, and electromagnetic waves; geometrical optics; interference and diffractions; special theory of relativity, and modern physics. PHYS 263A is the lab for this course.

**PHYS 272 Introductory Physics: Vibration, Waves, Heat, Electrostatics and Magnetostatics (3)** Prerequisite: PHYS 171 and MATH 141. Corequisite: PHYS 275 and MATH 241 or MATH 240 (It is preferable to take MATH 241 before MATH 240 for this course.) Credit will be granted for only one of the following: PHYS 272 and PHYS 142 or former PHYS 192 or PHYS 262. Second semester of a three semester sequence intended for physics majors and those desiring a rigorous preparation in the physical sciences: vibrations, waves, heat, kinetic theory, fluids, electric and magnetic fields. DC circuits.

**PHYS 273 Introductory Physics: Electrodynamics, Optics, Light, Relativity and Modern Physics (3)** Prerequisite: PHYS 272, PHYS 275 and MATH 240 or MATH 241. Corequisite: PHYS 276 and MATH 240 or

MATH 241. Credit will not be granted for PHYS 273 and PHYS 263 or former PHYS 293. Third semester of a three-semester sequence intended for physics majors and those desiring a rigorous preparation in the physical sciences: electrostatics, Maxwell's equations, electromagnetic waves, geometrical optics, interference, special relativity and modern physics.

**PHYS 275 Experimental Physics I: Mechanics and Thermodynamics (1)** Prerequisite: PHYS 171 or PHYS 191. One two-three laboratory-lecture per week. Credit will not be granted for more than two of the following courses: PHYS 275, PHYS 195, PHYS 196. First course in the three semester introductory sequence pertaining to the methods and rationale of experimental physics. Intended for physics majors and science and engineering students who desire a more rigorous approach. Experiments chosen from the areas of classical mechanics, vibrations and waves, and thermodynamics.

**PHYS 276 Experimental Physics II: Electricity and Magnetism (2)** One four-hour laboratory-lecture session each week. Prerequisite: PHYS 272 or PHYS 293. Credit will not be granted for both PHYS 276 and former PHYS 295. Second course in the three semester introductory sequence pertaining to the methods and rationale of experimental physics. Intended for physics majors and science and engineering students who desire a more rigorous approach. Experiments chosen from the fields of electricity and magnetism including electrostatics, magnetostatics, magnetic induction, AC circuits.

**PHYS 299 Special Problems in Physics (1-6)** Prerequisite: permission of department. May be taken no more than twice. Maximum of eight credits applicable to B.S. degree program. Research or special study to complement courses taken elsewhere which are not fully equivalent to those in departmental requirements. Credit according to work done.

**PHYS 301 Intermediate Theoretical Physics (3)** Prerequisite: PHYS 142 and MATH 241. Students interested should seek advice of department before enrolling. Intended for those not yet prepared for PHYS 410. Selected topics in mechanics, electricity and magnetism.

**PHYS 305 Physics Shop Techniques (1)** Three hours of laboratory per week. Prerequisite: PHYS 395 or permission of department. Machine tools, design and construction of laboratory equipment.

**PHYS 318 Topics in Contemporary Physics (3)** Prerequisite: PHYS 122 and/or PHYS 112 or permission of department. A survey of topics of current research and public interest. Intended for the non-physics or non-science major. Topics covered will include lasers, quantum liquids, cosmology, elementary particles and geophysics.

**PHYS 375 Experimental Physics III: Electromagnetic Waves, Optics and Modern Physics (2)** One four-hour laboratory-lecture session per week. Prerequisite: PHYS 273 or PHYS 294. Credit will not be granted for both PHYS 375 and former PHYS 296. Third course in the three-semester introductory sequence pertaining to the methods and rationale of experimental physics. Intended for physics majors and science and engineering students who desire a more rigorous approach. Experiments chosen from the areas of electromagnetic waves, optics and modern physics.

**PHYS 389 Undergraduate Thesis Research (1-6)** Prerequisite: permission of department. For PHYS majors only. Repeatable to 6 credits. Independent directed research and study on a topic selected by the student in consultation with his or her advisor. Final written thesis and oral defense will be expected.

**PHYS 395 Advanced Experiments (3)** Prerequisite: PHYS 375. Advanced laboratory techniques. Selected experiments from many fields of modern physics. Emphasis on self-study of the phenomena, data analysis, and presentation in report form.

**PHYS 398 Independent Studies Seminar (1-16)** Credit according to work done. Enrollment is limited to students admitted to the independent studies program in physics.

**PHYS 399 Special Problems in Physics (1-3)** Two hours laboratory work per week for each credit. Prerequisite: PHYS 395 and permission of department. One to three credits may be taken concurrently each

semester. Selected advanced experiments. (Will be given with sufficient demand.)

**PHYS 406 Optics (3)** Prerequisite: [PHYS 263 or PHYS 273 or PHYS 301]; and MATH 240. Geometrical optics, optical instruments, wave motion, interference and diffraction, and other phenomena in physical optics

**PHYS 407 Sound (3)** Prerequisite: PHYS 142 or PHYS 263 or PHYS 273. Pre- or corequisite: MATH 246. Basic concepts of sound production and its applications.

**PHYS 410 Elements of Theoretical Physics: Mechanics (4)** Prerequisite: [PHYS 263 or PHYS 273 or PHYS 301]; and MATH 241. Corequisite: MATH 240. Theoretical foundations of mechanics with extensive application of the methods. Various mathematical tools of theoretical physics.

**PHYS 411 Elements of Theoretical Physics: Electricity and Magnetism (4)** Prerequisite: [PHYS 263 or PHYS 273 or PHYS 301]; and MATH 240 and MATH 241. Foundations of electromagnetic theory, with extensive applications of the methods. Thorough treatment of wave properties of solutions of Maxwell's equations

**PHYS 412 Kinetic Theory of Gases (3)** Prerequisite: PHYS 301 or PHYS 410; and MATH 240. Dynamics of gas particles, Maxwell-Boltzmann distribution, diffusion, Brownian motion, transport.

**PHYS 414 Introduction to Thermodynamics and Statistical Mechanics (3)** Prerequisite: [PHYS 263 or PHYS 273 or PHYS 301]; and MATH 240. Introduction to basic concepts in thermodynamics and statistical mechanics.

**PHYS 420 Principles of Modern Physics (3)** Prerequisite: [PHYS 263 or PHYS 273 or PHYS 301]; and MATH 241. Credit will be granted for only one of the following: PHYS 420 or PHYS 421. A survey of atomic and nuclear phenomena and the main trends in modern physics. Appropriate for students in engineering and other physical sciences.

**PHYS 421 Introduction to Modern Physics (3)** Prerequisite: [PHYS 263 or PHYS 273 or PHYS 301]; and MATH 241, including some knowledge of ordinary equations. Credit will be granted for only one of the following: PHYS 420 or PHYS 421. Special relativity and origins of the quantum theory. Development of wave mechanics including angular momentum and the hydrogen spectrum.

**PHYS 422 Modern Physics (4)** Prerequisite: PHYS 421. Use of quantum mechanics in a discussion of a variety of physical phenomena and systems, including atomic spectra, radioactivity, solid state phenomena, and the properties of elementary particles.

**PHYS 423 Elementary Quantum Physics (3)** Prerequisites: PHYS 420 or 422; MATH 240 and 246; and a level of mathematical sophistication equivalent to that of a student who has taken PHYS 410 and 411, or ENEE 380 and 381. A rigorous presentation of the quantum theory, including the concepts of operators, measurement and angular momentum. The application of these concepts together with the Schrödinger equation to some basic problems in atomic and molecular physics.

**PHYS 429 Atomic and Nuclear Physics Laboratory (3)** Prerequisite: PHYS 395. Classical experiments in atomic physics and more sophisticated experiments in current techniques in nuclear physics.

**PHYS 431 Properties of Matter (3)** Prerequisite: PHYS 301; or [PHYS 410 or PHYS 411]; and [PHYS 420 or PHYS 421]. Introduction to solid state physics. Electromagnetic, thermal, and elastic properties of metals, semiconductors, insulators and superconductors.

**PHYS 441 Nuclear Physics (3)** Prerequisite: PHYS 301; or [PHYS 410 and PHYS 411]; and [PHYS 420 or PHYS 421]. An introduction to nuclear physics at the pre-quantum-mechanics level. Properties of nuclei; radioactivity; nuclear systematics; nuclear moment; the Shell model; interaction of charged particles and Gamma rays with matter; nuclear detectors; accelerators; nuclear reactions; Beta decay; high energy phenomena.

**PHYS 443 Neutron Reactor Physics (3)** Prerequisite: PHYS 420 or PHYS 421 or consent of instructor. Various related topics in neutron reactor physics.

**PHYS 451 Introduction to Elementary Particles (3)** Prerequisite: PHYS 422. Properties of elementary particles, production and detection of particles, relativistic kinematics, invariance principles and conservation laws

**PHYS 461 Introduction to Fluid Dynamics (3)** Prerequisite: PHYS 301 or PHYS 410, and MATH 240. Kinematics of fluid flow, properties of incompressible fluids, complex variable methods of analysis, wave motions

**PHYS 463 Introduction to Plasma Physics (3)** Prerequisite: PHYS 301, or [PHYS 410 and PHYS 411]; or [ENE 221 and ENEE 380]. Students without the electricity and magnetism prerequisite, but having a familiarity with Maxwell's equations, should check with the instructor. Orbit theory, magneto-hydrodynamics, plasma heating and stability, waves and transport processes.

**PHYS 465 Modern Optics (3)** Prerequisite: PHYS 410; and PHYS 411; and PHYS 420 or PHYS 421. Designed for students with a background in fundamental optics. Topics in modern optics such as coherence, holography, principles of laser action, electron optics, and non-linear optics

**PHYS 471 Introduction to Atmospheric and Space Physics (3)** Prerequisite: PHYS 301; or [PHYS 410 and PHYS 411]; and [PHYS 420 or PHYS 421]. Motions of charged particles in magnetic fields, aspects of plasma physics related to cosmic rays and radiation belts, atomic phenomena in the atmosphere, thermodynamics and dynamics of the atmosphere.

**PHYS 483 Biophysics and Theoretical Biology (3)** Designed for advanced and mature students who may have only minimal knowledge of biological processes but are well grounded in physics. Areas in bioscience where physics, biophysical chemistry, and mathematical analysis fuse to provide definition for biologic statics and dynamics.

**PHYS 485 Electronic Circuits (4)** Two hours of lecture and four hours of laboratory per week. Prerequisite: PHYS 395. Corequisite: PHYS 301 or PHYS 411. Theory and application to experimental physics of modern semiconductor analog and digital circuits. Emphasis on understanding passive and active elements in practical circuits. Topics span the range from simple transistor circuits to microcomputers.

**PHYS 487 Particle Accelerators, Physical and Engineering Principles (3)** Prerequisites: PHYS 410; and PHYS 411; and PHYS 420 or PHYS 421. Also offered as ENEE 487. Sources of charged particles; methods of acceleration and focusing of electron and ion beams in electromagnetic fields; basic theory, design, and engineering principles of particle accelerators.

**PHYS 490 History of Modern Physics (3)** Prerequisite: PHYS 420 or PHYS 421 or equivalent. Primarily for senior physics majors and first year graduate students. A survey of major discoveries and trends in 20th century physics, including the relations of physics to other sciences, philosophy of science, technology and society.

**PHYS 499 Special Problems in Physics (1-16)** For PHYS majors only. Research or special study. Credit according to work done.

## PORT — Portuguese

**PORT 101 Elementary Portuguese (4)** One hour of laboratory and four hours of discussion/recitation per week. Introduction to basic structures, with emphasis upon audio-lingual skills. Leads to PORT 102.

**PORT 102 Elementary Portuguese (4)** One hour of laboratory and four hours of discussion/recitation per week. Prerequisite: PORT 101. Completion of basic structures with increasing emphasis upon reading skill, reinforced by conversation.

**PORT 121 Accelerated Portuguese (3)** One hour of laboratory and four hours of discussion/recitation per week. Limited to students who have reached the 300 level or equivalent in Spanish and wish to acquire a reading knowledge of Portuguese in one semester. Normally leads to PORT 221.

**PORT 203 Intermediate Portuguese (4)** One hour of laboratory and four hours of discussion/recitation per week. Prerequisite: PORT 102. Extensive reading, conversation and composition.

**PORT 205 Intermediate Conversation (3)** Prerequisite: PORT 203 or permission of department. Development of oral skills in Portuguese. Intensive conversation on contemporary issues

**PORT 221 Introduction to Brazilian Literature (3)** Prerequisite: PORT 203. Reading of literary texts, discussion and brief written reports. Conducted in Portuguese

**PORT 399 Independent Study in Portuguese (1-3)** Prerequisite: permission of department. Repeatable to 3 credits. Specific readings in literature under the supervision of a faculty member of the department.

**PORT 478 Themes and Movements of Luso-Brazilian Literature in Translation (3)** Repeatable to 6 credits if content differs. A study of specific themes and movements either in Portuguese or Brazilian literature, as announced. Designed for students for whom the literatures would be inaccessible in Portuguese.

## PSYC — Psychology

**PSYC 100 Introduction to Psychology (3)** A basic introductory course, intended to bring the student into contact with the major problems confronting psychology and the more important attempts at their solution.

**PSYC 200 Statistical Methods in Psychology (3)** Prerequisite: PSYC 100; and MATH 111 or MATH 140 or MATH 220. A basic introduction to quantitative methods used in psychological research.

**PSYC 206 Developmental Biopsychology (3)** Prerequisite: PSYC 100. Biological basis of behavioral development in relation to genetic, constitutional, anatomical, physiological, and environmental factors. Emphasis upon both phylogenetic and ontogenetic research findings in biological psychology.

**PSYC 221 Social Psychology (3)** Prerequisite: PSYC 100. The influence of social factors on the individual and on interpersonal behavior. Includes topics such as conformity, attitude change, person perception, interpersonal attraction and group behavior.

**PSYC 235 Psychology of Adjustment (3)** Prerequisite: PSYC 100. Theory and research on the psychology of personal adjustment in everyday life, with an emphasis on self-concept, emotions, self-control, interpersonal relations, and stress.

**PSYC 300 Introduction to Methods of Psychological Research - Honors (3)** Prerequisite: PSYC 200 and permission of the Honors Program Director. Formerly PSYC 201. Various methods of inquiry in psychology; research questions, differences between correlational and experimental research, what to observe, how to measure observations, the role of theory in psychological research, and the interface between ethics and methodology. Observations of on-going research projects will be required.

**PSYC 301 Biological Basis of Behavior (3)** Prerequisite: PSYC 100. The experimental analysis of the behavior of humans and animals and underlying biological mechanisms. Topics such as genetic determiners and physiological mechanisms, and basic principles of conditioning and learning.

**PSYC 309 Special Topics in Psychology (3)** Prerequisite: PSYC 100. Repeatable to 6 credits if content differs. Topics of current interest which represent extensions of or additions to topics covered in more general topical courses.

**PSYC 310 Perception (3)** Prerequisite: PSYC 100 or permission of department. Not open to students who have completed PSYC 410. A survey of phenomena and theories of perception including psychological, anatomical, physiological, and environmental factors important in determining how we perceive the world. Historical background will be examined as well as contemporary research.

**PSYC 330 Child Psychopathology (3)** Prerequisite: PSYC 100; and PSYC 355 or equivalent. Etiology, diagnosis, prevention and treatment of emotional disorders of childhood and adolescence.

**PSYC 332 Psychology of Human Sexuality (3)** Prerequisite: PSYC 100. A survey of historical and contemporary psychological views on a wide variety of sexual behaviors; theory and research bearing on the

relationship between life span psychological development, psychological functioning, interpersonal processes and sexual behaviors, political and social issues involved in current sexual norms and practices

**PSYC 334 Psychology of Interpersonal Relationships (3)** Prerequisite: PSYC 100 Research, theory and their practical applications pertaining to the development, maintenance and dissolution of human relationships. Processes critical to successful relating (e.g. communication, bargaining, conflict relations), and issues associated with troubled dyadic relations with equal partners (e.g. jealousy, spouse abuse, divorce).

**PSYC 336 Psychology of Women (3)** Prerequisite: PSYC 100. A survey of the biology, life-span development, socialization, personality, mental health, and special issues of women.

**PSYC 337 Introduction to Community Psychology (3)** Prerequisite: PSYC 100 Survey and critical examination of the effects of social process and social structure in community life on individual mental health includes theoretical models in community psychology

**PSYC 341 Introduction to Memory and Cognition (3)** Prerequisite: PSYC 100. An introduction to the basic models, methods of research and findings in memory problem-solving, and language and their applications

**PSYC 353 Adult Psychopathology (3)** Prerequisite: PSYC 100 Credit will be granted for only one of the following PSYC 353 and PSYC 331 or PSYC 431. The nature, diagnosis, etiology and treatment of mental disorders among adults.

**PSYC 354 Cross-Cultural Psychology (3)** Prerequisite: PSYC 100 plus 3 credits in psychology or permission of department. Cultural components in theory and research in personality, social and community psychology. Interplay of individual, ethnic and cultural factors in psychosocial growth and well-being, cross-cultural and cross-ethnic communication, and counseling and psychotherapeutic interactions.

**PSYC 355 Child Psychology (3)** Prerequisite: PSYC 100 Not open to students who have completed PSYC 333 or PSYC 433. Survey of research and theory of psychological development from conception through childhood, stressing physiological, conceptual and behavioral changes and the social and biological context in which individuals develop

**PSYC 356 Psychology of Adolescence (3)** Prerequisite: PSYC 355 or permission of department. A description of adolescent development based on research and theory interrelating psychological, intellectual, and social changes during the teen years and the systems dealing with those changes.

**PSYC 357 Psychology of Adulthood and Aging (3)** Prerequisite: PSYC 100. Theory, research and implications of developmental stability and change in physiological, intellectual and interpersonal functioning in the social context from early adulthood through the aging years

**PSYC 361 Survey of Industrial and Organizational Psychology (3)** Prerequisite: PSYC 100 A general survey of the field of industrial/organizational psychology including such topics as organizational entry (recruitment, selection, training, socialization), organizational psychology (motivation, leadership, job attitudes), and productivity in the work place (performance appraisal, absenteeism, turnover). The role that the larger environment plays in influencing work behaviors and work attitudes.

**PSYC 400 Experimental Psychology: Learning and Motivation (4)** Two hours of lecture and four hours of laboratory per week. Prerequisites: PSYC 200, completion of the departmentally required English, math and science supporting course sequence, and permission of department. The experimental analysis of behavior, with emphasis on conditioning, learning and motivational processes. Experiments on the behavior of animals.

**PSYC 401 Advanced Laboratory in the Experimental Analysis of Behavior (3)** Prerequisite: PSYC 400 An intensified extension of the principles and techniques demonstrated in the laboratory of PSYC 400. Emphasis on complex schedules of reinforcement, and experimental designs using repeated measures

**PSYC 402 Physiological Psychology (3)** Prerequisite: PSYC 206 or PSYC 301 Credit will be granted for only one of the following ZOO 323 or PSYC 402. An introduction to research on the physiological basis of human behavior, including considerations of sensory phenomena, motor coordination, emotion, drives, and the neurological basis of learning

**PSYC 403 Animal Behavior (3)** Prerequisite: PSYC 206 or PSYC 301. A study of animal behavior, including considerations of social interactions, learning, sensory processes, motivation, and experimental methods, with a major emphasis on mammals.

**PSYC 404 Introduction to Behavioral Pharmacology (3)** Prerequisite: PSYC 206; or PSYC 301; or PSYC 400, or a course in zoology. The basic findings and theoretical viewpoints on the interaction of drugs and behavior. Introduction to basic principles of pharmacology, the effects of drugs on various behavior, experimental analysis of drug dependence and abuse, and neuropharmacology and behavior.

**PSYC 405 Applied Behavior Analysis (3)** Prerequisite: PSYC 301 Theoretical and research literature in the application of operant and respondent conditioning principles to human behavior. Approaches to behavior problems in school, home and professional settings

**PSYC 410 Experimental Psychology: Sensory Processes I (4)** Three hours of lecture and two hours of laboratory per week. Prerequisites: PSYC 200; and completion of the English, math and science supporting course sequence, and permission of department. A student who has completed PSYC 310 must have permission of the instructor in order to register for PSYC 410. A systematic survey of the content, models, and methodology of sensory and perceptual research

**PSYC 415 History of Psychology (3)** Prerequisite: twelve credits in psychology or permission of department. The origins of psychology in philosophy and biology, and the development of psychology as a science in the nineteenth and twentieth centuries. Consideration of current theoretical perspectives and experiments in relation to the enduring problems of psychology, and of the role of culture, science, and technology in the development of psychological ideas

**PSYC 420 Experimental Psychology: Social Processes I (4)** Two hours of lecture and four hours of laboratory per week. Prerequisite: PSYC 200, and PSYC 221; and completion of the departmentally required English, math, and science supporting course sequence, and permission of department. A laboratory course to provide a basic understanding of experimental method in social psychology and experience in conducting research on social processes.

**PSYC 421 Experimental Psychology: Social Processes II (4)** Prerequisite: PSYC 420. Two hours of lecture and four hours of laboratory per week. An advanced laboratory course providing intensive training in experimental work in social psychology and the opportunity to design and carry out original research on social processes

**PSYC 423 Advanced Social Psychology (3)** Prerequisite: PSYC 420, or permission of department. A systematic review of research and points of view in regard to major problems in the field of social psychology

**PSYC 424 Communication and Persuasion (3)** Prerequisite: PSYC 221 or equivalent. The effect of social communication upon behavior and attitudes. Theory and research concerning attitude change and social influence.

**PSYC 432 Introduction to Counseling Psychology (3)** Prerequisite: nine hours in psychology. A survey and critical analysis of research and intervention strategies developed and used by counseling psychologists. Examination of both historical and current trends in content and methodology

**PSYC 433 Analysis of Helping Relationships (3)** Two hours of lecture and two hours of laboratory per week. Prerequisites: PSYC 200; and PSYC 235 or PSYC 334 or PSYC 435 or PSYC 432). Theories and research strategies regarding effective helping relationships. Basic components of helping relationships and how to conduct a research project evaluating helping behavior and its impact on others

**PSYC 435 Personality Theories (3)** Prerequisite: PSYC 100; and PSYC 200 or equivalent. Major theories of personality and research methods and findings relevant to those theories

**PSYC 436 Introduction to Clinical Psychology (3)** Prerequisite: PSYC 100. A survey and critical analysis of clinical psychology, with particular emphasis on current developments and trends

**PSYC 440 Experimental Psychology: Cognitive Processes (4)** Three hours of lecture and two hours of laboratory per week. Prerequisites: PSYC 100; and PSYC 200 or a statistics course from an approved departmental list, and completion of the departmentally required English, math and science supporting course sequence, and permission of department. A survey of the content, models, and methods in cognitive psychology with an emphasis on auditory and visual pattern recognition, information processing, attention, memory, learning, problem solving, and language.

**PSYC 442 Psychology of Language (3)** Prerequisite: PSYC 200, and PSYC 341 or PSYC 440, or permission of department. Introductory survey of topics in psycholinguistic research, theory and methodology. Major emphasis on the contribution of linguistic theory to the psychological study of language behavior and cognition. Linguistic theory, biological bases of language, and speech, grammars, phonetics and phonological performance, speech perception and production, psychological studies of syntax and semantics, language and cognitive development, language comprehension and thought

**PSYC 443 Thinking and Problem Solving (3)** Prerequisites: PSYC 200, and [PSYC 341 or PSYC 440] or permission of department. Historical development, current theory and data, and research methods in problem solving. Formal problem solving theory and computer models of thinking and human problem-solving behavior. The uses of strategies to improve students' own thinking processes and problem-solving behavior.

**PSYC 444 Cognitive Structure in Perception (3)** Prerequisite: PSYC 200, and [PSYC 341 or PSYC 440] or permission of department. Perception as an information extraction and pattern recognition process. Complex form and space perception and pattern recognition of speech. Review of early studies of form and pattern perception which support information processing state or cascade models of perceptual capacities, studies on development and the roles of learning and attention.

**PSYC 451 Principles of Psychological Testing (4)** Three hours of lecture and two hours of laboratory per week. Prerequisite: PSYC 200. A survey of the basic concepts and theories of psychological measurement illustrated through demonstration of principal approaches to psychological testing

**PSYC 452 Psychology of Individual Differences (3)** Prerequisite: PSYC 200. Problems, theories and research related to psychological differences among individuals and groups

**PSYC 453 Mathematical Psychology (3)** Prerequisite: PSYC 200 or equivalent, and permission of department. A survey of mathematical formulations in psychology, including measurement and scaling models, statistical and psychometric models, and elementary mathematical representations of psychological processes in learning, choice, psychophysics, and social behavior.

**PSYC 455 Life-Span Cognitive Development (3)** Prerequisite: PSYC 355 or PSYC 341 or PSYC 440 or equivalent. Theory and research in cognition from a life-span developmental perspective. Topics include memory, reasoning, attention, spatial, cognition and conceptual organization and discussions of implications of current research for a variety of educational interventions

**PSYC 456 Research Methods in Developmental Psychology (3)** Prerequisites: PSYC 200 and [PSYC 355 or PSYC 356 or PSYC 357]. A presentation of major research designs used in developmental psychology and of the methodology used in developmental research, such as observational research, program evaluation and laboratory experimentation

**PSYC 457 Cultural Context of Psychological Development (3)** Prerequisite: [PSYC 355, or PSYC 356, or PSYC 357,] or permission of department. An



examination of whether important differences or similarities exist among and within cultures in the way people develop psychological competencies in the period from birth through adolescence.

**PSYC 458 Applied Developmental Psychology (3)** Prerequisite: PSYC 200 and [PSYC 355, or PSYC 356, or PSYC 357]. Repeatable to 6 credits if content differs. An examination of a topic in developmental psychology which has been examined in the laboratory and is central to developmental theories. Extension of these analyses to practical and social issues in the daily life of the developing individual. Topics will vary from semester to semester.

**PSYC 460 Psychological Foundations of Personnel Selection and Training (3)** Prerequisite: PSYC 200 or equivalent. An examination of issues and processes involved in the design and evaluation of personnel selection and training programs in a variety of organizational settings, job, person and organizational analysis; organizational choice, development of predictors; evaluation of instructional and training systems; criteria for performance evaluation, promotion and training.

**PSYC 462 Engineering Psychology and Training Models (3)** Prerequisite: PSYC 200 or equivalent, and PSYC 361 or permission of department. For PSYC majors only. An examination of theories and research regarding human performance capabilities and skills (information processing, decision-making, environmental constraints, automation), training procedures (traditional methods, programmed learning, computer-assisted instruction) and models and procedures for evaluating training programs in industry, education, and service organizations.

**PSYC 463 Psychology of Motivation and Attitudes in Organizational Settings (3)** Prerequisite: PSYC 361 or equivalent. Theories, research and practice regarding the assessment, understanding, and prediction of motivation at work. Theories of, and the assessment and consequences of, various work-related attitudes. An integration of theory, research and practice.

**PSYC 464 Psychology of Leaders in Work Organizations (3)** Prerequisite: PSYC 361 or equivalent. The psychological assumptions and implications of various theories of management and leadership. Selections and training; development of careers; influence processes; change of managerial behavior; and the impact of the larger environment, nature of product or service, and organization structure on managerial behavior.

**PSYC 465 Psychology of Organizational Processes (3)** Prerequisite: PSYC 361 or equivalent. Various theories of interpersonal, intra- and inter-group relations, with emphasis on issues of conflict, competition, cooperation and the role of power in organizations. Organizational diagnosis and intervention.

**PSYC 466 Environmental and Ecological Psychology (3)** Prerequisite: PSYC 200 or equivalent. An examination of measurement, description, and impact of the physical and social environments that affect various aspects of behavior in school, at work, and during leisure.

**PSYC 468 Field Experience and Special Assignments in Honors (1-3)** Prerequisite: permission of department as well as supervisor and honors faculty. Repeatable to 6 credits. An individual experience arranged by the honors student and his or her supervisor. A proposal submitted to the honors faculty in the semester preceding registration for the course should state the activities anticipated and the method of evaluation.

**PSYC 469 Honors Thesis Proposal Preparation (1-3)** Prerequisite: Honors thesis supervisor's approval. Repeatable to 3 credits. Development of honors thesis proposal by preliminary research and literature review. Presentation of formal proposal to the thesis committee.

**PSYC 478 Independent Study in Psychology (1-3)** Prerequisite: permission of both department and instructor in the form of a written agreement signed by the student and the faculty mentor. The student must have completed 9 hours in psychology with at least a 3.0 G.P.A. in psychology and a 2.8 overall G.P.A. Students may not accumulate more than a total of 9 credits in PSYC 478 and PSYC 479 without permission of the Chair of the Department of Psychology or the Psychology Undergraduate Committee. Integrated

reading under direction leading to the preparation of an adequately documented report on a special topic.

**PSYC 479 Special Research Problems in Psychology (1-3)** Prerequisite: permission of both department and instructor in the form of a written agreement signed by the student and the faculty mentor. The student must have completed 9 hours in psychology with at least a 3.0 G.P.A. in psychology and a 2.8 overall G.P.A. Repeatable to a maximum of 9 credits unless there is a waiver from the Psychology Undergraduate Committee. Research and data collection under individual faculty supervision, leading to a written research report.

**PSYC 488 Advanced Psychology I (Honors) (3)** Prerequisite: PSYC 200 and permission of department. Seminar covering topics in sensation, perception, learning, and motivation.

**PSYC 489 Senior Seminar (3)** Prerequisite: PSYC 100. Treatment of a specialized topic in psychology.

**PSYC 498 Advanced Psychology II (Honors) (3)** Prerequisite: PSYC 488H or permission of department. Semester covering topics in measurement, social processes, developmental processes and other subject matter of current interest.

**PSYC 499 Honors Thesis Research (3)** Prerequisite: PSYC 469 and permission of thesis advisor.

## RECR — Recreation

**RECR 130 Recreation and Leisure (3)** The study of recreation and leisure behavior, including concepts, theories and terminology. Psychological, social psychological and sociological factors that affect recreation and leisure behavior throughout the lifespan. Analysis of recreation and leisure behavior in our changing society.

**RECR 150 Camp Counseling (2)** A study of the philosophy and techniques of camp counseling including the qualifications, responsibilities and skills involved, the basic organization, administration and program planning practices and problems of camping as a whole; the relationship of these practices and problems to the counselor and his or her probable success. Outdoor skills will be taught and practiced insofar as possible with field trips included.

**RECR 200 Sophomore Seminar (1)** Prerequisite: permission of department. Discussion, observation, analysis and assessment of a number of possible placements under various conditions, with a number of age groups, in different settings, with diverse facilities and programs for their activity leadership role in the sophomore summer field work practicum. Work in the field with supervisors to identify strategies and problems and to develop materials appropriate to the interviewing and placement process.

**RECR 220 Methods and Materials in Recreation (3)** Two hours of lecture and three hours of laboratory per week. Roles, duties and responsibilities of the recreation activity leader. Practical experience in planning, organizing, leading, participating and evaluating a wide variety of recreation activities.

**RECR 270 Leisure Services and Special Populations (3)** Leisure services programming for special populations (physically disabled, mentally retarded, visually impaired, hearing impaired, law offenders, psychologically disabled, and aged). Emphasis on integration of special populations into the mainstream of leisure services, including history, legislation and population characteristics.

**RECR 271 Implications of Disabling Conditions For Therapeutic Recreation (3)** Etiology, symptomatology and characteristics of disabling conditions and their implications for therapeutic recreation interventions in clinical and non-clinical settings. Orientation to health-related disciplines and appropriate terminology.

**RECR 300 Senior Seminar (1)** Prerequisite: permission of department. Review and evaluation of academic and other professional preparation, analysis of future plans, and final preparation for entry into the recreation profession.

**RECR 325 General Fundamentals of Recreation (3)** This course is designed for and limited to students not majoring in recreation who wish to develop some understanding of the place, importance and potentialities

of recreation in modern life. Included will be limited study of the areas of philosophy, program planning, leadership techniques, organization and administration, and interrelationships with other fields.

**RECR 335 Recreation and Leisure (3)** Introduction to the study of leisure or park and recreation services. The challenges, opportunities, and problems of leisure as it affects individuals' lives and the social fabric of their local, national and world communities.

**RECR 337 Social Psychological Foundations of Leisure (3)** The basic social psychological principles and processes underlying human behavior are explored and applied to understanding leisure behavior and problems. This course examines how one's cognitions about leisure influence and are influenced by other's leisure cognitions and social leisure behavior.

**RECR 340 Field Work I (6)** Prerequisites: RECR 200; and permission of department. Practical field experience in developing recreation activity leadership skills at an organized recreation department or agency. Students will be expected to make a commitment for a minimum of eight weeks or equivalent.

**RECR 341 Field Work II (8)** Prerequisites: RECR 300; and permission of department. Observation and field work placement selected and assigned on the basis of the student's interest and future employment plans. Leadership activity and participation in staff activities and responsibilities.

**RECR 350 Recreational Use of Natural Areas (3)** An introductory orientation to the outdoor recreation phenomenon. Factors stimulating outdoor recreation involvement: federal, state, local, public, and private departments and agencies managing outdoor recreation areas; legislation; philosophical concepts, planning and management issues.

**RECR 351 Nature Interpretation (3)** Principles and techniques used for interpretation of environmental, natural, historic and other features of recreation and parks facilities to the visitor. Individual and group field trips will be required.

**RECR 375 Principles of Therapeutic Recreation (3)** Prerequisite: RECR 271. History, philosophy, and current principles of therapeutic recreation processes and application.

**RECR 376 Case Study Laboratory (1)** Pre- or corequisite: RECR 375. An applied experience where students develop and carry out an individualized intervention plan in an approved therapeutic recreation setting. Consists of one hour class per week in addition to weekly work in the therapeutic recreation setting.

**RECR 389 Topical Investigations (1-3)** Repeatable to 6 credits. Independent study by an individual student or a group of students in special areas of knowledge not covered by regularly scheduled courses.

**RECR 410 Measurement and Evaluation in Recreation (3)** Prerequisite: RECR 130; or permission of department. A survey course in measurement tools and methods and application of measurement to evaluative processes applicable in specific and broad areas of interest and specialization in recreation and parks.

**RECR 415 Quantitative Methods (3)** The statistical techniques most frequently used in research pertaining to recreation. An effort will be made to provide students with skills, interpretations and practical applications associated with these techniques.

**RECR 420 Program Planning and Analysis (3)** Prerequisite: RECR 130; or RECR 325. Recommended: RECR 220. The essential elements and basic principles involved in the organization and administration of various types of recreation programs with emphasis on the development of practical, comprehensive program plans and evaluations for a population and a facility within the student's particular area of interest.

**RECR 421 Campus Leisure Services Programming (3)** An introduction to the various elements of campus leisure services program development. Intramurals, clubs and organizations as well as an analysis of the campus union as a key in the college/university community activity effort.

**RECR 426 Industrial Employee Recreation (3)** Prerequisite: RECR 130 or RECR 335. An introductory study of the philosophy of and practices and problems in industrial recreation. Where possible the course will include opportunities for observation and for meeting visiting specialists.

**RECR 432 Philosophy of Recreation (3)** A study of the meanings, relationships, and services of recreation as expressed by past and present authorities and leaders. This course should be of interest to people active in education, social work, and related fields.

**RECR 440 Leisure Services for the Aging (3)** Prerequisite: RECR 130. Theory and practice in program development of services for the aging. Emphasis on: (1) needs assessment theory and practice, (2) program development, (3) evaluation theory and practice, (4) leisure service settings for the aging, and, (5) issues confronting providers of services to the aging population.

**RECR 450 Camp Management (3)** Prerequisite: RECR 150, or permission of department. An advanced camping course for those students with previous training and experience, organization, administration, programming, current trends, evaluation, and special problems. Whenever possible, visiting specialists and field trips will be included.

**RECR 454 Outdoor Education (3)** Field experience and resident camping in an outdoor setting will be used to present the activities and techniques recommended for modern outdoor education practice. Where possible groups of participants will be utilized as subjects for practice instructional work. Activity will emphasize not only the subject matter of science and education but also the broad concepts of conservation, worthy use of leisure time, education for democratic living, etc.

**RECR 455 Historical and Natural Interpretation (3)** Prerequisite: RECR 351. Examination of the philosophies of and techniques appropriate to historical and natural interpretation. Analysis and development of interpretive programs and visitor information services. Field trips and laboratory experiences will be required.

**RECR 457 Concepts and Issues in Outdoor Recreation (3)** A survey of the relationships between land, leisure and people as increasingly vital and interdependent issues in American civilization. The mainstream of thoughts, methods and policies of resource based recreation, with special attention to the history of conservation and the significance of wilderness.

**RECR 460 Leadership Techniques and Practices (3)** Prerequisite: RECR 130. Various types and dynamics of recreation leadership at academic, agency, small and large group levels. Acquisition of tangible techniques, such as goal setting, decision making, and leadership for purposes of organizing, implementing, observing and analyzing human function in organizational settings.

**RECR 463 Supervisory Techniques in Recreation (3)** Prerequisite: RECR 130, or RECR 325, or RECR 335. A study of the principles, methods, techniques as well as an analysis of the functions of supervision in the recreation and parks environment. This course is designed to advance the student's understanding of the art of building human relationships, and to apply the emerging concepts and principles of modern supervision to practical situations in which administrators, supervisors, leaders (both professional and paraprofessional) and volunteers are working.

**RECR 475 Problems in Therapeutic Recreation (3)** Prerequisite: RECR 375. Problems encountered in the delivery of therapeutic recreation services to individuals with special problems. Current trends, innovative service delivery models, literature review, and identification of funding sources.

**RECR 476 Institutional Recreation (3)** Prerequisite: permission of department. An introductory study of the philosophy of and practices in hospital and institutional recreation. Where possible the course will include opportunities for observation and for meeting visiting specialists.

**RECR 489 Field Laboratory Projects and Workshop (1-6)** A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses.

**RECR 490 Organization and Administration of Recreation (3)** A study of the organizational patterns and administrative problems involved in the various types of operating recreation departments and agencies, forms of organization, finance and budget, personnel, public relations.

**RECR 493 Tourism and Commercial Leisure Services (3)** A study of the tourism and commercial leisure services industries. Skill in feasibility study and management. Representative types of tourism and leisure services enterprises and their relationships to the public sector.

**RECR 495 Recreation Resource and Facility Planning I (3)** Basic principles of planning, design, development and maintenance of community recreation areas and facilities. The interrelationships between local, regional, state, and national park and recreation systems.

**RECR 497 Recreation Resource and Facility Planning II (3)** Prerequisite: RECR 495, or permission of department. Principles of design, development, procedures, and maintenance considerations for recreation areas and facilities. Use of analytical methods to carry out park designs and development of skills in graphically conveying design concepts. Safety, efficiency and economy as they affect design, development and park maintenance.

**RECR 498 Special Topics in Recreation (3)** Repeatable if content differs. Prerequisite: permission of department. Topics of special interest in areas not covered by regularly scheduled courses.

**RTVF — Radio Television and Film**  
**RTVF 124 Mass Communication in 20th Century Society (3)** The evolution of mass communications and the impact of the media on contemporary society. Emphasis on the relationship of broadcasting and film to social, economic, and political issues.

**RTVF 222 Introduction to Radio, Television, and Film (3)** The development, scope and influence of radio, television, and film; emphasis on the relationship of the industries to audiences, advertisers, and government.

**RTVF 223 The Television Program: Planning and Management (3)** Prerequisite: RTVF 222. Study of basic program formats and variations with special emphasis on pre-production planning, production organization, management, facility utilization.

**RTVF Upper-level Course Prerequisites:** A grade of C or higher is required in RTVF 222 before any other RTVF course may be taken. RTVF 223 with a grade of C or higher is required prior to enrollment in any other RTVF writing or production course (RTVF 302, RTVF 317, RTVF 340, RTVF 356). RTVF 314 with a grade of C or higher is required prior to enrollment in any other RTVF film course (RTVF 356, RTVF 413, RTVF 414, RTVF 415, RTVF 418, RTVF 419, RTVF 420, RTVF 421).

**RTVF 302 Beginning Sound Production (3)** Prerequisite: RTVF 223. Practical experience in sound production, including scripting, acoustics planning, recording, editing, and coordination of personnel. Application principally toward radio.

**RTVF 314 Introduction to the Film (3)** An elementary survey of the film as an art form. The medium of the cinema, a brief survey of its development, film genres, aesthetics, criticism, and the current international scene. Significant American and foreign films are viewed.

**RTVF 317 Introduction to Writing For Radio, Television, Film (3)** Prerequisites: RTVF 222. Methods and principles of writing for radio, TV, and film. Basic formats, theories, and writing styles in broadcast and film, public service announcements, commercials, campaigns, video and film script formats.

**RTVF 332 Public Broadcasting (3)** Public television and radio: development, problems, influence, its place in contemporary broadcasting, through the viewing of and listening to selected programs.

**RTVF 333 Television and Children (3)** A study of programming designed for children. Investigation of current research and the analysis of specific programs.

**RTVF 340 Principles of Television Production Techniques (3)** Prerequisites: RTVF 223 and permission

of department. Theory methods, techniques, and problems of television production: television cameras and lenses, lighting theory and practices, audio, graphic arts and special effects. Practical application in television studios.

**RTVF 346 Television News and Public Affairs (3)** Prerequisite: RTVF 317 or JOUR 360. Development of broadcast journalism, current problems concerning radio and television news, and the development of the documentary.

**RTVF 347 Broadcast Processes and Effects (3)** Prerequisite: RTVF 222. Common analytic approaches to electronic media and their effects on society, mass communication theory, social consequences of mass communication: principles of mass persuasion.

**RTVF 351 Television Programming (3)** Prerequisite: RTVF 223. The course examines programming trends, theories, and strategies in American television. It explores two major programming areas: program development, and current programming theories and practices. Students analyze current network theories and strategies in a group simulation process; class teams work up original programs and schedules to compete with current network practices.

**RTVF 356 Film Production I, Introduction (3)** Prerequisites: for majors, RTVF 314 and permission of department; for non-majors, permission of department. Introduction to film technology and techniques.

**RTVF 357 Film Production II, Cinematography (3)** Prerequisites: RTVF 356 and permission of department. Development of proficiency in 16mm film production.

**RTVF 384 Field Work Experience (1-3)** Prerequisite: permission of department. For RTVF majors only. Supervised professional field work experience in business, industry, government or education.

**RTVF 385 Field Work Analysis (1-3)** Prerequisite: permission of department. For RTVF majors only. A seminar and/or a written critique of the field work experience is required.

**RTVF 402 Advanced Sound Production (3)** Prerequisites: RTVF 302 and permission of department. An advanced sound production methodology in radio drama and documentaries.

**RTVF 413 The History of the Film (3)** Recommended: RTVF 314. A survey of the film as an art form. Cinema pre-history, actualities and the Lumiere tradition; Melies, Griffith, and their contemporaries; the silent film (1920-29); Germany, Russia, and the USA; screen comedy; the sound film (1926-present); American and foreign master directors; recent and current trends.

**RTVF 414 Contemporary American Cinema (3)** Prerequisite: RTVF 222. Recommended: RTVF 314. For RTVF majors only. Analysis of major trends, styles, and figures in post-World War II American film. Emphasis is on how recent "new wave" directors function in the Hollywood system.

**RTVF 415 Contemporary European Cinema (3)** A comparative and critical analysis of European and other national cinemas. Emphasis is on post-World War II figures, movements, and stylistic innovations.

**RTVF 417 Screenwriting for TV and Film I (3)** Prerequisites: RTVF 317 or equivalent; and permission of department. Principles of story and character development; theories of drama and comedy; film script format. Course concentrates on plot structure and screenplay form. Students write original treatment and first half of screenplay for film or television. Projects are critiqued in group story and script conferences.

**RTVF 418 The Film Auteur (3)** Repeatable to 6 credits if content differs. The intensive chronological study of the work of one European or American film director each semester.

**RTVF 419 Film Genres (3)** Repeatable to 6 credits if content differs. The study of one major film genre each semester (the western, science fiction, melodrama, political film). Emphasis is on formal implications of generic forms.

**RTVF 420 The Documentary Film (3)** Growth, implication, and the use of the international nonfiction

film as propaganda, public service, promotion, education, and entertainment. Case studies from representative documentaries will be analyzed.

**RTVF 421 Film Criticism and Theory (3)** Study of various theoretical models of film analysis and applied critical writing on such topics as montage, mise-en-scene, ideology, feminism, psychoanalysis, and structuralist approaches.

**RTVF 424 The Film Industry: History and Technology (3)** The history, status and present functions of the American film industry including the studio system, the innovation of color and sound, distribution and exhibition.

**RTVF 425 Television and Politics (3)** Critical review of studies of the effects of political broadcasts, legal and social issues, surveys and media campaigns.

**RTVF 427 Screenwriting for TV and Film II (3)** Prerequisites: RTVF 417 or equivalent, and permission of department. Analysis and technique of screenwriting. Complete a dramatic or comedy script for motion pictures or television. Students may complete scripts written in RTVF 417.

**RTVF 440 Television Direction (3)** Prerequisites: RTVF 340 and permission of department. Principles of television direction including elements of composition, picturization, timing, script notation and program coordination.

**RTVF 441 Television Direction II (3)** Prerequisite: RTVF 440 or permission of department. Advanced theories of television direction, script analysis and adaptation, production coordination, casting, blocking, rehearsals and mixing.

**RTVF 447 Quantitative Methods of Broadcast Research (3)** Prerequisite: RTVF 347 or permission of department. An examination of the fundamentals of research methodology as it relates to the study and analysis of broadcast audiences.

**RTVF 448 Television Workshop (1-3)** Prerequisite: permission of department. Repeatable to 6 credits. Special studio projects.

**RTVF 450 Radio and Television Station Management (3)** The role of the manager in broadcasting industry. Station organization, licensing, regulation, sales, programming, personnel, and promotion are examined in light of the competitive marketplace.

**RTVF 451 Broadcast Criticism (3)** An analysis of the professional, historical, social, and psychological criticism of American television, together with practical application of professional and scholarly critical methods.

**RTVF 452 International and Comparative Broadcasting Systems (3)** A comparative study of international broadcasting program policies, economic systems, control and organization. The use of broadcasting in international affairs as an instrument of propaganda, culture and information dissemination. Monitoring of overseas broadcasts, television programs and discussions with representatives of domestic and foreign international broadcast agencies.

**RTVF 453 Broadcast Regulation (3)** Prerequisite: RTVF 223. Legal issues involving radio and television: freedom, restraints, self-regulation; regulation of programming, competition, rights as seen by the broadcaster, regulatory agencies and the public.

**RTVF 454 Cable Television (3)** Prerequisite: RTVF 223. History, regulatory development, system designs, communications capability and franchising of cable television.

**RTVF 456 Structure and Criticism of TV Advertising (3)** Prerequisites: RTVF 222; and RTVF 223; and RTVF 317. An examination of the persuasive power of television advertising. Analysis of form, structure and content of the television commercial and techniques used to influence attitudes and behavior.

**RTVF 457 Media Economics (3)** Economic issues involving radio, television, film, and new technologies of cable and satellite transmission.

**RTVF 466 Film Production III, Synchronized Sound Film Systems (3)** Prerequisites: RTVF 356 and permission of department. Synchronized sound and color technology with emphasis on the 16mm format.

**RTVF 467 Film Production IV, Advanced (3)** Prerequisites: RTVF 466 and permission of department. Direction and production of 16mm, color, synchronized sound motion picture. Production management, cinematography, and sound recording.

**RTVF 470 Corporate Television (3)** Television and other electronic technologies for corporate communication.

**RTVF 498 Seminar (3)** Prerequisite: permission of department. Senior standing. Repeatable to 6 credits. Present day radio-television-film research.

## RUSS — Russian

**RUSS 001 Elementary Russian for Graduate Students (3)** Intensive elementary course in the Russian language designed particularly for graduate students who wish to acquire reading knowledge. This course does not carry credit towards any degree at the University.

**RUSS 101 Elementary Russian I (5)** Two hours of lecture and six hours of laboratory per week. Not open to native speakers of Russian. Elements of grammar, pronunciation, conversation and reading; exercises in translation.

**RUSS 102 Elementary Russian II (5)** Two hours of lecture and six hours of laboratory per week. Prerequisite: RUSS 101. Not open to native speakers of Russian. Continuation of RUSS 101. Elements of grammar, pronunciation, and conversation; exercises in translation.

**RUSS 201 Intermediate Russian I (4)** Two hours of lecture and four hours of laboratory per week. Prerequisite: RUSS 102. Not open to native speakers of Russian. Continuation of RUSS 102. For students planning to continue the study of Russian. Review and expansion of grammar knowledge, conversation and reading skills; exercises in translation. Note: this new RUSS 201 has no relation to the old SLAV 201, which is to be eliminated.

**RUSS 202 Intermediate Russian II (4)** Two hours of lecture and four hours of laboratory per week. Prerequisite: RUSS 201. Not open to native speakers of Russian. Continuation of RUSS 201. Review and expansion of grammar knowledge, conversation and reading skills. Exercises in translation.

**RUSS 210 Structural Description of Russian (3)** Prerequisite: RUSS 201 or equivalent. An introductory linguistic course designed to order and supplement students' knowledge of the sound system and the inflectional system of the verb. A practical component on reading skills also focuses on the verb and methods of developing vocabulary.

**RUSS 211 Applied Russian Phonetics (3)** Prerequisite: RUSS 102. Not open to native speakers of Russian. Pronunciation, the sounds and intonational patterns of Russian in contrast with those of English.

**RUSS 221 Masterworks of Russian Literature I (3)** Introduction to the classics of Russian literature in translation, beginning with Pushkin in the early 19th century and concluding with works of Dostoevsky and Tolstoy in the later part of that century.

**RUSS 222 Masterworks of Russian Literature II (3)** Introduction to the classics of Russian literature in translation, beginning with the later works of Dostoevsky and Tolstoy and extending to the present and works by Solzhenitsyn.

**RUSS 281 Russian Language and Pre-Revolutionary Culture (3)** Not open to native speakers of Russian. Introduction to the Russian language and a study of Russian nationalism; artistic and social concepts in the development of Russian art, dance, geography, history and literature from the 18th to the 20th centuries. Lectures in English, with third hour devoted to basic language instruction (alphabet, vocabulary, pronunciation and minimal conversational skills).

**RUSS 282 Russian Language and Soviet Culture (3)** Prerequisite: RUSS 281. Not open to native speakers of Russian. Continuation of introduction to the Russian language and a study of cultural developments since the Revolution. Lectures in English, with third hour devoted to language study (overview of grammar, conversation, and basic reading).

**RUSS 298 Special Topics in Russian Language and Literature (3)** Repeatable to 6 credits if content differs.

**RUSS 301 Advanced Russian Grammar and Composition I (3)** Prerequisite: RUSS 202 or equivalent. A thorough training in the structure of the language, drill in Russian composition.

**RUSS 302 Advanced Russian Grammar and Composition II (3)** Prerequisite: RUSS 301. A continuation of RUSS 301.

**RUSS 303 Russian Conversation: Functional Skills (3)** Prerequisite: RUSS 202 or equivalent. Intended for students who do not anticipate having the opportunity to study in the Soviet Union. Skills for daily life (both function and etiquette) and argumentation (rhetoric).

**RUSS 321 Survey of Russian Literature I (3)** Prerequisite: RUSS 202 or equivalent. The first half of a survey of Russian literature.

**RUSS 322 Survey of Russian Literature II (3)** Prerequisite: RUSS 321 or equivalent. The second half of a survey of Russian literature.

**RUSS 327 Old Russian Literature in Translation (3)** Recommended: RUSS 221. Old Russian literature of the 11th-17th centuries for the general student. Selected texts will be read in translation, with analysis in terms of genre and historical setting.

**RUSS 328 19th Century Russian Literature in Translation (3)** Repeatable to 6 credits if content differs. Development of Russian literary thought in the Russian novel and short prose of the 19th century. Influence of western literatures and philosophies.

**RUSS 329 Soviet Literature in Translation (3)** Repeatable to 6 credits if content differs. Russian literature since 1917, both as a continuation of prerevolutionary traditions and as a reflection of Soviet ideology.

**RUSS 381 Russian Civilization (in Russian) I (3)** Prerequisite: RUSS 202. A historical survey of Russian civilization emphasizing architecture, painting, sculpture, music, ballet and the theater in the beginning of the 19th century pointing out the inter-relationship of all with literary movements. Taught in Russian.

**RUSS 382 Russian Civilization (in Russian) II (3)** Prerequisite: RUSS 202. A historical survey of Russian civilization emphasizing architecture, painting, sculpture, music, ballet, and the theater, from the beginning of the 19th century to the present pointing out the inter-relationships of all with literary movements. Taught in Russian.

**RUSS 398 Selected Topics in Russian Language and Literature (3)** Repeatable to 6 credits if content differs.

**RUSS 401 Advanced Russian Composition (3)** Prerequisite: RUSS 302.

**RUSS 402 Practicum in Written Russian (3)** Prerequisite: RUSS 401 or equivalent. Improve comprehension of functional varieties of written Russian. Develop ability to present in written form concise syntheses of source texts.

**RUSS 403 Russian Conversation: Advanced Skills (3)** Prerequisite: RUSS 303 or equivalent. Advanced spoken production of high-level, abstract language.

**RUSS 404 Practicum in Spoken Russian (3)** Prerequisite: RUSS 403 or equivalent. To improve comprehension of rapidly spoken Russian of various functional styles and to develop ability to synthesize orally the content of spoken material.

**RUSS 405 Russian-English Translation (3)** Prerequisite: RUSS 302 or equivalent. Introduction to the principles of translation of a particular—typically diplomatic, business, or literary.

**RUSS 409 Selected Topics in Russian Language Study (3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Presentation of a topic in Russian language study.

**RUSS 410 Applied Russian Linguistics (3)** The nature of applied linguistics and its contributions to the effective teaching of foreign languages. Comparative study of English and Russian, with emphasis upon points of divergence. Analysis, evaluation and construction of related drills.

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**RUSS 411 Linguistic Analysis of Russian I (3)** Prerequisites: RUSS 210, and LING 200. Pre- or corequisite: RUSS 301. Ilucidation of theoretical concepts of modern linguistics through the analysis of problematic concepts in the Russian linguistic system. Phonology and the syntax of the simple sentence.

**RUSS 412 Linguistic Analysis of Russian II (3)** Prerequisite: RUSS 411. Continuation of RUSS 411. The syntax of the complete sentence, semantics.

**RUSS 431 Russian Literature of the 19th Century I (3)**

**RUSS 432 Russian Literature of the 19th Century II (3)**

**RUSS 433 Russian Literature of the 20th Century (3)**

**RUSS 434 Soviet Russian Literature (3)**

**RUSS 439 Selected Topics in Russian Literature (3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Presentation of a topic in Russian literature.

**RUSS 473 Recent History of the Russian Language (3)** Prerequisite: RUSS 210 or equivalent. Linguistic interpretation of Russian texts from the late 18th century to the present.

### SLAV — Slavic

**SLAV 469 Selected Topics in Slavic Studies (3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Presentation of a topic in Slavic studies.

**SLAV 475 Old Church Slavonic (3)** Introduction to the language of the oldest recorded Slavic documents. Historical presentation of phonology, morphology, and syntax; reading of texts.

**SLAV 479 Selected Topics in Slavic Linguistics (3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Presentation of a topic in Slavic linguistics.

**SLAV 499 Directed Study (1-3)** Prerequisite: permission of department. For advanced students. Repeatable to 6 credits if content differs.

### SOCY — Sociology

**SOCY 100 Introduction to Sociology (3)** The fundamental concepts and principles of sociology. Includes consideration of culture, patterns of social interaction, norms, values, social institutions, stratification, and social change.

**SOCY 105 Introduction to Contemporary Social Problems (3)** An examination of contemporary social problems through sociological perspectives; ways in which social problems are part of the organization of society; a detailed study of selected social problems including social conflict and social inequality.

**SOCY 120 Urban Sociology (3)** Prerequisite: SOCY 100 or SOCY 105. Urban growth and expansion; characteristics of city populations; urban institutions and personality patterns; relations of city and country.

**SOCY 201 Introductory Statistics for Sociology (4)** Three hours of lecture and two hours of laboratory per week. Prerequisite: SOCY 100 or SOCY 105 and MATH 110 or equivalent. Elementary descriptive and inferential statistics. Construction and percentage of bivariate contingency tables; frequency distributions and graphic presentations; measures of central tendency and dispersion; parametric and nonparametric measures of association and correlation; regression, probability, hypothesis testing; the normal, binomial and chi-square distributions; point and interval estimates.

**SOCY 202 Introduction to Research Methods in Sociology (4)** Prerequisite: SOCY 201. The underlying logic, major strategies, specific techniques and skills of sociological research. Research design, measurement, data collection, sampling, field research experiments, surveys, index and scale construction, data analysis, interpretation and report writing.

**SOCY 203 Sociological Theory (3)** Prerequisite: SOCY 100 or SOCY 105. Development of the science of sociology; historical backgrounds; recent theories of society. Required of all sociology majors.

**SOCY 230 Sociological Social Psychology (3)** Social psychology of groups such as committees, teams, clubs, sects, social movements, crowds and publics. Origin of the social self; role behavior, inter-group and intragroup relations.

**SOCY 241 Inequality in American Society (3)** Credit will be granted for only one of the following: SOCY 241 or SOCY 441. Formerly SOCY 341. The sociological study of the status and treatment of the poor, minorities, the aged, women, deviant subcommunities and the physical handicapped. The dynamics of inequality: its social production, politics, future and ideological bases. Utopian communities, efforts to eliminate inequality.

**SOCY 300 American Society (3)** The social structure and organization of American society with special reference to recent social change. A sociological perspective on urban and other population trends: the character structure, values and ideology of Americans - social movements and changes in work, family life and recreation.

**SOCY 305 Scarcity and Modern Society (3)** Prerequisite: SOCY 100 or SOCY 300. The problems of resource depletion and the deterioration of the environment. Emphasis is on the relationship to life styles, individual consumer choices, cultural values, and institutional failures. Projection of the future course of American society on the basis of the analysis of scarcity, theories of social change, current trends, social movements, government actions, and the futurist literature.

**SOCY 312 Family Demography (3)** Study of the family and population dynamics. Fertility issues, such as teenage pregnancy, the timing of parenthood, and the determinants and consequences of family size; as they relate to family behavior, such as marital patterns, child care use, and the relationship between work and the family. Policy issues that relate to demographic changes in the family.

**SOCY 324 Racism and Intergroup Conflict (3)** Prerequisite: SOCY 100 or SOCY 105. An introduction to the study of racism and intergroup conflict in the U.S. history of racism; racial stereotypes, roles, and myths; individual and institutional racism; race and its relation to culture, stratification, social movements, and social change.

**SOCY 325 Sex Roles (3)** Sex-role differentiation and sex inequality from a sociological perspective. Institutional bases of sex inequality, cultural views of the sexes, sex role socialization and sex-role change. Emphasis on contemporary American society.

**SOCY 327 Introduction to the Study of Deviance (3)** Prerequisite: SOCY 100 or SOCY 105. Not open to students who have completed SOCY 427. An introduction to the sociological study of deviant behavior, covering such topics as mental illness, sexual deviance, and the use of drugs.

**SOCY 330 Community Organization (3)** Prerequisite: SOCY 100 or SOCY 105. Community organization and its relation to social welfare; analysis of community needs and resources; health, housing, recreation; community centers, neighborhood projects.

**SOCY 331 Work, Bureaucracy, and Industry (3)** A sociological approach to the world of work, occupational class, and personal experiences in the bureaucratic organizations of modern industrial society.

**SOCY 333 Technology and Society (3)** An examination of human evolution and the interplay between technological discoveries and changes in human societies. The impact of technology on agriculture, the industrial revolution, politics, economics, and health, education and welfare, as these affect changes in social organizations. The development of small cities, the better utilization of energy, the use of wealth and abundance and its relation to the division of labor, and the role of technology in shaping of new forms of political and economic organizations.

**SOCY 343 Sociology of Marriage and Family (3)** Prerequisite: SOCY 100 or SOCY 105. The sociological study of marriage and family life, including a consideration of demographic trends in marriage, childbearing, divorce, sociological theories of mate selection, marital interaction, and marital dissolution. The course includes discussion of some contemporary controversial issues, such as the

relationship of unmarried couples, alternative marriage forms, abortion, and violence in the family.

**SOCY 359 Social Field Training (1-3)** Prerequisite: permission of instructor and at least 12 hours of sociology credit. Enrollment restricted to available placements. The student will be responsible to an agency for a program of in-service training. Group meetings, individual conferences and written program reports will be a required part of the course.

**SOCY 378 Honors Independent Reading in Sociology (3)** Prerequisite: acceptance into the Sociology Honors Program. [This course permits Sociology Honors students to undertake a program of reading on a particular problem in sociology or a subfield therein. The reading will be done under the supervision of a member of the sociology faculty. Required of Sociology Honors students.]

**SOCY 388 Honors Independent Research in Sociology (3)** Prerequisite: acceptance into Sociology Honors Program and SOCY 378. [This course permits Sociology Honors students to define a particular problem in sociology or a subfield therein and to develop a research plan for use as a thesis topic. The work will be done under the supervision of a member of the sociology faculty.]

**SOCY 389 Honors Thesis Research (3)** Prerequisite: acceptance into Sociology Honors program and SOCY 378, and SOCY 388. Student research under the direction of a member of the sociology faculty, culminating in the presentation and defense of a thesis reporting the research.

**SOCY 398 Special Topics in Sociology (1-3)** Prerequisite: SOCY 100 or SOCY 105. Repeatable to 6 credits if content differs. Topics of special interest to both sociology majors and non-majors.

**SOCY 399 Independent Study in Sociology (1-6)** Prerequisite: permission of department and 12 credits in sociology to include one or more of - SOCY 201, SOCY 202, SOCY 203. A maximum of 6 credits may be earned by a student for the same field experience in SOCY 386, SOCY 387, and SOCY 399 combined. Integrated reading or research under the direction and supervision of a faculty member.

**SOCY 401 Intermediate Statistics for Sociologists (3)** Prerequisite: SOCY 201 or equivalent, and six additional credits in sociology. Intermediate correlation techniques, analysis of variance, sampling, additional nonparametric techniques, additional topics in inferential statistics.

**SOCY 402 Intermediate Procedures For Data Collection (3)** Prerequisite: SOCY 202 or equivalent or permission of department. An intermediate survey of the major research methods used by sociologists, including survey research, experimentation, observation, archival research, and in-depth interviewing. The selection of an appropriate research method, with analysis of the strengths and weaknesses of various methods, practical issues, data collection and preparation, and analytical techniques.

**SOCY 403 Intermediate Sociological Theory (3)** Prerequisite: SOCY 203. Major theoretical approaches e.g., Functionalism, conflict, symbolic interactionism, and their implicit methods of logic illustrated by case studies. Original works of major theorists in historical perspective.

**SOCY 404 Methods of Quantitative Analysis (3)** Prerequisite: SOCY 202 or equivalent or permission of department. A computer-based approach to the analysis of sociological data. Statistical program packages such as spss, using both card input and computer terminals; data storage and file manipulation. Use of multivariate statistical techniques, national sample surveys, census, and artificial data sets constructed to illustrate specific features of the techniques.

**SOCY 410 Population I (3)** Prerequisite: junior standing; SOCY 100 or SOCY 105 not required. Population distribution and growth, sources of demographic data, population composition, population theories, mortality, fertility and family planning, migration, and population problems and policy.

**SOCY 411 Population II (3)** Prerequisite: SOCY 410 or permission of department. Introduction to basic techniques for analyzing population change. The measurement of fertility, mortality, and migration.

**SOCY 423 Ethnic Minorities (3)** Prerequisite: SOCY 100 or SOCY 105. Basic social processes in the relations of ethnic groups; immigration groups and Blacks in the United States, ethnic minorities in Europe.

**SOCY 424 Sociology of Race Relations (3)** Prerequisite: 9 credits in sociology or permission of department. Analysis of race-related issues, with a primary focus on American society. The historical emergence, development, and institutionalization of racism; the impact of racism on its victims; and racially based conflict.

**SOCY 425 Sex Roles and Social Institutions (3)** Prerequisite: SOCY 325 or permission of department. Relationship between sex roles and the structure of one or more social institutions (e.g., the economy, the family, the political system, religion, education). The incorporation of sex roles into social institutions; perpetuation or transformation of sex roles by social institutions; how changing sex roles affect social institutions.

**SOCY 426 Sociology of Religion (3)** Prerequisite: SOCY 100 or SOCY 105. Varieties and sources of religious experience. Religious institutions and the role of religion in social life.

**SOCY 427 Deviant Behavior (3)** Prerequisite: SOCY 327 or 12 credits in sociology or permission of department. Current theories of the genesis and distribution of deviant behavior, and their implications for a general theory of deviant behavior. Definitions of deviance, labeling theory, secondary deviance.

**SOCY 430 Sociology of Personality (3)** Prerequisite: SOCY 100 or SOCY 105. Development of human nature and personality in contemporary social life; processes of socialization; attitudes, individual differences and social behavior.

**SOCY 431 Formal and Complex Organizations (3)** Prerequisite: SOCY 331 or permission of department. The concept of formal organization. The study of functioning and control in the operation of bureaucracies such as corporations and in large-scale organizations such as military, religious and educational hierarchies. Forms of recruitment, internal mobility and organizational personality. Relations between large-scale organizations and with the larger society.

**SOCY 432 Collective Behavior (3)** Prerequisite: SOCY 100 or SOCY 105 or SOCY 230 or permission of department. Unlike most sociology courses which focus on structured groups, this course examines instances of transient behavior: crowds, disasters, hysterical contagion, revolution, and social movements, including American Utopian experiments.

**SOCY 433 Social Control (3)** Prerequisite: SOCY 100 or SOCY 105. Forms, mechanism, and techniques of group influence on human behavior; problems of social control in contemporary society.

**SOCY 440 Sociology of the Self-Concept (3)** The nature of the self-concept and the social forces that mold it. Major sociological, psychological, and psycho-analytic theories of the self-concept. Self-concept motives, mechanisms of self-defense, and the nature of a healthy self-concept. Empirical research dealing with the bearing of social interaction, social structure, social context and social institutions on the self-concept.

**SOCY 441 Social Stratification and Inequality (3)** Prerequisite: 6 credits of sociology or permission of department. 56 semester hours. Junior standing. Credit will be granted for only one of the following: SOCY 241 or SOCY 441. The sociological study of social class, status, and power. Topics include theories of stratification, correlates of social position, functions and dysfunctions of social inequality, status inconsistency, and social mobility.

**SOCY 443 The Family and Society (3)** Prerequisite: SOCY 343 or permission of department. Study of the family as a social institution; its biological and cultural foundation; historic development, changing structure, and interaction of marriage and parenthood, disorganizing and reorganizing factors in present day trends.

**SOCY 445 Sociology of the Arts (3)** Prerequisite: SOCY 100 or SOCY 105. Functions of the arts as a social institution. Social role of the artist. Recruitment to

and organizational structure of artistic professions. Art forms and social characteristics of audiences. Changing technology and social values as reflected in artistic expression.

**SOCY 447 Small Group Analysis (3)** Prerequisite: SOCY 100 or SOCY 105 or SOCY 201 (sociological statistics) or equivalent. Analysis of small group structures and dynamics. Review of research on small groups in real life settings and in laboratories. Presentation of techniques used in small groups.

**SOCY 450 Applied Sociology (3)** Prerequisite: SOCY 201, SOCY 202, SOCY 203. The uses of sociology in non-academic settings. The ethics and social organization of sociological research, the range of applied settings, the development and evaluation of proposals, and the communication of sociological findings to non-sociological audiences.

**SOCY 457 Sociology of Law (3)** Prerequisite: SOCY 100 or SOCY 105. Law as a form of social control interrelation between legal and other conduct norms as to their content, sanctions, and methods of securing conformity; law as an integral part of the culture of groups; factors and processes operative in the formation of legal norms as determinants of human behavior.

**SOCY 460 Sociology of Work (3)** Prerequisite: SOCY 331 or permission of department. Analysis of the American work world with special attention to the impact of social change and occupational conflicts on the individual worker. Professionalization, career patterns, problems of minority groups and the future of work.

**SOCY 462 Industrial Sociology (3)** Prerequisite: SOCY 331 or permission of instructor. The sociology of human relations in American industry and business. Complex industrial and business organization as social systems. Social relationships within and between industry, business, community and society.

**SOCY 464 Military Sociology (3)** Prerequisite: SOCY 100 or SOCY 105. Social change and the growth of military institutions. Complex formal military organizations. Military service as an occupation or profession. The sociology of military life. Relations between military institutions, civilian communities and society.

**SOCY 465 The Sociology of War (3)** Prerequisite: SOCY 100 or SOCY 105. The origin and development of armed forces as institutions, the social causes, operations and results of war as social conflict; the relations of peace and war and revolution in contemporary civilizations.

**SOCY 466 Sociology of Politics (3)** Prerequisite: 9 credits in sociology. An introduction to the sociology of political phenomena. Consideration of the basic concepts and major findings in the field; the relationship of the polity to other institutional orders of the society; the relationship of political activity in America to the theory of democracy.

**SOCY 467 Sociology of Education (3)** Prerequisite: SOCY 100 or SOCY 105 or permission of department. Sociological analysis of educational institutions and their relation to society: goals and functions, the mechanisms of social control, and the impacts of stratification and social change. Study of the school as a formal organization, and the roles and subcultures of teachers and students.

**SOCY 470 Rural-Urban Relations (3)** Prerequisite: SOCY 100 or SOCY 105. The ecology of population and the forces making for change in rural and urban life; migration, decentralization and regionalism as methods of studying individual and national issues. Applied field problems.

**SOCY 473 The City (3)** Prerequisite: SOCY 100 or SOCY 105. The rise of urban civilization and metropolitan regions; ecological process and structure; the city as a center of dominance; social problems, control and planning.

**SOCY 474 Soviet Ethnic Issues (3)** Ethnic processes and issues in the Soviet Union. The major ethnic groups in the U.S.S.R. cultural, political, religious, economic, and other aspects of Soviet ethnicity.

**SOCY 498 Selected Topics in Sociology (1-3)** Prerequisite: SOCY 100 or SOCY 105. Repeatable to 6

credits. Topics of special interest to advanced undergraduates in sociology. Such courses will be offered in response to student request and faculty interest.

## SPAN — Spanish

**SPAN 100 Applied Spanish (3)** Cannot be used to satisfy university/college or Spanish major language requirements. Vocabulary and structures pertinent to specific professions and vocations: medicine, nursing, law enforcement, firefighting, and social work.

**SPAN 101 Elementary Spanish (4)** Four hours of discussion/recitation per week. Introduction to basic structures, with emphasis upon understanding and speaking.

**SPAN 102 Elementary Spanish (4)** Four hours of discussion/recitation per week. Continuation of SPAN 101, with increasing emphasis upon reading skill, reinforced by discussion and composition.

**SPAN 103 Review of Elementary Spanish (4)** An intensive beginning course in Spanish language skills: guided practice in reading and writing, understanding the spoken language and conversation, to enable the student to move more quickly to advanced courses.

**SPAN 203 Intermediate Spanish (4)** Four hours of discussion/recitation per week. Continued development of the skills of understanding and speaking with supplementary attention to reading and writing. Enriched course of study, with broad oral base and related development of reading and writing.

**SPAN 204 Review of Oral and Written Spanish (3)** Prerequisite: SPAN 203. May be taken concurrently with SPAN 221 or SPAN 205. A practical language course recommended for all students continuing in Spanish.

**SPAN 205 Intermediate Conversation (3)** Prerequisite: SPAN 203 or SPAN 203H or permission of department. Not open to native speakers. Provides an opportunity to develop fluency in oral Spanish.

**SPAN 221 Readings in Spanish (3)** Prerequisite: SPAN 204. Selected readings from various genres in Spanish and Spanish American literature. Discussion and brief written reports in Spanish.

**SPAN 301 Review Grammar and Composition (3)** Prerequisite: SPAN 204 or equivalent. An intensive review of grammar and practice in Spanish composition.

**SPAN 302 Review Grammar and Composition (3)** Prerequisite: SPAN 301 or equivalent.

**SPAN 310 Spanish Phonetics (3)** Prerequisite: SPAN 204 or SPAN 205. Descriptive study of the Spanish sound system. Practice in phonetic perception, transcription, and articulation. Particular attention to sentence phonetics; juncture, rhythm, stress, pitch.

**SPAN 311 Advanced Conversation I (3)** Prerequisite: SPAN 204 or SPAN 205 or permission of department. Not open to native speakers. Designed to develop fluency and accuracy in speaking Spanish.

**SPAN 312 Advanced Conversation II (3)** Prerequisite: SPAN 205 or SPAN 311 or permission of department. Not open to native speakers.

**SPAN 315 Commercial Spanish (3)** Prerequisite: SPAN 301 or equivalent or permission of department. Designed to give a knowledge of correct commercial Spanish including letters and business forms.

**SPAN 316 Practicum in Translation I (3)** Prerequisite: SPAN 301 or permission of department. Translation of non-literary, non-technical texts of expository prose into Spanish or English. Emphasis on the expansion of vocabulary and on the morphological differences in both languages.

**SPAN 317 Practicum in Translation II (3)** Prerequisite: SPAN 316 or permission of department. Continuation of SPAN 316. Emphasis on syntactical differences between Spanish and English.

**SPAN 318 Translation of Technical Texts (3)** Prerequisites: SPAN 316 and SPAN 317 or permission of department. Repeatable to 6 credits if content differs. Translation into Spanish or English of texts pertinent to medicine, social work, law or international affairs.

**SPAN 321 Survey of Spanish Literature: 12th-17th Century (3)**

**SPAN 322 Survey of Spanish Literature: 18th-20th Century (3)**

**SPAN 323 Survey of Spanish-American Literature I (3)** Basic survey of the history of Spanish-American literature

**SPAN 324 Survey of Spanish-American Literature II (3)** Basic survey of the history of Spanish-American literature.

**SPAN 325 Spanish Civilization I (3)** A survey of 2000 years of Spanish history, outlining the cultural heritage of the Spanish people, traditions, customs, art, and literature, with special emphasis on the interrelationship of social and literary history. Conducted in Spanish.

**SPAN 326 Spanish Civilization II (3)** A survey of 2000 years of Spanish history, outlining the cultural heritage of the Spanish people, traditions, customs, art, and literature, with special emphasis on the interrelationship of social and literary history. Conducted in Spanish.

**SPAN 346 Latin American Civilization I (3)** A survey of the cultural heritage of the Latin American peoples from the Pre-Columbian Period to independence. Hispanic and other European influences. Conducted in Spanish.

**SPAN 347 Latin American Civilization II (3)** A survey of the cultural heritage of the Latin American peoples from independence to the present. Hispanic and other European influences. Conducted in Spanish.

**SPAN 356 Practicum in Translation III (3)** Prerequisites: SPAN 316 and SPAN 317 or permission of department. Translation of descriptive and narrative texts into Spanish or English.

**SPAN 357 Practicum in Translation IV (3)** Prerequisite: SPAN 356 or permission of department. Translation into Spanish or English of texts limited to the dialog form.

**SPAN 378 Pro-seminar in the Hispanic Literatures (3)** Prerequisites: SPAN 321 and SPAN 322 (for Spanish topic); SPAN 323 and SPAN 324 (for Spanish-American topic). Repeatable to 6 credits if content differs.

**SPAN 399 Independent Study in Spanish (1-3)** Prerequisite: permission of department. Repeatable to 3 credits. Specific readings in literature or a translation project under the supervision of a faculty member of the department.

**SPAN 401 Advanced Composition (3)** Exercises in practical stylistics, with special emphasis on idiomatic and syntactic structures.

**SPAN 402 Advanced Composition (3)** Exercises in practical stylistics, with special emphasis on idiomatic and syntactic structures.

**SPAN 408 Great Themes of the Hispanic Literatures (3)** Prevailing themes in the literature of Spain or Spanish-America. Each theme will be announced when the course is offered.

**SPAN 409 Great Themes of the Hispanic Literatures (3)** Prevailing themes in the literature of Spain or Spanish-America. Each theme will be announced when the course is offered.

**SPAN 410 Literature of the Middle Ages (3)** Spanish literary history from the eleventh through the fifteenth century. Reading of representative texts. This course covers until the year 1350.

**SPAN 411 Literature of the Middle Ages (3)** Spanish literary history from the eleventh through the fifteenth century. Reading of representative texts. This course covers from 1350 to 1500.

**SPAN 412 The Romancero (3)** Origin, nature and influence. Extensive reading in each of the respective sub-genres.

**SPAN 416 Practicum in Translation V (3)** Prerequisite: SPAN 357 or permission of department. Translation of complete literary texts from Spanish into English. Presentation and comparison of special problems encountered in individual projects.

**SPAN 417 Practicum in Translation VI (3)** Prerequisite: SPAN 416 or permission of department. Translation of complete literary texts from Spanish into English. Evaluation of different renditions of the originals. Problems of interpretation and literary analysis, structure and criticism.

**SPAN 418 Hispanic Literature in Translation (3)** Repeatable to 6 credits if content differs.

**SPAN 420 Poetry of the 16th Century (3)** Prerequisite: SPAN 321 or equivalent. Selected readings and literary analysis.

**SPAN 421 Prose of the 16th Century (3)** Prerequisite: SPAN 321 or equivalent. Selected readings and literary analysis.

**SPAN 424 Drama of the Sixteenth Century (3)** From the earliest autos and pasos, the development of Spanish drama anterior to Lope de Vega, including Cervantes.

**SPAN 430 Cervantes: Don Quijote (3)** Prerequisite: SPAN 321 or equivalent.

**SPAN 431 Cervantes: Novelas Ejemplares and Entremeses (3)** Prerequisite: SPAN 321 or equivalent.

**SPAN 434 Poetry of the 17th Century (3)** Prerequisite: SPAN 321 or equivalent. Selected readings, literary analysis, and discussion of the outstanding poetry of the period, in the light of the historical background.

**SPAN 435 Prose of the 17th Century (3)** Prerequisite: SPAN 321 or equivalent. Selected readings, literary analysis, and discussion of the outstanding prose of the period, in the light of the historical background.

**SPAN 436 Drama of the Seventeenth Century (3)** Prerequisite: SPAN 321. Devoted to Lope de Vega, dramatic theory and the Spanish stage.

**SPAN 437 Drama of the Seventeenth Century (3)** Drama after Lope de Vega to Calderon de la Barca and the decline of the Spanish theater.

**SPAN 440 Literature of the Eighteenth Century (3)** Traditionalism, Neo-Classicism, and Pre-Romanticism in prose, poetry, and the theater; esthetics and poetics of the enlightenment.

**SPAN 448 Special Topics in Latin American Civilization (3)** Repeatable to 6 credits if content differs. An intensive study of a selected topic related to Latin American civilization. Conducted in Spanish.

**SPAN 449 Special Topics in Spanish Civilization (3)** Repeatable to 6 credits if content differs. An intensive study of a selected topic related to Spanish civilization.

**SPAN 452 The Romantic Movement in Spain (3)** Poetry, prose and drama of the Romantic and Post-Romantic periods.

**SPAN 454 Nineteenth Century Fiction (3)** Significant novels of the nineteenth century.

**SPAN 456 Nineteenth Century Drama and Poetry (3)** Significant dramas and poetry of the Realist Period.

**SPAN 460 The Generation of 1898 and Its Successors (3)** Authors and works of all genres of the generation of 1898 and those of the immediately succeeding generation.

**SPAN 461 The Generation of 1898 and Its Successors (3)** Authors and works of all genres of the generation of 1898 and those of the immediately succeeding generation.

**SPAN 462 Twentieth Century Drama (3)** Significant plays of the twentieth century.

**SPAN 464 Contemporary Spanish Poetry (3)** Spanish poetry from the generation of 1927 to the present.

**SPAN 466 The Contemporary Spanish Novel (3)** The novel and the short story from 1940 to the present.

**SPAN 468 Modernism and Post-Modernism in Spain and Spanish-America (3)** Repeatable to 9 credits if content differs. A study of the most important works and authors of both movements in Spain and Spanish-America.

**SPAN 469 Modernism and Post-Modernism in Spain and Spanish-America (3)** Repeatable to 9 credits if content differs. A study of the most important works and authors of both movements in Spain and Spanish-America.

**SPAN 480 Spanish-American Essay (3)** A study of the socio-political contents and aesthetic qualities of representative works from the colonial to the contemporary period.

**SPAN 481 Spanish American Essay (3)** A study of the socio-political contents and aesthetic qualities of representative works from the colonial to the contemporary period, with emphasis on the essay of the twentieth century.

**SPAN 488 Spanish-American Fiction (3)** Representative novels and or short stories from the Wars of Independence to the present or close analysis of major contemporary works. Subject will be announced each time course is offered.

**SPAN 489 Spanish-American Fiction (3)** Representative novels and or short stories from the Wars of Independence to the present or close analysis of major contemporary works. Subject will be announced each time course is offered.

**SPAN 491 Honors Reading Course: Poetry (3)** Supervised reading to be taken by students admitted to the honors program or upon consultation with the instructor.

**SPAN 492 Honors Reading Course: Novel (3)** Supervised reading to be taken by students admitted to the honors program or upon consultation with the instructor.

**SPAN 493 Honors Reading Course: Drama (3)** Supervised reading to be taken by students admitted to the honors program or upon consultation with the instructor.

**SPAN 496 Honors Seminar (3)** Prerequisite: Open to honors students only; permission of department. Required of all students in the honors program. Other students will be admitted on special recommendation. Discussion of a central theme with related investigation by students. Conducted in Spanish.

**SPAN 498 Spanish-American Poetry (3)** Main trends, authors and works from the conquest to Ruben Dano.

## SPCH — Speech

**SPCH 100 Basic Principles of Speech Communication (3)** Credit will be granted for only one of the following: SPCH 100 or SPCH 107. Prerequisite: for advanced speech courses. A study of oral communication principles, including verbal and nonverbal language, listening, group dynamics, and public speaking. Emphasis in this course is upon the application of these principles to contemporary problems and upon the preparation of different types of oral discourse.

**SPCH 107 Technical Speech Communication (3)** Credit will be granted for only one of the following: SPCH 100 or SPCH 107. A study of oral communication as it is part of technical fields. Emphasis in this course is on the principles and techniques of interviewing, group discussion, listening, and informative and persuasive briefings and speeches.

**SPCH 125 Introduction to Interpersonal Communication (3)** Concepts of interpersonal communication including perception, language and meaning, nonverbal communication, listening and feedback.

**SPCH 170 Foundations of Listening (3)** Role, process, and levels of listening behavior and the development of listening skills.

**SPCH 200 Advanced Public Speaking (3)** Prerequisite: SPCH 100 or SPCH 107 or permission of department. Rhetorical principles and models of speech composition in conjunction with the preparation and presentation of specific forms of public speaking.

**SPCH 220 Small Group Discussion (3)** Principles, methods and types of interaction occurring in small groups with an emphasis on group discussion and decision-making.

**SPCH 222 Interviewing (3)** Prerequisite: permission of department. Speech principles and practices based on recognized types of interviews, giving special attention to behavioral objectives and communication variables involved in the process of interviewing.

**SPCH 230 Argumentation and Debate (3)** A study of the fundamental principles of reasoning, analysis, and evidence preparation of debate briefs and presentation of standard academic debate.

**SPCH 250 Introduction to Speech Communication Inquiry (3)** An introduction to the field of speech communication. Definitions, models, and contexts of communication, rhetorical theory and rhetorical criticism of discourse.

**SPCH 324 Communication and Gender (3)** The creation of images of male and female, and masculine and feminine, through communication, the differences in male and female communication behaviors and styles, and the implications of those images and styles for male-female transactions.

**SPCH 330 Argumentation in Society (3)** Contemporary theories of argument with special emphasis on the role of argument in dispute resolution and social influence.

**SPCH 340 Oral Interpretation (3)** Examination of ways that performance studies can be used to make critical responses to forms of literature.

**SPCH 350 Foundations of Communication Theory (3)** Theories of human communication including intrapersonal, interpersonal, language behavior, nonverbal communication, small group communication and mass media.

**SPCH 360 The Rhetoric of Black America (3)** An historical-critical survey of the rhetoric of Black Americans from the colonial period to the present.

**SPCH 383 Urban Communication (3)** A study of communication variations in the urban setting with emphasis on communication problems encountered in ethnic relations. Strategies for improving communication.

**SPCH 399 Honors Thesis (3)** Prerequisite: permission of department.

**SPCH 400 Research Methods in Speech Communication (3)** Prerequisites: SPCH 250 and an introductory course in statistics. Philosophy of scientific method, role of theory, research ethics, empirical research methods (measurement, sampling, design, analysis).

**SPCH 401 Foundations of Rhetoric (3)** Prerequisite: SPCH 250. Principles and approaches to the theory, criticism, and historical understanding of rhetorical discourse.

**SPCH 402 Communication Theory and Process (3)** Recommended: SPCH 250. Philosophical and conceptual analysis of speech communication theories.

**SPCH 420 Theories of Group Communication (3)** Prerequisite: SPCH 400 or permission of department. Current theory, research and techniques regarding small group process. Group dynamics, leadership and decision-making.

**SPCH 423 Communication Processes in Conferences (3)** Prerequisite: one course in speech communication or permission of department. Group participation in conferences, methods of problem solving, semantic aspects of language, and the function of conferences in business, industry and government settings.

**SPCH 424 Communication in Complex Organizations (3)** Prerequisite: SPCH 400 or permission of department. Structure and function of communication within organizations; organizational climate and culture, information flow, networks and role relationships.

**SPCH 435 Theories of Interpersonal Communication (3)** Prerequisite: SPCH 400 or permission of department. Major theoretical approaches and research trends in the study of interpersonal communication.

**SPCH 450 Classical and Medieval Rhetorical Theory (3)** Prerequisite: SPCH 401 or permission of department. A systematic inquiry into the rhetorical theory of the classical and medieval periods. Aristotle, Cicero, Quintilian, Martianus Capella, Aurelius Augustine, Alberic

of Monto Cassino, Geoffrey of Vinsauf, and Robert of Basevorn.

**SPCH 451 Renaissance and Modern Rhetorical Theory (3)** Prerequisite: SPCH 450 or permission of department. Survey of rhetorical theory in the renaissance and modern periods— especially in Britain. Wilson, Sherry, Rainolde, Ramus, Bacon, Campbell, Blair, and Whately.

**SPCH 453 Rhetorical Foundations of American Socio-Political Life (3)** Rhetorical potential of language forms and strategic discourse to create, perpetuate, and alter patterns of political and cultural behavior. The influence of historical and contemporary American political and cultural discourse on American society.

**SPCH 455 Speechwriting (3)** Prerequisite: SPCH 401 or permission of department. Rhetorical principles of speech composition through study of model speeches and through a practicum in speech writing. Emphasis on the application of research in speech writing to various forms and styles of speeches.

**SPCH 460 American Public Address 1635-1900 (3)** Prerequisite: SPCH 401 or permission of department. Rhetorical development of major historical movements and influential speakers from 1635-1900. Emphasis on religious movements, the American Revolution, rhetoric leading up to the Civil War, and the rhetoric of the imperialist and populist movements.

**SPCH 461 American Public Address in the 20th Century (3)** Prerequisite: SPCH 401 or permission of department. Rhetorical movements and influential speakers from 1900 to the present. Focus on the themes and rhetorical strategies that characterize contemporary rhetorical discourse.

**SPCH 462 British Public Address (3)** Prerequisite: SPCH 401 or permission of department. A biographical, textual and critical-rhetorical study of select British speakers and their influence.

**SPCH 470 Theories of Listening (3)** Listening process with emphasis on functional analysis of listening behavior.

**SPCH 471 Public Communication Campaigns (3)** Prerequisite: SPCH 200 or permission of department. Diffusion theory and its implications for public communication campaigns.

**SPCH 472 Theories of Nonverbal Communication (3)** Prerequisite: SPCH 400 or permission of department. Nonverbal communication in human interaction theory and research on proxemics, kinesics and paralanguage as expression of relationship, affect and orientation within and across cultures.

**SPCH 475 Theories of Persuasion (3)** Prerequisite: SPCH 400 or permission of department. Bases of persuasion with emphasis on recent experimental developments in persuasion.

**SPCH 476 Theories of Language and Communication (3)** A theoretical investigation of speech as significant behavior. Language, linguistic knowledge, meaning, intention, and understanding, as they relate to communication and communication competence.

**SPCH 477 Discourse Analysis (3)** Concepts of textual and discourse analysis applied to speech situations.

**SPCH 478 Speech Communication Colloquium (1)** Repeatable to 4 credits. Current trends and issues in the field of speech communication, stressing recent research methods. Recommended for senior and graduate student majors and minors in speech communication.

**SPCH 482 Intercultural Communication (3)** Prerequisite: SPCH 400 or permission of department. The major variables of communication in an intercultural context: cultural, racial and national differences; stereotypes; values; cultural assumptions; and verbal and nonverbal channels.

**SPCH 488 Speech Communication Internship (1-3)** Prerequisites: GPA 2.5 or above; 56 semester hours or more; 12 semester hours or more in SPCH, including SPCH 250, SPCH 400, SPCH 401; and permission of department. Semester hours earned in SPCH 488 do not satisfy SPCH major requirements. Repeatable to 6 credits if content differs. Practical career experience with a speech communication professional.

**SPCH 489 Topical Research (1-3)** Prerequisite: permission of department. Repeatable to 6 credits. Individualized research projects conducted with a faculty sponsor.

**SPCH 498 Seminar (3)** Prerequisite: permission of instructor. Senior standing. Present-day speech research.

## STAT — Statistics and Probability

**STAT 100 Elementary Statistics and Probability (3)** Prerequisite: MATH 110 or exemption from MATH 110 by a satisfactory score on a departmental placement examination. Not open to students who have completed MATH 111 or any MATH or STAT course with a prerequisite of MATH 141. Events, probability, combinations, independence. Binomial probabilities, confidence limits. Random variables, expected values, median, variance. Tests based on ranks. Law of large numbers, normal approximation. Estimates of mean, variance and proportion. Tests of statistical hypotheses, comparing treatments, matched pairs, chi squared.

**STAT 400 Applied Probability and Statistics I (3)** Prerequisite: MATH 141. Random variables, standard distributions, moments, law of large numbers and central limit theorem. Sampling methods, estimation of parameters, testing of hypotheses. (Not acceptable toward graduate degrees in STAT, MAPL or MATH.)

**STAT 401 Applied Probability and Statistics II (3)** Prerequisite: STAT 400. Point estimation—unbiased and consistent estimators. Interval estimation. Minimum variance and maximum likelihood estimators. Testing of hypotheses. Regression, correlation and analysis of variance. Sampling distributions. Elements of non-parametric methods. (Not acceptable toward graduate degrees in STAT, MAPL, or MATH.)

**STAT 410 Introduction to Probability Theory (3)** Prerequisite: MATH 240; and MATH 241. Probability and its properties. Random variables and distribution functions in one and several dimensions. Moments. Characteristic functions. Limit theorems.

**STAT 411 Introduction to Stochastic Processes (3)** Prerequisite: STAT 400. Elementary stochastic processes. Renewal process, random walks, branching process, discrete Markov chains, first passage times, Markov chains with a continuous parameter, birth and death processes. Stationary processes.

**STAT 420 Introduction to Statistics (3)** Prerequisite: STAT 410 or equivalent. Point estimation, sufficiency, completeness, Cramer-Rao inequality, maximum likelihood. Confidence intervals for parameters of normal distribution. Hypotheses testing, most powerful tests, likelihood ratio tests. Chi-squared tests, analysis of variance, regression, correlation. Nonparametric methods.

**STAT 440 Sampling Theory (3)** Prerequisite: STAT 401 or STAT 420. Simple random sampling. Sampling for proportions. Estimation of sample size. Sampling with varying probabilities of sampling. Sampling: stratified, systematic, cluster, double, sequential, incomplete.

**STAT 450 Regression and Analysis of Variance (3)** Prerequisite: STAT 401 or STAT 420. One, two, three and four-way layouts in analysis of variance, fixed effects models, linear regression in several variables, Gauss-Markov Theorem, multiple regression analysis, experimental designs.

**STAT 464 Introduction to Biostatistics (3)** Prerequisite: One semester of calculus, 56 semester hours. Junior standing. Probabilistic models. Sampling. Some applications of probability in genetics. Experimental designs. Estimation of effects of treatments. Comparative experiments. Fisher-Irwin test, Wilcoxon tests for paired comparisons. Not acceptable for credit towards degrees in mathematics or statistics.

**STAT 498 Selected Topics in Statistics (1-6)** Prerequisite: permission of department. Repeatable to 16 credits. Topics of special interest to advanced undergraduate students will be offered occasionally under the general guidance of the MATH STAT major committee. Students register for reading in statistics under this number.

## TEXT — Textiles

**TEXT 105 Introduction to Textiles (3)** An introduction to textile consumer products; their structure and

properties, with emphasis on the structure of apparel fabrics.

**TEXT 205 Textile Materials and Performance (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: TEXT 105. Recommended: prior or concurrent registration in CHEM 103. Credit will be granted for only one of the following: TEXT 150 or TEXT 205. Formerly TEXT 150. Analysis of the structural components of consumer textile materials with emphasis on yarns, fibers, dyes and finishes as they relate to textile performance in consumer use.

**TEXT 221 Apparel I (3)** Two hours of lecture and two hours of laboratory per week. A study of the fundamental principles and processes of pattern design and apparel construction. The relation of commercial patterns and construction techniques to apparel design problems.

**TEXT 222 Apparel II (3)** Prerequisite: TEXT 221. Apparel design through the flat pattern method. Development of portfolios as well as full scale fashion design projects from original patterns. Emphasis on successful integration of pattern design with construction processes in contemporary fabrics.

**TEXT 235 Computer Applications in Textiles (3)** Two hours of lecture and two hours of laboratory per week. For TEXT majors only. Background and introduction to the use of personal computers in textiles. Needs of higher level courses utilizing computers in instruction will be addressed.

**TEXT 298 Special Topics (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Topics of special interest to lower division students under the guidance of department faculty.

**TEXT 300 Professional Development (1)** A series of lectures focused on career options, career preparation and professional development for majors in textiles and consumer economics.

**TEXT 305 Textile Materials: Evaluation and Characterization (3)** Two hours of lecture and two hours of laboratory per week. Prerequisite: TEXT 205. An investigation of the behavior of textile materials in relation to environmental factors and conditions of service influencing performance, comfort and aesthetics. Laboratory experience provides an opportunity to explore a variety of textile materials and methods of evaluation.

**TEXT 345 History of Costume I (3)** The development of ancient and Non-Western forms of dress, including Greek, Roman, Early European, Middle Eastern, Far Eastern and African costume. Emphasis on clothing as an expression of culture and as an indicator of cultural change.

**TEXT 347 History of Costume II (3)** The development of European and American dress from the Renaissance to the present, relating the history of costume to changing technology, social attitudes and trends in the popular and fine arts.

**TEXT 355 Textile Furnishings (3)** Prerequisite: TEXT 205. The performance of textile furnishings, including both the residential and contract-commercial markets. The selection, material properties, specifications, use and care of textile furnishings. Carpet and floor coverings, upholstered furniture, draperies and window coverings, wall coverings, bedding and mattresses, and domestic textiles.

**TEXT 363 History of Textiles (3)** A study of historic and contemporary fibers and fabrics. The analysis of designs and techniques of decorating fabrics and the relationship of textiles to the aesthetic and developmental cultures of society.

**TEXT 365 Fashion Merchandising (3)** Prerequisite: permission of department. Analysis of fashion trends and their effect on retail merchandising. Emphasis on the buying and selling process, including the calculations necessary to plan and estimate seasonal purchases, mark-ups, turnover, open-to-buy, markdowns and stocksales ratios.

**TEXT 375 Economics of the Textile and Apparel Industry (3)** Prerequisites: ECON 201; and ECON 203. Trends in the production and consumption of textiles and apparel; economic analysis of the textile and apparel industries; factors affecting changes in output, price, location and market structure.

**TEXT 385 Junior Honors Seminar (1)** Junior standing in departmental honors program. Readings, reports and discussion of selected topics.

**TEXT 388 Field Work and Analysis in Textiles (3-12)** Prerequisite: permission of department. For TEXT majors only. Repeatable to 12 credits. Supervised, professional, field work experience in retailing, industry or government. A seminar and a written critique of the field work experience will be required to relate formal academic study to student work experiences. Students must apply a semester in advance.

**TEXT 400 Research Methods (3)** Prerequisite: MATH 110 or MATH 115. Not open to students who have completed CNEC 400 or BMGT 230. Research methodology in textiles and consumer economics, with particular emphasis on the application of statistical concepts and techniques to the analysis of data from the areas of textiles and consumer economics.

**TEXT 420 Apparel Design: Draping (3)** Six hours of laboratory per week. Prerequisites: APDS 101 or ARTT 100; and TEXT 222. Recommended: ARTT 110. Students explore pattern design through draping on the human form. Emphasis is on the interrelationship between material, design and form.

**TEXT 425 Advanced Apparel Design (3)** Six hours of laboratory per week. Prerequisites: APDS 101 or ARTT 100; TEXT 305 and TEXT 222. The integration of apparel design skills and principles in solving problems in apparel production, merchandising, and in clothing for special needs.

**TEXT 430 Portfolio Presentation (3)** Six hours of laboratory per week. Prerequisites: [TEXT 420; and TEXT 425] or permission of department. Senior standing. For TEXT majors only. Problems of apparel design and professional presentation of solutions.

**TEXT 435 Woven Fabric Structures and Design (3)** Two hours of lecture and three hours of laboratory per week. Prerequisite: TEXT 235. Senior standing. For TEXT majors only. Use of computers to study the construction and combination of simple and complex weaves, the structures of standard classes of cloths and the application of color to woven fabrics.

**TEXT 441 Clothing and Human Behavior (3)** Prerequisites: PSYC 100; and SOCY 100. An exploration of socio-psychological approaches to the study of clothing in relation to human behavior. Social and psychological theories will be examined as possible framework for the study and investigation of clothing.

**TEXT 452 Textile Science: Chemical Structures and Properties of Fibers (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: CHEM 104 or permission of department. The chemical structure, properties and reactions of the major classes of natural and man-made fibers. The relationship between molecular structure and physical properties of fibers and fabrics. Laboratory includes chemical identification of fibers, preparation of selected fibers and examination of chemical reactions and properties of fibers.

**TEXT 454 Textile Science: Finishes (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: TEXT 452 or permission of department. A study of the chemical reactions and mechanisms involved in imparting water repellance, crease resistance and crease recovery properties, shrink-resistance, flame resistance, soil-release properties and moth and mildew resistance to textile materials. Properties of the finished material which affect its end-use. The application of finishes, identification of finishes and a study of the properties of finished fabrics.

**TEXT 456 Textile Science: Dyes and Dye Application (3)** Two hours of lecture and four hours of laboratory per week. Prerequisite: TEXT 452 or permission of department. Examination of the principles and techniques of dyeing and printing of textile materials. Properties of the finished products which affect their end-use.

**TEXT 470 Textile and Apparel Marketing (3)** Prerequisite: BMGT 350 or permission of department. Analysis of the production, pricing, distribution, and promotion of fibers, yarns, fabrics and textile products by end use. Identification of target markets and development of marketing strategies. Application of case study method to problems of textile and apparel firms.

**TEXT 488 Senior Honors Thesis (1-4)** For undergraduate students in the departmental honors program only. An independent literary, laboratory or field study, conducted throughout the student's senior year. Student should register in both fall and spring.

**TEXT 498 Special Studies (2-4)** Independent study by an individual student or by a group of students in advanced work not otherwise provided in the department. Students must prepare a description of the study they wish to undertake. The plan must be approved by the faculty directing the study and the department chairman.

## THET — Theatre

**THET 110 Introduction to the Theatre (3)** Introduction to the people of the theatre, actors, directors, designers and backstage personnel. The core and characteristics of a play script, theatrical forms and styles; and theatre history.

**THET 111 Making Theatre: Art and Scholarship (3)** Systematic introduction to the tools and techniques used by theatre practitioners.

**THET 120 Acting I (3)** Prerequisites: THET 110; and THET 111 or permission of department. Basic principles of acting techniques. Exercises structured to develop the student's concentration, imagination, sense and emotional memory. Textual analysis, character analysis and scene study, and the application of these techniques to character portrayal through performance of short scenes.

**THET 170 Stagecraft (3)** Prerequisites: THET 110; and THET 111. A survey of the fundamentals of theatrical productions, with emphasis in the construction of scenery. Practice work on University Theatre and experimental theatre productions.

**THET 185 Makeup (2)** Prerequisite: permission of department. The theory and practice of stage makeup covering character analysis, facial anatomy, application of makeup and period styles in theatrical makeup.

**THET 221 Speech For the Stage (3)** Development of the vocal techniques required for theatrical production including projection, resonance, and character voices. The study and acquisition of the diction of the American stage.

**THET 273 Scenographic Techniques (3)** Prerequisite: THET 170 or permission of department. An analysis of the graphic approaches used in various stages of planning and execution of a setting for the theatre. Study of drafting techniques, presentational conventions, and scene painting techniques unique to the theatre.

**THET 283 Costume Crafts (3)** Study and practical experience in garment construction and related costume crafts as used in theatre costume design. Emphasis on elastic arm, jewelry, hat-making and other related theatre costuming crafts.

**THET 310 The American Theatre (3)** An analysis of the theatre people, plays, events, and social forces which shaped an evolution from the colonial beginnings of artistic dependence on England to the uniquely American theatre of today.

**THET 311 Play Production (3)** A practical study of the various elements and procedures necessary for production of plays for public performance.

**THET 320 Acting II (3)** Prerequisites: THET 120 and THET 221 and permission of department. May be taken concurrently with THET 221. Continuation of THET 120. Emphasis on the blueprinting of character development and portrayal for a full length play.

**THET 330 Play Directing I (3)** Prerequisites: THET 120; and THET 170; and permission of department. A lecture-laboratory course dealing with the techniques of coordination, designing and guiding the production of a script through to performance. Study and practice in stage composition, movement, pacing, script and character analysis, and rehearsal routines. Emphasis on methods of communicating a script to an audience.

**THET 350 American Musical Comedy (3)** The evolution of musical comedy through opera to early American extravaganzas and minstrels to the musicals of the 1920's and 1930's. The development and highlights of the form since 1940. The function and form of the libretto, music and lyrics, and the roles of the creative



personnel of a musical production. Workshops in performance skills

**THET 372 Stage Property Design (3)** Prerequisite: permission of department. Materials and techniques for the design and execution of stage properties with special emphasis on period research, special materials, and special effects

**THET 375 Scenic Design I (3)** Prerequisite: permission of department. Design-oriented theatre majors are expected to also have credit for THET 273 A study of design theory and style Methods and techniques of coordination on all elements of scenic design for theatre.

**THET 415 Playwriting (3)** The writing of a one-act and a full-length play

**THET 420 Acting III (3)** Prerequisites: THET 120; and THET 221; and THET 320; and permission of department. Emphasis on the philosophical basis and techniques necessary for acting modern realistic drama and acting period style dramas. In-depth study of Stanislavski System and application of those techniques toward performance in scenes. Examination and application of the techniques necessary for the preparation and performance of an acting score for performing Shakespeare. Improvisation Required attendance at live theatre productions.

**THET 421 Movement for Actors (3)** Prerequisite: permission of department Studies and intensive exercises to aid the acting student in understanding physical and emotional energy flow, body placement, alignment and body image. The physical aspects of character.

**THET 423 Actor's Studio I(1-3)** Prerequisite: permission of department Repeatable to 6 credits. Participation in dramatic roles executed under faculty supervision in the department's productions. Eligible students must make commitments and plan performances with course instructor during pre-registration.

**THET 430 Play Directing II (3)** Prerequisite: THET 330 or permission of department Discussion of the preparation procedures and rehearsal practices necessary for the presentation of a variety of theatrical styles and forms. Emphasis on understanding the relationship between the director, the actor, the script and the audience. A series of student directed scenes supplemented by attendance at theatre productions.

**THET 451 Musical Comedy Workshop(3)** Prerequisite: permission of department. Development of the ability to move, act and express through the media of lyric and music.

**THET 460 Theatre Management I (3)** Prerequisites: THET 110; and THET 111 or permission of department. The practical tools of theatre management: production philosophies, selecting and balancing a season, tickets and box office procedures, budgeting, graphic arts production, advertising, publicity and other promotional devices.

**THET 461 Theatre Management II (3)** Prerequisite: THET 460 or permission of department. Case studies, discussions, lectures and projects concerning advanced theatre management decision making and administration, including such areas as personnel relations, contract negotiations, theatrical unions, fund raising, touring, audience development and public relations.

**THET 471 Scenic Design II (3)** Prerequisite: THET 170, THET 273, THET 375, or permission of department. Study of period styles and techniques in scenic design. Emphasis on individual projects and multi-use theatres.

**THET 473 Scene Painting (3)** Prerequisite: permission of department. Scene painting techniques and materials. Three-dimensional realistic scenery and non-realistic two-dimensional backdrops. Individual projects.

**THET 474 Stage Management (3)** Prerequisite: THET 170 or permission of department. Intensive practical study of the techniques and procedures for stage management. Independent projects dealing with the production of shows.

**THET 475 Stage Decor (3)** Prerequisite: THET 170 or permission of department. A study of environmental decor, ornaments and properties through the ages and their practical reproduction for a theatrical production.

**THET 476 Lighting Design I (3)** Prerequisites: THET 170, and permission of department Recommended THET 273 A study of the theories of electrification, instruments, design, color, and control for stage and television. Brief survey of sound for the theatre Practical work on productions

**THET 477 Lighting Design II (3)** Prerequisites: THET 476; and permission of department. Study of history and theory of lighting design. Design exercises in proscenium, in-the-round, thrust, outdoor pageant, circus, concert, spectacle, dance and television lighting A survey of lighting companies and equipment and architectural lighting

**THET 479 Theater Workshop (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Supervised participation in the areas of assistant directing, scenic design and properties, costuming or make-up, lighting, technical theatre, stage management, sound.

**THET 480 Stage Costume History and Design I (3)** Basic principles of theatre costume design and introduction to rendering skills. Emphasis on development of design conception, unity, character statement, basic clothing design and period style adaptation.

**THET 481 Stage Costume History and Design II (3)** One hour of lecture and six hours of laboratory per week. Prerequisites: THET 480, and permission of department. An advanced study of costume design and interpretation leading to understanding and facility in design of stylized productions. Emphasis on design for musical comedy, dance theatre, opera and various non-traditional forms of theatre production.

**THET 486 Stage Costume Construction I (3)** Study and practical experience in garment construction and related costume crafts as used in theatre costume design. Flat pattern development, textiles, theatrical sewing techniques and organization of the costume construction process.

**THET 487 Stage Costume Construction II (3)** Prerequisite: permission of department. Study and practical experience in the construction of stage costumes, props and accessories. Pattern development by draping, millinery, corsets, masks, jewelry, armor and period footwear.

**THET 490 History of the Theatre I (3)** Evolution of the theatre from primitive origins, through the early Renaissance with emphasis on playwrights and plays, theatre architecture and decor, and significant personalities. Extensive use of graphic material, play reading, related theatre-going.

**THET 491 History of the Theatre II (3)** A continuation of THET 490 beginning with the 16th century and progressing into the 20th, examining the late Renaissance, Elizabethan, Restoration, 17th to 19th century European, and early American theatres. Emphasis on dramatic forms and styles, theatre architecture and decor, and significant personalities. Extensive use of graphic material, play reading, related theatre-going.

**THET 495 History of Theatrical Theory and Criticism (3)** The development of theatrical theory and criticism from the Greeks to the modern theorists. The philosophical basis of theatre as an art form. Important theorists and the practical application of their theories in either play scripts or theatrical productions. Required attendance at selected live theatre productions.

**THET 499 Independent Study (1-3)** Prerequisite: permission of department. Repeatable to 6 credits. An independent study course in which each student completes an assigned major theatre project under close faculty supervision. Projects may culminate with term papers, scenic or costume designs, or a stage production.

## UMEI — Maryland English Institute

**UMEI001 English as a Foreign Language: Beginning (0)** Intensive course for the non-native speaker of English who has little or no previous knowledge of English. Focus on the rapid acquisition of the basic features of English grammar and pronunciation and on speaking and understanding American English; reading and writing appropriate to the level will be included. Special fee required for this course. This course does not carry credit towards any degree at the University and does not count in the retention plan.

**UMEI 002 English as a Foreign Language: Intermediate I (0)** 25 hours of laboratory per week. Intensive course for the non-native speaker of English who has had some previous instruction in English. Emphasis on improving listening and speaking skills, on mastering intermediate grammatical structures, and on expanding vocabulary. Includes practice in Reading and writing appropriate to the level. Special fee required for this course. This course does not carry credit towards any degree at the University and does not count in the retention plan.

**UMEI 003 English as a Foreign Language: Intermediate II (0)** 25 hours of laboratory per week. Intensive course for the non-native speaker of English who has mastered the essential structures of English grammar. Emphasis on improving communicative skills for a wide range of linguistic situations, on rapid expansion of vocabulary, and on improving reading comprehension and basic writing skills. Special fee required for this course. This course does not carry credit towards any degree at the University and does not count in the retention plan.

**UMEI 004 English as a Foreign Language: intermediate III (0)** 25 hours of laboratory per week. Intensive course for the non-native speaker of English who has a good command of the basic features of spoken and written English. Emphasis on refining speaking and listening skills, on improving reading speed and comprehension of academic texts, and on developing writing skills for academic courses. Special fee required for this course. This course does not carry credit towards any degree at the University and does not count in the retention plan.

**UMEI 005 Advanced English as a Foreign Language (6)** 12 hours of laboratory per week. Semi-intensive course for the nearly proficient non-native speaker of English needing additional academic instruction prior to undertaking full-time academic study. Speaking and listening skills; improvement of reading speed and comprehension; and development of writing skills with special emphasis on research skills and use of the University library. Special fee required for this course. This course does not carry credit towards any degree at the University and does not count in the retention plan.

**UMEI 006 English Pronunciation (1)** Individualized class for the non-native speaker of English. Diagnosis of individual pronunciation problems. Practice in the correct pronunciation of English sounds and improvement of ability to speak English with proper stress and intonation patterns. Special fee required for this course. This course does not carry credit towards any degree at the University and does not count in the retention plan.

**UMEI 008 Advanced Oral Communication Skills (1)** Four hours of laboratory per week. Prerequisite: permission of department. For advanced non-native speakers of English. Practice in speaking skills relevant to the academic situation. Improvement of speaking skills for various classroom activities such as participating in discussions, making appointments with professors, asking for information and presenting oral reports. Special fee required for this course. This course does not carry credit towards any degree at the University and does not count in the retention plan.

## URBS — Institute for Urban Studies

**URBS 100 Introduction to Urban Studies (3)** Contemporary urban patterns, trends and problems. Major urban issues, such as population, the economy, and use, housing, neighborhood development, fiscal and unemployment crises, and social, environmental, and political controversies of metropolitan areas. Urbanization patterns and policies internationally.

**URBS 210 Behavioral and Social Dimensions of the Urban Community (3)** Urbanism, urbanization, and urban demography; study of the institutional framework of urban areas, including administration, politics, finances, and communications; human services and social issues.

**URBS 220 Environmental and Technological Dimensions of the Urban Community (3)** The impact of environment and technology on urban living. The metropolis as a physical structure, including its housing, land use and geography; on the metropolis as a physical system, including its environment, engineering and utilities; and on public policy issues of technology in the urban areas.

**URBS 350 Quantitative Methods in Urban Studies (3)** Prerequisite: two of URBS 100, URBS 210, or URBS 220; or permission of department. A practical introduction to urban data sources and measurement, basic descriptive statistics, urban data collection, sampling and questionnaire design, field techniques, plan use, introduction to computer use and data presentation.

**URBS 397 Honors Independent Reading (3)** Prerequisite: admission to honors program in URBS or other departments. Directed reading in contemporary urban studies.

**URBS 399 Independent Study in Urban Topics (3)** Prerequisite: permission of instructor or one URBS course. Directed research and study of selected aspects of urban affairs.

**URBS 410 The Development of the American City (3)** The evolution of the American city and American city planning. Ways in which the interests and ideologies of American city planners have shaped and responded to urban development in the U.S.

**URBS 420 Seminar in Urban Literature (3)** Prerequisite: two URBS courses or permission of department. The works of several of the major 20th century writers in urban studies. A comparative analysis of the perspectives of these writers on theoretical and substantive urban issues, is a basis for more advanced study in the theory and process of urbanization.

**URBS 438 Urban Internship (1-6)** Prerequisite: permission of department. Repeatable to 6 credits. Supervised field training in urban-oriented programs. Emphasized areas of interest are (1) neighborhoods and communities, (2) organizations and agencies, (3) specific programs. The student will be assigned to a specific agency or project and will be responsible to that agency. Class meetings, written reports, instructor conferences, and a student's critique of his experience are included.

**URBS 440 City and Regional Economic Development (3)** Prerequisite: URBS 210 and ECON 105, or ECON 201, or ECON 205. Emphasis on urban finance and causes of urban fiscal stress, the spatial patterns of employment and population, urban labor markets, and models of urban and regional growth and decline. Focus on application of economic theory and urban planning techniques to issues of public service delivery, local economic development, and land use planning.

**URBS 450 Problems in Urban Law (3)** Recommended: six credits in URBS courses. A survey of the urban legal environment and special legal problems of urban governments and public interest lawyers. Problems related to planning, zoning, eminent domain and land use controls; consumer protection in central cities; housing codes and multiple dwelling regulation; public accommodations and civil rights ordinances; defending the indigent; and welfare delivery systems.

**URBS 460 Urban and Regional Planning in Developing Countries (3)** The theoretical issues of spatial development from a comparative urbanization perspective and analysis of multiple problems facing cities in developing countries. Current government planning policies and interventions.

**URBS 470 Management and Administration of Metropolitan Areas (3)** Management and administration of local governments in metropolitan areas with emphasis on cities, counties and special districts in urban areas. Urban governmental organizations, management styles and service delivery. Contemporary problems confronting urban local governments.

**URBS 480 Urban Theory (3)** Contemporary theories of the city as a physical and an institutional system. Urban theory as integration of information involving economic, political, and social dimensions of contemporary cities.

**URBS 488 Selected Topics in Urban Studies (1-3)** Prerequisite: permission of department. Repeatable to 6 credits if content differs. Topics of special interest to advanced urban studies students.

**URBS 498 Honors Seminar in Selected Topics (3)** Prerequisite: admission to honors program in URBS or other departments. Repeatable to 6 credits if content differs. Individual reading and research, and group discussion dealing with selected major contemporary urban issues: Philosophy and growth of new towns;

emergent forms of urban policy; federal legislation and the cities, citizen attitudes toward metropolitan government, housing abandonment, rehabilitation, and new construction, the urban future; major world capitals; and urbanization in developing nations.

**URBS 499 Honors Thesis (3-6)** Prerequisite: admissions to honors program in URBS or other departments. Individual reading and research, and the writing of an original paper on an urban topic of the student's choice under the guidance of a faculty member.

## WMST — Women's Studies

**WMST 200 Introduction to Women's Studies: Women and Society (3)** An interdisciplinary study of the status, roles, and experiences of women in society. Sources from a variety of fields such as literature, psychology, history, and anthropology, focusing on the writings of women.

**WMST 250 Introduction to Women's Studies: Women, Art and Culture (3)** An examination of women's creative powers as expressed in selected examples of music, film, art, drama, poetry, fiction, and other literature. Explores women's creativity in relation to families, religion, education, ethnicity, class, sexuality, and within a cultural tradition shaped by women.

**WMST 350 Feminist Education Practicum (3)** Prerequisite: permission of department. Corequisite: WMST 351. Teaching practicum, providing experience in the facilitation of small sections of lower division introductory survey courses.

**WMST 351 Feminist Education Analysis (3)** Prerequisite: permission of department. Corequisite: WMST 350. General application of feminist methodology to teaching and communication skills, teaching strategies, motivation, classroom dynamics and knowledge of students' development and learning styles.

**WMST 400 Theories of Feminism (3)** Prerequisite: WMST 200 or WMST 250. A study of the multiplicity of feminist theories which have been developed to explain women's position in the family, the workplace, and society. Major feminist writings are considered in the context of their historical moment and in the context of the intellectual traditions to which they relate.

**WMST 490 Feminist Reconceptualizations (3)** Prerequisite: WMST 200 or WMST 250; and WMST 400. Focuses on the ways in which feminist thinking not only changes the content of the various disciplines by including woman as subject, but also leads us to alter the questions we ask, the methods we use, and the ways we come to learn, know and teach. Explorations will be centered around a specific integrative theme.

**WMST 498 Special Topics in Women's Studies (1-3)** Prerequisite: WMST 200 or WMST 250 or permission of department. Repeatable to 6 credits.

**WMST 499 Independent Study (1-3)** Prerequisite: Three credits in women's studies courses and permission of department. Research and writing or specific readings on a topic selected by the student and supervised by a faculty member of the Women's Studies Program.

## ZOOL — Zoology

**ZOOL 181 Life in the Oceans (3)** Prerequisite: an introductory course in biological principles. Consideration of major groups of animals and plants in various marine environments and humanity's potential uses and misuses of the ocean. Not accepted for credit towards the zoology major.

**ZOOL 201 Human Anatomy and Physiology I (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: BIOL 105 or equivalent. Anatomy and physiology of the skeletal, muscular, neural, endocrine, and sensory systems. Not accepted as credit toward the zoology major.

**ZOOL 202 Human Anatomy and Physiology II (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: ZOOL 201 or permission of department. Anatomy and physiology of the cardiovascular, respiratory, immune, digestive, urinary and reproductive systems. Not accepted as credit toward the zoology major.

**ZOOL 210 Animal Diversity (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: BIOL 106. Comparative study of the diversity of animal

form and function, including analysis of structures and mechanisms which different organisms utilize to cope with similar requirements of life.

**ZOOL 211 Cell Biology and Physiology (4)** Three hours of lecture and three hours of laboratory per week. Prerequisites: BIOL 105, and CHEM 103. Biochemical and physiological mechanisms underlying cellular function. Properties of cells which make life possible and mechanisms by which cells provide energy, reproduce, and regulate and integrate with each other and their environment.

**ZOOL 212 Ecology, Evolution and Behavior (4)** Three hours of lecture and three hours of laboratory per week. Fundamental principles underlying the diversity of ecological, evolutionary, and behavioral relationships observed in nature, including the mechanisms of natural selection leading to adaptation of organisms to the environment.

**ZOOL 213 Genetics (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: BIOL 105; CHEM 113. Credit will be granted for only one of the following: ZOOL 213, ANSC 201, BOTN 414, HORT 274. Composition, transmission, variation, function, and regulated expression of genetic material.

**ZOOL 299 Supplemental Study in Zoology (1-3)** Prerequisite: permission of department. Repeatable to 6 credits. Research or special study to complement a course taken previously which is not fully equivalent to current departmental requirements. Credit according to work done.

**ZOOL 301 Biological Issues and Scientific Evidence (3)** Prerequisite: BIOL 105. The process of scientific inquiry in biology, using as models two areas in which scientific data of social importance is subject to widely differing interpretations: (1) evolution vs. creationism; (2) measurement of human intelligence. The provisional nature of scientific truth. Evolution and creation-science viewpoints. Intelligence testing is viewed from a historical perspective of its origins in 19th century craniometry and the subsequent development of intelligence tests.

**ZOOL 308 Honors Seminar (1)** Prerequisite: participation in honors program. Repeatable to 4 credits. Guided discussion of topics of current interest.

**ZOOL 309 Honors Independent Study (1-4)** Prerequisite: participation in the honors program. Repeatable to 12 credits. Study of classical material by way of guided independent study and laboratory experiments.

**ZOOL 312 The Biology of Conservation and Extinction (3)** Prerequisite: BIOL 106. Ecology, evolutionary biology and paleontology will be applied to the study of conservation, species invasions and extinction.

**ZOOL 318 Honors Research (1-2)** Prerequisite: participation in the honors program. Repeatable to 8 credits. A laboratory research problem, required each semester during honors participation and culminating in a honors thesis.

**ZOOL 319 Special Problems in Zoology (1-2)** Prerequisite: a major in zoology or biological sciences, a minimum of 3.0 GPA in the biological sciences. Repeatable to 8 credits if content differs. Research or integrated reading in zoology.

**ZOOL 323 Brain and Behavior (3)** Prerequisite: ZOOL 201 or equivalent introduction to general physiology. Credit will be granted for only one of the following: ZOOL 323 or PSYC 402. Current knowledge of the structural and functional basis of human behavior including: how the brain monitors and maneuvers the body through its environment, how the brain integrates bodily functions, how it is changed with experience, the characteristics and consequences of brain rhythms and the cellular basis of brain activity.

**ZOOL 326 Biology of Reproduction (3)** Prerequisite: BIOL 105 or permission of department. The biology of the reproductive system with emphasis on mammals and, in particular, on human reproduction. Hormone actions, sperm production, ovulation, sexual differentiation, sexual behavior, contraception, pregnancy, lactation, maternal behavior and menopause.

**ZOOL 328 Selected Topics in Zoology (1-4)** Repeatable to 6 credits if content differs. Lectures, seminars, mini-courses and other special instruction in various zoological subjects.

**ZOOL 346 Human Genetics and Society (3)** Prerequisite: two college courses in the natural sciences and/or mathematics. For non-biological/science students seeking an understanding of genetics, especially as it relates to humans and the decisions they may have to make as individuals and members of society. Study of genes, their mutation and transmission, and the effect of recent discoveries on present and future generations. Not accepted for credit towards the zoology or general biological sciences and general biological sciences majors.

**ZOOL 368 Laboratory Techniques in Behavioral Endocrinology (2)** One hour of lecture and six hours of laboratory per week. Prerequisite: permission of department. Repeatable to 4 credits. Techniques for analyzing physiological bases of behavior under lab and semi-natural conditions including handling and rearing of animals, surgical techniques and direct, video, and computer-assisted behavioral observations.

**ZOOL 381 Natural History of the Chesapeake Bay (3)** Three lectures per week and at least one Saturday field trip. Prerequisite: a course in biological sciences or permission of department. Consideration of the major groups of organisms associated with the Chesapeake Bay and current issues that determine human's present and future uses for the Chesapeake and its biota. Not accepted as credit for the zoology major.

**ZOOL 390 Comparative Vertebrate Morphology (4)** Two hours of lecture and six hours of laboratory per week. Prerequisites: BIOL 106 or equivalent; and ZOOL 210. A comparative study of adaptive modifications in vertebrate structure and function as a result of natural selection.

**ZOOL 411 Cell Biology (4)** Three hours of lecture and four hours of laboratory per week. Prerequisites: [ZOOL 211; and CHEM 233] or permission of department. The molecular and biochemical basis of cell structure and of integrated functions of the subcellular organelles, with an emphasis on eukaryotes.

**ZOOL 413 Biophysics (3)** Prerequisite: ZOOL 211; and [PHYS 122 or PHYS 142]; and [MATH 140 or MATH 220]. An introduction to the ideas and methods used in biophysics to analyze the functional components of cells and tissues as physical-chemical systems.

**ZOOL 415 Cell Differentiation (3)** Prerequisite: ZOOL 211 or ZOOL 213. The processes by which cells become differentiated from each other during development, with an emphasis on the biochemical and ultrastructural mechanisms of these changes.

**ZOOL 416 Biology of Cancer (3)** Prerequisites: ZOOL 211; and [MICB 200 or a course in biochemistry]. Causes and consequences of neoplastic transformations at the biochemical and cellular levels.

**ZOOL 421 Neurophysiology (4)** Three hours of lecture and three hours of laboratory per week. Prerequisites: ZOOL 211; and CHEM 233; and PHYS 122. The physiology of nerves, muscles, and sensory receptors and aspects of central nervous system physiology.

**ZOOL 422 Vertebrate Physiology (4)** Three hours of lecture and three hours of laboratory per week. Prerequisite: ZOOL 211 and one semester of organic chemistry or permission of department. A study of the cardiovascular, hemopoietic, gastrointestinal, renal and respiratory systems. Chemical and endocrine regulation of physiological functions in higher vertebrates with emphasis on mammals.

**ZOOL 425 Computer Simulation and Modeling of Biological Systems (4)** Prerequisite: permission of department. Students will be expected to have a 300-400 level majors course in BCHM, BOTN, ENTM, MICB

or ZOOL, and one semester of calculus. No prior knowledge of computers or programming required. The use of computers as creative research tools in biology to study compartmental analysis, biological oscillations, chaos, fractals, and cellular automata.

**ZOOL 426 General Endocrinology (3)** Prerequisites: ZOOL 211; and CHEM 233; and CHEM 243. Functions and the functioning of the endocrine glands of animals with special reference to the vertebrates.

**ZOOL 430 Developmental Biology (3)** Prerequisite: ZOOL 211 or ZOOL 213. Structural, functional and regulatory events and mechanisms that operate during development to produce an integrated, multicellular organism composed of a multitude of differentiated cell types.

**ZOOL 431 Advanced Developmental Biology (3)** Prerequisite: ZOOL 211; and ZOOL 213, and an upper division course in cell biology or developmental biology. A study of the progression of selected problems in developmental biology from their origins in classical experimental embryology to their current status in modern developmental biology, through analysis of original articles and experimental results.

**ZOOL 440 Evolution (3)** Prerequisites: ZOOL 210, and ZOOL 213; and BIOL 106. A consideration of current thought in regard to the evolution of living organisms.

**ZOOL 444 Advanced Evolutionary Biology (3)** Prerequisite: ZOOL 440 or equivalent, MATH 140 or MATH 220. The nature and consequences of organic evolution in relation to present day geography and geologic time. Topics covered will include organic diversity gradients in space and time, rates of evolution, co-evolution and extinctions. Particular emphasis will be placed in the synthesis of information and on construction and evaluation of hypotheses.

**ZOOL 446 Molecular Genetics (3)** Prerequisites: a course in genetics (e.g. ZOOL 213) and CHEM 233. The molecular basis of gene structure and function. Regulation of differential gene expression.

**ZOOL 452 Recombinant DNA (3)** Prerequisite: ZOOL 211 or ZOOL 213 or MICB 380. An advanced course presenting the tools and procedures of genetic engineering. Theory and practical applications of recombinant DNA techniques to understanding eukaryotic gene structure and expression.

**ZOOL 455 General Immunology (3)** Prerequisites: ZOOL 211; ZOOL 213. Credit will be granted for only one of the following: ZOOL 455 and MICB 450. Basic principles of immunobiology, immunochemistry and immunogenetics with emphasis on the cellular and molecular basis of the immune response: cells of the immune system and their development, interactions and physiologic environment; the antibody response and interaction with antigen; cell mediated immunity; genetic regulation of the immune response; and the relationship of the immune system to disease.

**ZOOL 460 Ethology (3)** Prerequisites: BIOL 106; and ZOOL 213. Study of animal behavior with emphasis on its evolution and function. Topics include: communication, foraging, cooperation and mate selection.

**ZOOL 461 Ethology Laboratory (3)** One hour of lecture and six hours of laboratory per week. Pre- or corequisite: ZOOL 460 or equivalent. Training in the description of behavior, methods of quantification and experimentation, and the mathematical treatment of behavioral data.

**ZOOL 465 Behavioral Ecology (4)** Three hours of lecture and two hours of laboratory per week. Prerequisites: [BIOL 106 or ZOOL 212]; and ZOOL 213. Natural and social environments' effect on individual behavior. The influence of evolution on patterns of individual adaptation. Use of the evolutionary paradigm to investigate specific problems in animal and human behavior.

**ZOOL 468 Experimental Behavioral Endocrinology (2)** One hour of lecture and six hours of laboratory per week. Prerequisite: ZOOL 368 or permission of department. Repeatable to 4 credits.

**ZOOL 470 Advanced Animal Ecology (2)** Prerequisites: BIOL 106; and MATH 220; and a course in statistics. Theory of population growth and regulation, life tables and population projection theory of competition and predation, diversity analysis and island geography. Emphasis on current literature and research in ecological theory.

**ZOOL 471 Laboratory and Field Ecology (2)** Four hours of laboratory and field work per week. Pre- or corequisite: ZOOL 470. Laboratory and field exercises involving problems of contemporary ecological interest, population density regulation, community structure, and spatial pattern diversity in both terrestrial and aquatic systems. Topics coordinated with those presented in ZOOL 470.

**ZOOL 472 Protozoology (4)** Prerequisite: one year of biology. Two hours of lecture and six hours of laboratory including field trips per week. Basic conceptual treatment of free-living and parasitic protozoan functional morphology, life history, and systematics. The laboratory will stress observations of protozoa, living and stained, collected from diverse habits.

**ZOOL 473 Marine Ecology (3)** Prerequisites: a course in invertebrate zoology or animal diversity, and ZOOL 470, or permission of department. Courses in evolution and animal behavior are strongly recommended. A detailed analysis of the evolutionary ecology of marine invertebrates; emphasis on testing of theories and on current literature.

**ZOOL 477 Symbiology (3)** Prerequisite: ZOOL 210 or ZOOL 212. An introduction to basic concepts of symbiosis, with emphasis on coevolution between symbiotic organisms. Adaptations for establishment and maintenance of mutualistic, commensal and parasitic associations. Emphasis on current literature and a research perspective.

**ZOOL 480 Aquatic Biology (4)** Two hours of lecture and six hours of laboratory per week. Prerequisites: BIOL 106; and ZOOL 210. Relationships of freshwater and estuarine biotic communities to their environment.

**ZOOL 481 The Biology of Marine and Estuarine Invertebrates (4)** Two hours of lecture and six hours of laboratory per week. Prerequisite: one year of zoology including ZOOL 210 or equivalent. A study of the taxonomy and functional morphology of the invertebrates, exclusive of insects. Emphasis on the study of living material.

**ZOOL 482 Marine Vertebrate Zoology (4)** Two hours of lecture and six hours of laboratory per week. Prerequisite: two hours of zoology including ZOOL 210 and ZOOL 213. A consideration of the evolution, taxonomy, morphology, physiology, behavior and ecology of marine and estuarine protochordates and vertebrates.

**ZOOL 483 Vertebrate Zoology (4)** Two hours of lecture and six hours of laboratory per week. Prerequisite: BIOL 106 or ZOOL 212. The identification, classification, habits, and behavior of vertebrates with emphasis on fresh water, terrestrial and aerial forms, and a consideration of the evolution of living and fossil representatives.

**ZOOL 495 Mammalian Histology (4)** Two hours of lecture and six hours of laboratory per week. Prerequisites: ZOOL 211; and ZOOL 422; or permission of department. A study of the microscopic anatomy, ultrastructure and histophysiology of tissues and organs of mammals.

# UNIVERSITY OF MARYLAND AND COLLEGE PARK ADMINISTRATORS AND FACULTY

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Vice President for Academic Affairs and Provost  
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John W. T. Webb

**Aaron, Henry J.** Professor, Part-time, Economics. B.A., University of California (Los Angeles), 1958; M.A., Harvard University, 1960; Ph.D., 1963.

**Abdelhamid, Mohamed K.** Assistant Professor, Mechanical Engineering. B.Sc., Cairo University, 1974. M.S., Iowa State University, 1979; Ph.D., 1981.

**Abed, Eyed H.** Associate Professor, Electrical Engineering; Associate Professor, Systems Research Center. B.S., Massachusetts Institute of Technology, 1979; M.S., University of California (Berkeley), 1981. Ph.D., 1982.

**Abraham, Katherine** Associate Professor, Economics. B.S., Iowa State University, 1976; Ph.D., Harvard University, 1982.

**Adams, Bruce** Lecturer, part-time, School of Public Affairs. A.B., Princeton University, 1970; J.D., Georgetown University Law Center, 1974.

**Adams, Jeffrey D.** Assistant Professor, Mathematics. B.A., Johns Hopkins University, 1977; Ph.D., Yale University, 1981.

**Adams, John Q., III** Professor, Economics. A.B., Oberlin College, 1960; Ph.D., University of Texas, 1965.

**Adams, Lowell, W.** Instructor, Part-time, Agricultural and Extension Education. B.S., Virginia Polytechnic Institute & State University, 1968; M.S., The Ohio State University, 1973; Ph.D., 1976.

**Adams, William W.** Professor, Mathematics. B.A., University of California (Los Angeles), 1959; Ph.D., Columbia University, 1964.

**Ades, Ibrahim Z.** Associate Professor, Zoology. B.A., University of California (Los Angeles), 1971; Ph.D., 1976.

**Adler, Isidore** Professor Emeritus, Chemistry and Biochemistry. B.S., Brooklyn College, 1942; M.S., Brooklyn Polytechnic Institute, 1947; Ph.D., 1952.

**Agar, Michael H.** Professor, Anthropology. A.B., Stanford University, 1967; Ph.D., University of California (Berkeley), 1971.

**Aggour, M. Sherif** Professor, Civil Engineering. B.S., Cairo University, 1964; M.S., 1966; Ph.D., University of Washington, 1972.

**Agrawala, Ashok K.** Professor, Computer Science, Professor, Institute for Advanced Computer Studies. B.S., Agra University, 1960; B.E., Indian Institute of Science, 1963; M.E., 1965; Ph.D., Harvard University, 1970.

**Agre, Gene P.** Associate Professor, Education Policy, Planning, and Administration. B.A., Macalester College, 1951; B.S., University of Minnesota, 1953; M.A., 1956; Ph.D., University of Illinois (Urbana), 1964.

**Aguiler-Mora, Jorge** Associate Professor, Spanish and Portuguese. B.A., Universidad Nacional de Mexico, 1966; Ph.D., El Colegio de Mexico, 1976.

**Ahad, Rafiul** Assistant Professor, College of Business and Management. B.Sc., Burma Arts and Science University, 1973; M.Sc., 1975; M.Sc., Asian Institute of Technology, 1980; Ph.D., University of Southern California, 1985.

**A'Hearn, Michael F.** Professor, Physics and Astronomy, Astronomy Program. B.S., Boston College, 1961; Ph.D., University of Wisconsin, 1966.

**Ahn, Sung K.** Visiting Assistant Professor, College of Business and Management. B.A., Seoul National University, 1979; M.S., Wright State University, 1983; Ph.D., University of Wisconsin, 1987.

**Ahrens, Richard A.** Professor, Human Nutrition and Food Systems. B.S., University of Wisconsin, 1958; Ph.D., University of California (Davis), 1963.

**Aiello, Elaine L.** Instructor, Part-time, Special Education. B.S., Gallaudet College, 1966; M.A., Western Maryland, 1975.

**Alavi, Maryam** Associate Professor, College of Business and Management. B.A., State University of New York at Buffalo, 1972; M.S., Ohio State University, 1974; Ph.D., 1978.

**Albert, Jodi** Lecturer, part-time, University Honors Program. B.A., University of Maryland, 1979; Ph.D., SUNY (Albany), 1986.

**Albrecht, Pedro** Professor, Civil Engineering, Dipl. Ing., Federal Institute of Technology (Switzerland), 1962; Ph.D., Lehigh University, 1972.

**Aldridge, Charlotte Groff** Instructor, Maryland English Institute. B.A., University of Florida, 1979; M.A., 1982.

**Alexander, Charles, Jr.** Lecturer, Part-time, Electrical Engineering. B.S., Lowell Technological Institute, 1962; M.S., University of New Hampshire, 1965; Ph.D., University of Maryland, 1973.

- Alexander, James C.** Professor, Mathematics B.A., Johns Hopkins University, 1964. Ph.D., 1968.
- Alexander, Linda** Assistant Professor, Health Education, BSN, University of Maryland, 1972; M.S. Ed., University of Southern California, 1977; MSN, University of Texas, 1980; Ph.D., University of Maryland, 1988.
- Alexander, Millard H.** Professor, Chemistry and Biochemistry B.A., Harvard, 1964. Ph.D., University of Paris, 1967.
- Alexander, Pamela** Assistant Professor, Psychology B.A., Wake Forest University, 1974; M.A., Emory University, 1978; Ph.D., 1980.
- Alford, C. Fred** Assistant Professor, Government and Politics B.A., Austin College, 1969. M.A., University of Texas, 1971; Ph.D., 1979.
- Ali, Abdul** Assistant Professor, College of Business and Management, Bachelor of Technology, Indian Institute of Technology, 1978; M.B.A., Indian Institute of Management, 1980; Ph.D., Purdue University, 1988.
- Allen, J. David** Professor, Zoology B.Sc., University of British Columbia, 1966; M.S., University of Michigan, 1968; Ph.D., 1971.
- Allen, Ira R.** Lecturer, Part-time, College of Journalism, B.S., University of Maryland, 1970.
- Allen, LaRue** Associate Professor, Psychology A.B., Radcliffe College, 1972; M.S., Yale University, 1977; Ph.D., 1980.
- Allen, Redfield W.** Professor, Part-time, Mechanical Engineering, B.S., University of Maryland, 1943; M.S., 1949; Ph.D., University of Minnesota, 1959.
- Allen, Roger J.** Associate Professor, Health Education, B.S.E., University of Kansas, 1976; M.S., 1977; Ph.D., University of Maryland, 1979.
- Alley, Carroll O., Jr.** Professor, Physics and Astronomy, B.S., University of Richmond, 1948; M.A., Princeton University, 1951; Ph.D., 1962.
- Almenas, Kazys K.** Associate Professor, Chemical and Nuclear Engineering, B.S., University of Nebraska, 1957; Ph.D., University and Polytechnic of Warsaw, 1968.
- Almon, Clopper, Jr.** Professor, Economics, A.B., Vanderbilt University, 1956; Ph.D., Harvard University, 1962.
- Alomonos, John** Assistant Professor, Computer Science, Assistant Professor, Institute for Advanced Computer Studies, B.S., University of Athens (Greece), 1981; M.S., University of Rochester, 1984; Ph.D., 1986.
- Alston-Mills, Brenda** Assistant Professor, Animal Sciences, A.B., Lycoming College, 1967; M.Sc., Michigan State University, 1972; Ph.D., 1984.
- Alt, Frank B.** Associate Professor, College of Business and Management, B.S.E., Johns Hopkins University, 1967; M.S., Georgia Institute of Technology, 1973; Ph.D., 1977.
- Alter, Mary K.** Instructor, Mathematics, B.S., University of Maryland, 1957; M.Ed., 1976; Ph.D., 1987.
- Amereschuk, Kathleen G.** Associate Professor, Curriculum and Instruction, B.S., Indiana State College (Pennsylvania), 1951; M.Ed., Pennsylvania State University, 1957; Ph.D., University of Minnesota, 1966.
- Amir, Amihood** Assistant Professor, Computer Science, Assistant Professor, Institute for Advanced Computer Studies, B.S., Bar Ilan University, Magna Cum Laude, 1975; M.S., Bar Ilan University, 1976; Ph.D., 1983.
- Ammon, Herman L.** Professor, Chemistry and Biochemistry, B.Sc., Brown University, 1958; Ph.D., University of Washington, 1963.
- Ammons, Lila** Lecturer, Afro-American Studies; Undergraduate Academic Advisor, Afro-American Studies, B.A., North Carolina Central University, 1974; M.A., American University, 1980; M.A., University of Maryland, 1989; Ph.D., 1989.
- Amodeo, Stefania** Instructor, French and Italian, Laurea in Literature, Genoa University (Italy), 1964.
- Anand, Davinder K.** Professor, Mechanical Engineering, Professor, Systems Research Center, B.S., George Washington University, 1959; M.S., 1961; Ph.D., 1965.
- Anastos, George** Professor Emeritus, Zoology B.S., University of Akron, 1942; M.A., Harvard University, 1947; Ph.D., 1949.
- Ancekewicz, Elaine** Assistant Professor, French and Italian B.A., Cornell University, 1974; M.A., Yale University, 1975; M.Ph., 1977; Ph.D., 1984.
- Anderson, Amel** Assistant Dean, Colleges of Agriculture and Life Sciences, B.S., Jackson State University, 1962; M.S., University of Houston, 1969; Ed.D., Virginia Polytechnic Institute and State Univ., 1976.
- Anderson, Clarita S.** Assistant Professor, Textiles and Consumer Economics, B.S., University of Minnesota, 1959; Ph.D., University of Maryland, 1985.
- Anderson, Elaine A.** Associate Professor, Family and Community Development, B.S., The University of Nebraska, 1973; M.S., The Pennsylvania State University, 1975; Ph.D., 1978.
- Anderson, Gary** Assistant Professor, Economics, A.B., Harvard University, 1974; M.A., 1976; Ph.D., 1980.
- Anderson, John D. Jr.** Professor, Aerospace Engineering, B.S., University of Florida, 1959; Ph.D., Ohio State University, 1966.
- Anderson, J. Robert** Professor, Physics and Astronomy B.S., Iowa State University, 1955; Ph.D., 1963.
- Anderson, Nancy S.** Professor, Psychology, B.A., University of Colorado, 1952; M.A., Ohio State University, 1953; Ph.D., 1956.
- Anderson, Vernon E.** Professor Emeritus, Education Policy, Planning, and Administration, B.S., University of Minnesota, 1930; M.A., 1936; Ph.D., University of Colorado, 1942.
- Andrews, J. Edward** Visiting Professor, Education Policy, Planning, and Administration; Director, Research and Development Laboratory on School Based Administration, B.S., Frostburg State College, 1957; M.Ed., University of Maryland, 1961; Ed.D., 1968.
- Angle, Jay S.** Associate Professor, Agronomy, B.S., University of Missouri, 1975; M.S., 1978; Ph.D., University of Missouri, 1980.
- Anjanappa, Muniswamappa** Assistant Professor, Mechanical Engineering, B.E., University of Bangalore (India), 1973; M.E., University of Madras (India), 1975; Ph.D., University of Maryland, 1986.
- Ankem, Sreeramamurthy** Assistant Professor, Chemical and Nuclear Engineering, B.S., University of Mysore, 1972; M.E., Indian Institute of Science, 1974; Ph.D., Polytechnic Institute of New York, 1980.
- Annand, Viki** Lecturer, Recreation, B.S., Pennsylvania State University, 1969; M.Ed., George Washington University, 1973.
- Ansell, Joseph P.** Assistant Professor, Housing and Design, B.A. Knox College, 1971; M.F.A., George Washington University, 1975.
- Anspacher, William B.** Lecturer, Part-time, Electrical Engineering, B.S., Washington University, 1936; M.S., University of Maryland, 1950.
- Antman, Stuart S.** Professor, Mathematics, B.S., Rensselaer Polytechnic Institute, 1961; M.S., University of Minnesota, 1963; Ph.D., 1965.
- Antonsen, Thomas M.** Associate Professor, Physics and Astronomy; Professor, Electrical Engineering, B.S., Cornell University, 1973; M.S., 1976; Ph.D., 1977.
- Ards, Sheila D.** Lecturer, School of Public Affairs, M.S., Carnegie-Mellon University, 1983.
- Arends, Richard I.** Professor and Chairperson, Curriculum and Instruction, B.S., Eastern Oregon College, 1959; M.A., University of Iowa, 1961; Ph.D., University of Oregon, 1972.
- Armstrong, Earlene** Associate Professor, Entomology B.S., North Carolina Central University, 1969; M.S., 1970; Ph.D., Cornell University, 1975.
- Armstrong, Richard N.** Associate Professor, Chemistry and Biochemistry B.S., Western Illinois University, 1970; Ph.D., Marquette University, 1974.
- Armstrong, Ronald W.** Professor, Mechanical Engineering, B.E.S., Johns Hopkins University, 1955; M.Sc., Carnegie-Mellon University, 1957; Ph.D., 1958.
- Arnold, Douglas** Professor, Mathematics A.B., Brown University, 1975; S.M., University of Chicago, 1976; Ph.D., 1979.
- Arrighi, Margarie A.** Assistant Professor, Physical Education, B.S., Westhampton College, 1958; M.S., University of Maryland, 1962; Ed.D., University of North Carolina (Greensboro), 1974.
- Arsenault, Richard J.** Professor, Chemical and Nuclear Engineering, B.S., Michigan Technological University, 1957; Ph.D., Northwestern University, 1962.
- Asbjornsen, Odd A.** Professor, Chemical and Nuclear Engineering; Professor, Systems Research Center, B.S., The Technical University of Norway, 1955; Ph.D., 1962.
- Ashey, Roy D.** Instructor, Industrial, Technological and Occupational Education, B.S., College of William and Mary, 1960; M.S., University of Southern California, 1980; M.S., Central Michigan University, 1981.
- Assad, Arjang J.** Professor, College of Business and Management, B.S., Massachusetts Institute of Technology, 1971; M.S., 1976; Ph.D., 1978.
- Atchison, William F.** Professor Emeritus, Computer Science, A.B., Georgetown College (Kentucky), 1938; M.A., University of Kentucky, 1940; Ph.D., University of Illinois (Urbana), 1943.
- Athey, Whitfield T.** Lecturer, Part-time, Electrical Engineering, B.S., Auburn University, 1964; M.S., 1966; Ph.D., Tufts University, 1975.
- Atlas, Robert** Visiting Lecturer, part-time, Meteorology, B.S., Parks College of St. Louis, 1970; M.S., New York University, 1973; Ph.D., 1976.
- Atwell, Wendy H.** Lecturer, Assistant Director, Office of Laboratory Experiences, B.S., University of Rochester, 1975; M.A., University of Maryland, 1983; Ph.D., 1988.
- Auchard, John F.** Associate Professor, English; Director, English Honors Program, B.A., New York University, 1970; M.A., University of Michigan, 1971; Ph.D., University of North Carolina, 1980.
- Auerbach, Jonathan** Assistant Professor, English, B.A., University of California (Santa Cruz), 1976; M.A., Johns Hopkins University, 1978; Ph.D., 1984.
- Auslander, Joseph** Professor, Mathematics, B.S., Massachusetts Institute of Technology, 1952; M.S., University of Pennsylvania, 1953; Ph.D., 1957.
- Austin, Mark A.** Assistant Professor, Civil Engineering; Assistant Professor, Systems Research Center, B.E., University of Canterbury (New Zealand), 1980; M.S., University of California (Berkeley), 1982; Ph.D., 1985.
- Austing, Richard H.** Associate Professor, Computer Science, B.S., Xavier University, 1953; M.S., Saint Louis University, 1955; Ph.D., Catholic University of America, 1963.
- Aversa, Elizabeth S.** Assistant Professor, College of Library and Information Services, B.A., Colby College, 1966; M.Ln., Emory University, 1968; Ph.D., Drexell University, 1984.
- Axley, John H.** Professor Emeritus, Agronomy, B.A., University of Wisconsin, 1937; M.S., University of Maryland, 1942; Ph.D., University of Wisconsin, 1945.
- Aycock, Marvin K., Jr.** Professor and Chair, Agronomy, B.S., North Carolina State University, 1959; M.S., 1963; Ph.D., Iowa State University, 1966.
- Aylward, Thomas J.** Professor, Communication Arts and Theatre, B.S., University of Wisconsin, 1947; M.S., 1949; Ph.D., 1960.

- Ayyub, Bilal** Associate Professor, Civil Engineering B.S., Kuwait University, 1980; M.S., Georgia Institute of Technology, 1981; Ph.D., 1983.
- Azar, Edward E.** Professor, Government and Politics; Director, Center for International Development and Conflict Management B.A., American University of Beirut, 1960; M.A., University of the Pacific, 1965; Ph.D., Stanford University, 1969.
- Azarm, Shapour** Assistant Professor, Mechanical Engineering B.S., University of Tehran (Iran), 1977; M.S., George Washington University, 1979; Ph.D., University of Michigan, 1984.
- Aziz, A. Kadir** Adjunct Professor, Institute for Physical Science and Technology and Mathematics B.S., Wilson Teachers College, 1952; M.S., George Washington University, 1954; Ph.D., University of Maryland, 1958.
- Babuska, Ivo** Research Professor, Mathematics and Institute for Physical Science and Technology Dipl. Ing., Technical University of Prague, 1949; Ph.D., 1951; Ph.D., Czechoslovak Academy of Sciences, 1955; D.Sc., 1960.
- Baer, Ferdinand** Professor, Meteorology B.A., University of Chicago, 1950; M.S., 1954; Ph.D., 1961.
- Bailey, Elaine L.** Instructor, Institute of Applied Agriculture B.S., Clatsop University, 1982; M.S., Iowa State University, 1984.
- Bailey, William J.** Research Professor, Chemistry and Biochemistry B.Chem., University of Minnesota, 1943; Ph.D., University of Illinois, 1946.
- Bally, Martin N.** Professor, Economics, Professor, Part-time, School of Public Affairs, B.A., Christ's College, Cambridge University, 1967; M.A., 1967; M.A., Simon Fraser University, Canada, 1972; Ph.D., Massachusetts Institute of Technology, 1972.
- Baker, Donald J.** Associate Professor, Hearing and Speech Sciences B.S., Ohio State University, 1954; M.A., 1956; Ph.D., 1962.
- Ball, Michael O.** Professor, College of Business and Management B.E.S., Johns Hopkins University, 1972; M.S.E., 1972; Ph.D., Cornell University, 1977.
- Balthrop, Carmen A.** Assistant Professor, Music B.M., University of Maryland, 1971; M.M., Catholic University, 1972.
- Bandel, Vernon A.** Professor, Agronomy B.S., University of Maryland, 1959; M.S., 1962; Ph.D., 1965.
- Banerjee, Menoj K.** Professor, Physics and Astronomy B.S., Patna University, 1949; M.S., Calcutta University, 1952; Ph.D., 1956.
- Barao, Scott M.** Assistant Professor, Animal Sciences B.S., Michigan State University, 1980; M.S., 1983; Ph.D., 1986.
- Baras, John S.** Professor, Electrical Engineering; Director, Systems Research Center B.S., National Technical University of Athens, 1970; S.M., Harvard University, 1971; Ph.D., 1973.
- Barbe, David F.** Executive Director, Engineering Research Center; Professor, Electrical Engineering B.S., West Virginia University, 1962; M.S., 1964; Ph.D., Johns Hopkins University, 1969.
- Barbosa, Pedro** Professor, Entomology B.S., City College of New York, 1966; M.S., University of Massachusetts, 1969; Ph.D., 1971.
- Bardeais, Angelo** Professor and Associate Chairman, Physics and Astronomy, A.B., Cornell University, 1957; M.S., University of Illinois (Urbana), 1959; Ph.D., 1962.
- Barker, Donald B.** Associate Professor, Mechanical Engineering B.S.M.E., University of Washington, 1969; M.S., 1971; Ph.D., University of California (Los Angeles), 1976.
- Barkin, Steve M.** Associate Professor, College of Journalism A.B., Washington University, St. Louis, 1967; M.J., Columbia University Graduate School of Journalism, 1968; Ph.D., The Ohio State University, 1978.
- Barlow, Jewel B.** Associate Professor, Aerospace Engineering B.Sc., Auburn University, 1963; M.S., 1964; Ph.D., University of Toronto, 1970.
- Barnett, Audrey J.** Associate Professor, Zoology B.A., Wilson College, 1955; M.A., Indiana University, 1957; Ph.D., 1962.
- Barnett, Neal M.** Associate Professor, Botany B.S., Purdue University, 1959; Ph.D., Duke University, 1966.
- Barnett, Ronald J.** Associate Professor, Music B.Mus., University of Rochester, 1960; M.Mus., University of Maryland, 1973.
- Baron, Sandy D.** Instructor, Part-time, Institute of Applied Agriculture B.A., Michigan State University, 1974; J.D., Catholic University, Columbus School of Law, 1977.
- Barrabini, Micheline** Lecturer, French and Italian, Licence en Droit, Bordeaux (France), 1952; Licence es Lettres, Aix en Provence (France), 1955.
- Barry, Jackson G.** Associate Professor, English B.A., Yale University, 1950; M.A., Columbia University, 1951; Ph.D., Case-Western Reserve University, 1963.
- Bartol, Kathryn M.** Professor, College of Business and Management B.A., Marygrove College, 1963; M.A., University of Michigan, 1966; Ph.D., Michigan State University, 1972.
- Basili, Victor R.** Professor, Computer Science; Professor, Institute for Advanced Computer Studies B.S., Fordham University, 1961; M.S., Syracuse University, 1963; Ph.D., University of Texas, 1970.
- Basolits, Peter P.** Adjunct Assistant Professor, Textiles and Consumer Economics B.A., University of Kansas, 1973; M.A., 1975; Ph.D., University of Missouri, 1983.
- Basu, Amit** Assistant Professor, College of Business and Management B.S., Indian Institute of Technology, 1979; M.B.A., Southern Illinois University, 1981; M.S., University of Rochester, 1983; Ph.D., 1986.
- Baum, Howell S.** Associate Professor, Urban Studies B.A., University of California (Berkeley), 1967; M.A., University of Pennsylvania, 1968; M.C.P., University of California (Berkeley), 1971; Ph.D., 1974.
- Baxter, Sharon E.** Instructor, Part-time, Sociology B.A., University of North Carolina, 1969; M.A., University of Maryland, 1973.
- Beach, Eugene H., Sr.** Lecturer, Part-time, Physics and Astronomy B.S., University of Michigan, 1941; M.S., 1947; Ph.D., 1953.
- Beach, John E.** Lecturer, College of Business and Management B.S., Wayne State University, 1968; J.D., Detroit College of Law, 1973.
- Bean, George A.** Associate Dean, College of Agriculture and Life Sciences; Professor, Botany B.S., Cornell University, 1958; M.S., University of Minnesota, 1960; Ph.D., 1963.
- Beardsley, Katherine Pedro** Assistant Dean, College of Behavioral and Social Sciences B.S., Oregon State University, 1972; M.A., University of Minnesota, 1977; Ph.D., 1983.
- Beasley, Maurine H.** Professor, College of Journalism B.A., University of Missouri, 1958; B.J., 1958; M.S., Columbia University, 1963; Ph.D., George Washington University, 1974.
- Beatty, Charles J.** Associate Professor & Acting Chair, Industrial, Technological and Occupational Education, B.S., Northern Michigan University, 1959; M.A., Michigan State University, 1963; Ph.D., Ohio State University, 1967.
- Beauchamp, Virginia W.** Associate Professor, English B.A., University of Michigan, 1942; M.A., 1948; Ph.D., University of Chicago, 1955.
- Bechhoefer, William B.** Associate Professor, School of Architecture A.B., Harvard College, 1963; M. Arch., Harvard Graduate School of Design, 1967.
- Beck, Evelyn T.** Professor and Director, Women's Studies Program B.A., Brooklyn College, 1954; M.A., Yale University, 1955; Ph.D., University of Wisconsin (Madison), 1969.
- Beck, Kenneth H.** Associate Professor, Health Education B.S., Pennsylvania State University, 1972; M.A., Syracuse University, 1975; Ph.D., 1977.
- Beckley, Betty** Assistant Dean, Coordinator for Undergraduate Advising, Undergraduate Studies; Instructor, part-time, English B.S., University of Maryland, 1964; M.A., 1977; M.F.A., George Washington University, 1980; Ph.D., University of Maryland, 1983.
- Beckman, Paula J.** Associate Professor, Special Education B.A., Hastings College, 1974; M.A., University of Nebraska, 1977; Ph.D., University of North Carolina, 1980.
- Beckmann, Robert B.** Professor, Eminentus, Chemical and Nuclear Engineering B.S., University of Illinois (Urbana), 1940; Ph.D., University of Wisconsin, 1944.
- Bedingfield, James P.** Associate Professor, College of Business and Management B.S., University of Maryland, 1966; M.B.A., 1968; D.B.A., 1972.
- Bedos-Rezak, Brigitte M.** Associate Professor, History Ecole nationale des Chartes, 1977; Licence es-Lettres, Université de Paris-Sorbonne, 1977.
- Behall, Kay McCague** Adjunct Assistant Professor, Part-time, Human Nutrition and Food Systems B.S., University of Arizona, 1965; M.S., Oregon State University, 1968; Ph.D., University of Maryland, 1982.
- Beicken, Peter U.** Professor, Germanic and Slavic Languages and Literatures M.A., University of Munich (Germany), 1968; Ph.D., Stanford University, 1971.
- Beicken, Suzanne J.** Lecturer, Music B.S., Columbia University, 1966; M.A., Stanford University, 1969; Ph.D., 1980.
- Bell, Matthew J.** Assistant Professor, School of Architecture B.A.RCH., University of Notre Dame, 1983; M.A.RCH., Cornell University, 1987.
- Bell, Roger A.** Professor, Physics and Astronomy; Director, Astronomy Program B.Sc., University of Melbourne, 1957; Ph.D., Australian National University, 1961; Ph.D. (honoris causa), Uppsala University, 1982.
- Belama, Jon M.** Professor, Chemistry and Biochemistry A.B., Allegheny College, 1960; Ph.D., University of Pennsylvania, 1966.
- Belz, Herman J.** Professor, History A.B., Princeton University, 1959; M.A., University of Washington, 1963; Ph.D., 1966.
- Bender, Filmore E.** Professor, Agricultural and Resource Economics B.S., University of California (Davis), 1961; M.S., North Carolina State University, 1964; Ph.D., 1965.
- Benedetto, John J.** Professor, Mathematics B.A., Boston College, 1960; M.A. Harvard University, 1962; Ph.D., University of Toronto, 1964.
- Benesch, William** Professor, Institute for Physical Science and Technology B.A., Lehigh University, 1942; M.A., Johns Hopkins University, 1950; Ph.D., 1952.
- Benito-Vassili, Carmen** Assistant Professor, Spanish and Portuguese B.A., University of Salamanca, Spain, 1977; M.A., 1977; Ph.D., University of California, Santa Barbara, 1988.
- Bennett, Lawrence H.** Adjunct Professor, Physics and Astronomy B.A., Brooklyn College, 1951; M.S., University of Maryland, 1955; Ph.D., Rutgers University, 1958.
- Bennett, Maurice J.** Associate Professor, English A.B., Harvard University, 1971; M.A., 1972; Ph.D., 1978.
- Bennett, Ralph D., Jr.** Professor, School of Architecture B.A. Arch., Princeton University, 1961; M.F.A. Arch., 1966.
- Bennett, Robert L.** Associate Professor, Economics B.A., University of Texas, 1951; M.A., 1955; Ph.D., 1963.

- Bennett, Stanley W.** Associate Professor, Human Development B.A., Iowa State University, 1959; M.A., State University of Iowa, 1961, Ph.D., University of Michigan, 1970
- Bensimon, Estelle** Assistant Professor, Education Policy, Planning, and Administration B.A., American University (Washington, D.C.), 1968; M.Ed., University of Maryland, 1975; Ph.D., 1977
- Benston, Jeri** Associate Professor, Measurement, Statistics, and Evaluation B.A., University of Florida, 1973; M.A.E., 1975; Ph.D., 1977
- Benson, Spencer A.** Assistant Professor, Microbiology B.S., University of Vermont, 1973; Ph.D., University of Chicago, 1978
- Bentley, Eric** Professor, Comparative Literature; Professor, Communication Arts and Theatre B.A., Oxford University, 1938; B.Litt., 1939; Ph.D., Yale University, 1941; D.Litt., University of Wisconsin, 1975; D.Litt., University of East Anglia, 1979
- Bentley, William E.** Assistant Professor, Chemical and Nuclear Engineering; Assistant Staff Scientist, Center for Agricultural Biotechnology B.S., Cornell University, 1982; M.Eng., Cornell University, 1983; Ph.D., University of Colorado (Boulder), 1989
- Bentz, Frank L., Jr.** Vice President Emeritus, Agricultural Affairs; Associate Professor, Agronomy B.S., University of Maryland, 1942; Ph.D., 1952
- Berdahl, Robert O.** Professor, Education Policy, Planning, and Administration; Director, Institute for Research in Higher and Adult Education; Director of Collaborative Activities, National Center for Postsecondary Governance and Finance; Affiliate Professor, Government and Politics B.A., University of California (Los Angeles), 1949; M.Sc., London School of Economics and Political Science, 1957; M.A., University of California (Berkeley), 1954; Ph.D., 1958
- Berenstein, Carlos A.** Professor, Mathematics; Professor, Systems Research Center, Licenciado En Matematicas, University of Buenos Aires, 1966; M.S., New York University, 1969; Ph.D., 1970
- Berg, Kenneth R.** Associate Professor, Mathematics B.S., University of Minnesota, 1960; Ph.D., 1967
- Berg, Linda R.** Lecturer, Botany B.S., University of Maryland, 1969; M.S., 1976; Ph.D., 1983
- Berger, Bruce S.** Professor, Mechanical Engineering B.S., University of Pennsylvania, 1954; M.S., 1959; Ph.D., 1962
- Bergmann, Barbara R.** Professor Emeritus, Economics A.B., Cornell University, 1948; M.A., Harvard University, 1955; Ph.D., 1959
- Berlin, Adele** Professor and Director, Hebrew and East Asian; Director, Meyerhoff Center for Jewish Studies B.A., University of Pennsylvania, 1964; Ph.D., 1976
- Berlin, Andrea Michelle** Lecturer, Classics B.A., University of Michigan, 1976; M.A., University of Chicago, 1979; Ph.D., University of Michigan, 1988
- Berlin, Ira** Professor, History B.S., University of Wisconsin, 1963; M.A., 1966; Ph.D., 1970
- Berman, Louise M.** Professor, Education Policy, Planning, and Administration A.B., Wheaton College, 1950; M.A., Columbia University, 1953; Ed.D., 1960
- Berman, Marilyn R.** Associate Dean, College of Engineering B.A., Brooklyn College, 1956; M.A., University of Maryland, 1973; Ph.D., 1979
- Bernard, Peter S.** Associate Professor, Mechanical Engineering B.E. (M.E.), City College of the City University of New York, 1972; M.S., University of California (Berkeley), 1973; Ph.D., 1977
- Bernold, Leonhard E.** Assistant Professor, Civil Engineering M.S., Swiss Institute of Technology (Zurich), 1978; M.B.A., St. Gall Graduate School (St. Gall), 1981; M.S., Georgia Institute of Technology, 1983; Ph.D., 1985
- Bernstein, Melvin** Professor, Music; Administrative Daan, Summer Programs A.B., Rhodes College, 1947; B.Mus., 1948; M.Mus., University of Michigan, 1949; M.A., University of North Carolina, 1954; Ph.D., 1964
- Berry, Thomas E.** Associate Professor, Germanic and Slavic Languages and Literatures B.S., Southern Illinois University, 1952; M.A., University of Illinois (Urbana), 1955; Ph.D., University of Texas, 1966
- Best, Otto F.** Professor, Germanic and Slavic Languages and Literatures Ph.D., University of Munich (Germany), 1963
- Beste, C. Edward** Associate Professor, Horticulture B.S., Purdue University, 1961; M.S., 1969; Ph.D., 1971
- Betancourt, Roger R.** Professor, Economics B.A., Georgetown University, 1965; Ph.D., University of Wisconsin, 1969
- Bhagal, Satindar M.** Professor, Physics and Astronomy B.A., Jammu and Kashmir University, 1950; M.Sc., University of Delhi, 1953; Ph.D., 1956
- Bickley, William E.** Professor Emeritus, Entomology B.A., University of Tennessee, 1934; M.S., 1936; Ph.D., University of Maryland, 1940
- Biehal, Gabriel J.** Associate Professor, College of Business and Management B.A., McGill University, 1966; M.B.A., 1969; Ph.D., Stanford University, 1978
- Bielec, John A.** Assistant Vice President, Administrative Affairs B.A., University of Maryland, 1966; M.A., 1969; Ph.D., 1972
- Bigio, David I.** Assistant Professor, Mechanical Engineering B.S., Case Western Reserve University, 1971; M.S., Massachusetts Institute of Technology, 1976; Engr., 1978; Ph.D., 1986
- Biik, Dorothy** Associate Professor, Germanic and Slavic Languages and Literatures B.A., Brooklyn College, 1951; M.A., University of Cincinnati, 1969; Ph.D., University of Maryland, 1977
- Billig, Frederick S.** Lecturer, Part-time, Aerospace Engineering B.E., Johns Hopkins University, 1955; M.S., University of Maryland, 1958; Ph.D., 1964
- Billingsley, Andrew** Professor and Chair, Family and Community Development; Affiliate Professor, Sociology; Affiliate Professor, Afro-American Studies Program A.B., Grinnell College, 1951; M.S., Boston University, 1956; M.A., University of Michigan, 1960; Ph.D., Brandeis University, 1964
- Bingham, Alfred J.** Professor Emeritus, French and Italian B.A., Yale University, 1933; Ph.D., Columbia University, 1939
- Birdsall, Esther K.** Associate Professor, English B.A., Central Michigan University, 1947; M.A., University of Arizona, 1950; Ph.D., University of Maryland, 1959
- Birk, Janice M.** Professor, Counseling and Personnel Services B.A., Sacred Heart College, 1963; M.A., Loyola University, 1966; Ph.D., University of Missouri, 1970
- Birkner, Francis B.** Professor, Civil Engineering B.S., Newark College of Engineering, 1961; M.S.E., University of Florida, 1962; Ph.D., 1965
- Birnbaum, Robert** Professor, Education Policy, Planning, and Administration; Professor, National Center for Postsecondary Governance and Finance B.A., University of Rochester, 1958; M.A., Teachers College, Columbia University, 1964; Ed.D., 1967
- Blissell, Theodore** Associate Professor Emeritus, Entomology B.S., University of Maryland, 1920; M.S., Cornell University, 1936
- Black, Cordell W.** Acting Assistant Dean, College of Arts and Humanities; Associate Professor, French and Italian B.A., St. Augustine's College, 1965; M.A., Wayne State University, 1967; Ph.D., University of Michigan, 1977
- Blankenship, Gilmer L.** Professor, Electrical Engineering; Professor, Systems Research Center B.S., Massachusetts Institute of Technology, 1967; M.S., 1969; Ph.D., 1971
- Blitz, Leo** Professor, Physics and Astronomy, Astronomy Program B.S., Cornell University, 1967; M.S., Columbia University, 1975; M.Phil., 1976; Ph.D., 1979
- Block, Ira** Associate Professor, Textiles and Consumer Economics B.S., University of Maryland, 1963; Ph.D., 1971
- Blotner, Pamela** Assistant Professor, Art B.S., The Cleveland Institute of Art, 1976; M.F.A., Syracuse University, 1986
- Blum, Richard A.** Assistant Professor, Communication Arts and Theatre B.A., Fairleigh Dickinson University, 1965; M.S., Boston University, 1968; Ph.D., University of Southern California, 1977
- Blumler, Jay G.** Professor, College of Journalism B.A., Antioch College, 1947; D. Phil., University of Oxford, 1962
- Bocksfael, Nancy E.** Professor, Agricultural and Resource Economics; Acting Associate Dean for Research, Graduate Studies and Research A.B., Connecticut College, 1971; M.A., Brown University, 1973; Ph.D., University of Rhode Island, 1976
- Bodin, Lawrence D.** Professor, College of Business and Management B.S., Northeastern University, 1962; M.S., University of California (Barkaley), 1966; Ph.D., 1967
- Boldt, Eilhu A.** Adjunct Professor, Physics and Astronomy B.S., Massachusetts Institute of Technology, 1953; Ph.D., 1958
- Bolles, Lynn** Associate Professor, Women's Studies; Associate Professor, Affiliate, Anthropology; Associate Professor, Affiliate, Afro-American Studies A.B., Syracuse University, 1971; M.A., Rutgers University, 1978; Ph.D., 1981
- Bonar, Dale B.** Associate Professor, Zoology B.A., Whitman College, 1967; M.S., University of the Pacific, 1970; Ph.D., University of Hawaii, 1973
- Bondurani, Dolores** Lecturer, French and Italian; Academic Advisor, College of Arts and Humanities B.A., Morgan State College, 1954; M.A., Howard University, 1966
- Bonta, Juan P.** Professor, Housing and Design B.H., Colegio Nacional de Buenos Aires, 1951; M.Arch., University of Buenos Aires, 1959
- Booth, Nancy M.** Affiliate Assistant Professor, Agricultural and Extension Education B.S., Seton Hall University, 1971; M.A., Michigan State University, 1973; Ph.D., University of Maryland, 1979
- Borgia, Gerald** Associate Professor, Zoology A.B., University of California (Berkeley), 1970; M.S., University of Michigan (Ann Arbor), 1973; Ph.D., 1978
- Borko, Hilda** Associate Professor, Curriculum and Instruction B.A., University of California (Los Angeles), 1971; M.A., 1973; Ph.D., 1978
- Borkovec, Alexej B.** Adjunct Professor, Entomology B.S., Virginia Polytechnic Institute, 1949; M.S., 1954; Ph.D., 1955
- Boroson, Harold R.** Lecturer, Electrical Engineering B.S., Union College, 1944; M.S., University of Illinois, 1947; Ph.D., University of Maryland, 1972
- Bottino, Paul J.** Associate Professor, Botany B.S., Utah State University, 1964; M.S., 1965; Ph.D., Washington State University, 1969
- Bottrell, Dale G.** Professor, Entomology B.S., Oklahoma State University, 1963; Ph.D., 1968
- Bouwkamp, John C.** Associate Professor, Horticulture B.S., Michigan State University, 1964; M.S., 1966; Ph.D., 1969
- Bowie, Lucile B.** Professor Emerita, Human Development B.S., University of Maryland, 1942; M.A., Teachers College, Columbia University, 1946; Ed.D., University of Maryland, 1957

- Bowker, Albert H.** Dean, Emeritus. School of Public Affairs. B.S., M.I.T., 1941; Ph.D., Columbia University, 1949.
- Bowman, Brian** Lecturer. Part-time, Music. B.M., University of Michigan, 1970; M.M., 1970; D.M.A., Catholic University, 1975.
- Boyce, Jeanann S.** Assistant Professor, Industrial, Technological and Occupational Education. B.A., Douglass College-Rutgers University, 1965; M.A., University of Massachusetts (Amherst), 1974. Ed.D., 1981.
- Boyd, Alfred C. Jr.** Associate Professor, Chemistry and Biochemistry. B.S., Canisius College, 1951; M.S., Purdue University, 1953; Ph.D., 1957.
- Boyd, Carolyn P.** Professor, History, Director, University Honors Program. A.B., Stanford University, 1966; M.A., University of Washington, 1969. Ph.D., 1974.
- Boyd, Derek A.** Professor, Physics and Astronomy B.S., University of Cape Town (S. Africa), 1964; B.S. (Hons.), 1965; M.Sc., 1967; Ph.D., Stevens Institute of Technology, 1973.
- Boyd, Vivian S.** Assistant Professor, Counseling and Personnel Services. B.A., Antioch College, 1961; M.A., University of Colorado, 1968; M.A., University of Maryland (Far East Division), 1972; Ph.D., University of Maryland, 1975.
- Boyle, Mike** Associate Professor, Mathematics. B.A., Stanford University, 1974; A.B. and B.S., University of California (Berkeley), 1977; Ph.D., University of Washington, 1983.
- Brace, John W.** Professor Emeritus, Mathematics. B.A., Swarthmore College, 1949; M.A., Cornell University, 1951; Ph.D., 1953.
- Bradbury, Miles L.** Assistant Professor, History. A.B., Harvard University, 1960; A.M., 1961; Ph.D., 1967.
- Bradford, William D.** Professor, College of Business and Management. B.A., Howard University, 1967; M.B.A., Ohio State University, 1968; Ph.D., 1972.
- Bredley, Lisa D.** Instructor, College of Veterinary Medicine. B.S., University of California (Davis), 1978; D.V.M., 1982.
- Braml, Joseph** Assistant Professor, French and Italian. Licence de Lettres Modernes, Sorbonne Nouvelle, 1974; Maitrise de Lettres Modernes, 1976; Ph.D., New York University, 1984.
- Brandt, John C.** Adjunct Professor, Physics and Astronomy. A.B., Washington University (St. Louis), 1956; Ph.D., University of Chicago, 1960.
- Brannigan, Vincent M.** Associate Professor, Textiles and Consumer Economics. B.A., University of Maryland, 1973; J.D., Georgetown University, 1975.
- Braun, Michael J.** Adjunct Assistant Professor, Zoology. B.A., Cornell University, 1977; Ph.D., Louisiana State University Medical Center, 1983.
- Brauth, Steven E.** Professor, Psychology. B.S., Rensselaer Polytechnic Institute, 1967; Ph.D., New York University, 1973.
- Brayfield, April A.** Assistant Instructor, Part-time, Sociology. B.S., University of California, Riverside, 1981.
- Brechling, Frank P.** Professor, Economics. B.A., University of Freiburg, 1951; Ph.D., Trinity College, 1955.
- Brecht, Richard D.** Professor, Germanic and Slavic Languages and Literatures. B.A., Pennsylvania State University, 1965; M.A., Harvard University, 1969; Ph.D., 1972.
- Breslow, Marvin A.** Associate Professor, History. B.A., University of Nebraska, 1957; A.M., Harvard University, 1958; Ph.D., 1963.
- Breuer, Herbert** Associate Research Scientist, Physics and Astronomy. Diploma, University of Heidelberg, 1974; Ph.D., 1976.
- Bridwell, Margaret** Affiliate Associate Professor, Health Education. B.S., Tulane University, New Orleans, 1943; M.D., Louisiana State University Medical Center, 1946.
- Brigham, Bruce H.** Associate Professor, Curriculum and Instruction. B.S., SUNY (Brookport), 1949; M.A., 1954; Ph.D., Temple University, 1967.
- Brill, Dieter R.** Professor, Physics and Astronomy. B.A., Princeton University, 1954; Ph.D., 1959.
- Brin, Michael** Professor, Mathematics. B.A., Moscow State University, 1970; Ph.D., Kharkov State University, 1975.
- Brinsfield, Russell B.** Affiliate Assistant Professor, Agricultural Engineering. B.S., University of Maryland, 1971; M.S., 1973; Ph.D., 1981.
- Brodie, Herbert L.** Principal Specialist, Agricultural Engineering. B.S., Rutgers The State University, 1964; M.S., University of Maryland, 1972.
- Brodsky, Harold** Associate Professor, Geography. B.S., City University of New York (Brooklyn College), 1954; M.S., Colorado College, 1960; Ph.D., University of Washington, 1966.
- Brooks, Laure W.** Instructor, Institute of Criminal Justice and Criminology. B.A., University of Maryland, 1980; M.A., 1982; Ph.D., 1986.
- Broome, Frederick R.** Lecturer, Part-time, Geography. B.S., University of Georgia, 1964; M.A., 1966.
- Brower, Sidney N.** Associate Professor, Urban Studies. B.Arch., University of Cape Town, 1953; M.C.P., M.I.T., 1964.
- Brown, Duncan** Assistant Professor, Communication Arts and Theatre. Be.D., University of New Brunswick (Canada), 1976; Me.D., 1978; Ph.D., University of Illinois, 1988.
- Brown, Earl H.** Professor, Agricultural and Resource Economics. B.S., University of Minnesota, 1956; M.S., 1957; Ph.D., Michigan State University, 1961.
- Brown, Elizabeth Y.** Lecturer, Physical Education. B.S., Kent State University, 1965; M.Ed., 1967; Ed.D., University of Houston, 1973.
- Brown, John H.** Associate Professor, Philosophy. A.B., Princeton University, 1952; M.A., 1957; Ph.D., 1959.
- Brown, Joshua R.C.** Professor Emeritus, Zoology. B.A., Duke University, 1948; M.A., 1949; Ph.D., 1953.
- Brown, Peter G.** Professor, School of Public Affairs. B.A., Haverford College, 1961; M.A., Columbia University, 1964; Ph.D., 1969.
- Brown, Richard H.** Associate Professor, Sociology. B.A., University of California (Berkeley), 1961; M.A., Columbia University, 1965; Ph.D., University of California (San Diego), 1973.
- Brown, Robert A.** Associate Professor, Psychology. B.A., University of Richmond, 1958; M.A., State University of Iowa, 1961; Ph.D., 1962.
- Brown, Russell G.** Professor Emeritus, Botany. B.S., West Virginia University, 1929; M.S., 1930; Ph.D., University of Maryland, 1934.
- Brown, Stephanie Pullen** Assistant to Vice Chancellor for Agricultural Affairs, Colleges of Agriculture and Life Sciences. M.A., Maryland Institute of Art, 1970; M.Ed., Coppin State College, 1973; M.Ed., Loyola College, 1979.
- Brush, Stephen G.** Professor, History; Professor, Institute for Physical Science and Technology. A.B., Harvard University, 1955; Ph.D., Oxford University, 1958.
- Bryan, John L.** Professor and Chairman, Fire Protection Engineering. B.S., Oklahoma State University, 1953; M.S., 1954; Ed.D., American University, 1965.
- Bryer, Jackson** Professor, English. B.A., Amherst College, 1959; M.A., Columbia University, 1960; Ph.D., University of Wisconsin, 1965.
- Bub, Jeffrey** Professor, Philosophy. B.Sc., University of Cape Town (pure science), 1961; B.Sc., University of Cape Town (applied mathematics), 1962; Ph.D., University of London, 1966.
- Buccheister, Eleonora Y.** Assistant Instructor, Part-time, Special Education. B.S., University of Maryland, 1980.
- Buckley, Frank T., Jr.** Professor, Mechanical Engineering. B.S., University of Maryland, 1959; Ph.D., 1968.
- Buhlig, Paul, Jr.** Instructor, English. B.S., Georgetown University, 1950; M.A., University of California (Berkeley), 1954.
- Bunn, Michael M.** Lecturer, Part-time, Music. B.Mus., Peabody Conservatory of Music, 1977; M.Mus., 1979.
- Buriel, Joseph F.** Instructor, Agronomy. B.S., University of California (Riverside), 1968; M.S., Duke University, 1979.
- Burke, Frank G.** Professor, College of Library and Information Services. B.A., University of Alaska, 1955; M.A., University of Chicago, 1959; Ph.D., 1969.
- Burke, Philip J.** Chairman and Professor, Special Education. B.S., University of Scranton, 1963; M.S., 1965; Ph.D., Syracuse University, 1970.
- Burnham, Jack W.** Professor and Chairman, Art History. B.F.A., Yale University, 1959; M.F.A., 1961.
- Burt, John J.** Dean, College of Physical Education, Recreation, and Health; Professor, Health Education. B.A., Duke University, 1956; M.Ed., University of North Carolina, 1957; M.S., University of Oregon, 1960; Ed.D., 1962.
- Butler, Ethel** Lecturer, Part-time, Dance.
- Butler, Mary L.** Instructor, Maryland English Institute. B.A., University of Connecticut, 1956; M.A.T., Yale University, 1961; Ph.D., University of Connecticut, 1979.
- Butterworth, Charles E.** Professor, Government and Politics. B.A., Michigan State University, 1959; Doct., University of Nancy (France), 1961; M.A., University of Chicago, 1962; Ph.D., 1966.
- Byrnes, James P.** Assistant Professor, Human Development. B.S., Saint Joseph's University, 1981; Ph.D., Temple University, 1985.
- Cadman, Theodore W.** Professor, Chemical and Nuclear Engineering. B.S., Carnegie Institute of Technology, 1962; M.S., 1964; Ph.D., 1966.
- Cain, Jarvis L.** Professor, Agricultural and Resource Economics. B.S., Purdue University, 1955; M.S., Ohio State University, 1956; Ph.D., 1961.
- Cairns, Gordon M.** Dean Emeritus, College of Agriculture; Professor, College of Agriculture. B.S., Cornell University, 1936; M.S., 1938; Ph.D., 1940.
- Calabrese, Richard V.** Associate Professor, Chemical and Nuclear Engineering. B.S., University of Rochester, 1969; M.S., University of Massachusetts, 1971; Ph.D., 1976.
- Caldwell, Graham E.** Assistant Professor, Physical Education. B.S., University of Waterloo, 1978; M.S., 1980; Ph.D., Simon Fraser University, 1987.
- Calfee, John E.** Assistant Professor, College of Business and Management. B.A., Rice University, 1963; M.A., University of Chicago, 1969; Ph.D., University of California (Berkeley), 1980.
- Callicott, George H.** Professor, History. B.A., University of South Carolina, 1950; M.A., Columbia University, 1951; Ph.D., University of North Carolina, 1956.
- Campbell, Elwood G.** Professor, Curriculum and Instruction, Director, Student Services, College of Education. B.S., Northeast Missouri State College, 1949; M.A., Northwestern University, 1952; Ph.D., 1963.
- Campbell, Patricia F.** Associate Professor, Curriculum and Instruction. B.S., College of Saint Francis, 1970; M.S., Michigan State University, 1972; Ph.D., Florida State University, 1976.



- Candely, Philip A.** Associate Professor, Geology B.S., CUNY (Brooklyn College), 1977; Ph.D., Harvard University, 1982.
- Capege, Mike** Assistant Professor, Microbiology B.A., West Virginia University, 1968; M.S., 1971; Ph.D., Pennsylvania State University, 1978.
- Caramello, Charles** Associate Professor, English, Associate Professor, Comparative Literature B.A., Wesleyan University, 1970; M.A., University of Wisconsin (Milwaukee), 1973; Ph.D., 1978
- Carbone, Robert F.** Professor, Education Policy, Planning, and Administration. B.A., Eastern Montana College, 1953; M.S., Emory University, 1958; Ph.D., University of Chicago, 1961.
- Carey, Deborah A.** Assistant Professor, Curriculum and Instruction, B.S.E., Westfield State College, 1972; M.E.A., University of Georgia- Athens, 1986; Ph.D., University of Wisconsin-Madison, 1989.
- Carlson, John B.** Lecturer, Part-time, University Honors Program. B.A., Oberlin, 1967; M.S., University of Maryland, 1971; Ph.D., 1977.
- Carlucci, Christina M.** Faculty Research Assistant, Special Education. B.A., Kean College of New Jersey, 1984; M.S., Gallaudet University, 1985.
- Carmel, Douglas K.** Assistant Professor, College of Veterinary Medicine B.S., University of Wisconsin, 1976; M.S., 1979; D.V.M., University of Minnesota, 1985.
- Carr, John C.** Professor Emeritus, Curriculum and Instruction, B.S. District of Columbia Teachers College, 1952; M.F.A., Catholic University of America, 1953; Ph.D., 1965.
- Carr, Lewis E.** Instructor, Agricultural Engineering B.S.A.E., Virginia Polytechnic Institute, 1963; M.S., 1970.
- Carr, Lois Green** Adjunct Professor, History, A.B., Swarthmore College, 1943; A.M., Radcliffe College, 1944; Ph.D., Harvard University, 1968.
- Carretta, Vincent** Associate Professor, English, B.A., State University of New York (Binghamton), 1968; M.A., 1971; Ph.D., University of Iowa, 1977.
- Carroll, Mark J.** Assistant Professor, Agronomy B.S., California Polytechnic State University, 1979; M.S., Michigan State University, 1982; Ph.D., Cornell University, 1989.
- Carroll, Stephen J., Jr.** Professor, College of Business and Management, B.S., University of California (Los Angeles), 1957; M.A., University of Minnesota, 1959; Ph.D., 1964
- Carson, Emmett D.** Lecturer, Part-time, Afro-American Studies. B.A., Morehouse College, 1980; M.P.A., Princeton University, 1983; Ph.D., 1985.
- Carson, Scott D.** Assistant Professor, Computer Science; Assistant Professor, Institute for Advanced Computer Studies. M.S., University of Virginia, 1981; Ph.D., 1986.
- Carter, Everett C.** Professor, Civil Engineering B.S., Virginia Polytechnic Institute, 1958; M.E., University of California, 1959; Ph.D., Northwestern University, 1969.
- Carter-Porges, C. Sue** Professor, Zoology, B.A., Drury College, 1966; Ph.D., University of Arkansas, 1969.
- Carton, James A.** Assistant Professor, Meteorology, B.S.E., Princeton University, 1976; M.S., University of Washington, 1979; M.A., Princeton University, 1980; Ph.D., 1983.
- Cartwright, Kent** Assistant Professor, English B.A., University of Michigan, 1965; M.A., 1968; Ph.D., Case Western Reserve University, 1979.
- Case, William** Lecturer, Part-time, Mechanical Engineering, B.S.A.E., University of Maryland, 1961; B.S.M.E., Drexel Institute of Technology, 1965; Ph.D., University of Maryland, 1972.
- Cassidy, Claire M.** Lecturer, Part-time, Anthropology, B.A., University of Wisconsin, 1965; M.S., 1968; Ph.D., 1972.
- Castellan, Gilbert W.** Professor, Chemistry and Biochemistry B.S., Regis College, 1945; Ph.D., Catholic University, 1949
- Castonguay, Thomas W.** Associate Professor, Human Nutrition and Food Systems. B.A., Framingham State College, 1973; M.A., Mount Holyoke College, 1975; Ph.D., Rutgers State University, 1978
- Catania, David N.** Assistant to the Dean, Summer Programs. B.S., University of Maryland, 1978.
- Cate, George A.** Associate Professor, English, B.A., Rutgers-The State University, 1960; M.A., Duke University, 1962; Ph.D., 1968.
- Caughey, John L.** Associate Professor, American Studies, B.A., Harvard College, 1963; M.A., University of Pennsylvania, 1967; Ph.D., 1970.
- Celazier, James L.** Associate Professor, Philosophy, A.B., University of Illinois (Urbana), 1956; M.A., 1958; Ph.D., University of Pennsylvania, 1960.
- Celi, Roberto** Assistant Professor, Aerospace Engineering, L. Ingegneria Aeronautica, Politecnico di Torino, 1980; M.S., University of California, 1982; Ph.D., 1987.
- Chaires, James W., Jr.** Assistant Instructor, Part-time, College of Business and Management. B.S., University of Maryland, 1972; M.B.A., 1974.
- Chait, Richard P.** Professor, Education Policy, Planning, and Administration; Executive Director, National Center for Postsecondary Governance and Finance. B.A., Rutgers University, 1966; M.A., University of Wisconsin (Madison), 1968; Ph.D., University of Wisconsin, 1972.
- Chalip, Laurence H.** Assistant Professor, Physical Education, A.B., University of California (Berkeley), 1972; M.S., University of Waikato (New Zealand), 1979; M.A., University of Chicago, 1983; Ph.D., 1988.
- Chambers, Erve J.** Professor, Anthropology, B.A., West Washington State College, 1969; M.A., University of Oregon, 1972; Ph.D., 1973.
- Chambers, Robert G.** Professor, Agricultural and Resource Economics, B.S.F.S., Georgetown University, 1972; M.S., University of Maryland, 1975; Ph.D., University of California (Berkeley), 1978.
- Chan, Tsze** Faculty Research Associate, Afro-American Studies. B.A., University of Guelph (Canada), 1976; M.A., University of Windsor (Canada), 1976; M.A., University of Pittsburgh, 1982; Ph.D., 1987.
- Chander, Suresh** Lecturer Part-time, Aerospace Engineering B.S., Banaras Hindu University, 1964; M.S., Indian Institute of Science, 1966; M.S., University of Maryland, 1971; Ph.D., 1975
- Chang, Chia-Cheh** Professor, Physics and Astronomy, B.S., Tainghai University (Taiwan), 1961; M.A., University of Southern California, 1966; Ph.D., 1968.
- Chang, Chung Yun** Professor, Physics and Astronomy, B.S., National Taiwan University, 1954; Ph.D., Columbia University, 1965.
- Chang, Der-Chen** Assistant Professor, Mathematics, B.S., National Tsing Hua University (Taiwan), 1979; M.A., 1981; Ph.D., Princeton University, 1984.
- Chang, Eric C.** Associate Professor, College of Business and Management, B.S., National Cheng Kung University, 1974; M.B.A., Wright State University, 1979; Ph.D., Purdue University, 1982.
- Chang, Gang Len** Assistant Professor, Civil Engineering, B.E., National Cheng Kung University, 1975; M.S., National Chiao Tung University, 1979; Ph.D., University of Texas at Austin, 1985.
- Chang, Luke L. Y.** Professor and Chairman, Geology, B.S., National Taiwan University, 1957; Ph.D., University of Chicago, 1963.
- Chang, Peter C.** Associate Professor, Civil Engineering, B.S., Texas A & M University, 1975; M.S., University of Illinois, 1979; Ph.D., 1982.
- Chang, Wook** Assistant Professor, Urban Studies, B.A., Sung Kyun-Kwan University, 1975; M.A., Seoul National University, 1977; Ph.D., University of Southern California, 1986
- Chant, Nicholas S.** Professor, Physics and Astronomy, B.A., University of Cambridge, 1962; M.A., Downing College (Cambridge University), 1966; Ph.D., Lincoln College (Oxford University), 1966
- Chao, Lin** Assistant Professor, Zoology, B.A., Cornell University, 1972; M.A., Mt. Holyoke College, 1975; Ph.D. University of Massachusetts, 1979.
- Chatelain, Verne E.** Professor Emeritus, History, B.A., Nebraska State Teachers College, 1917; M.A., University of Chicago, 1925; Ph.D., University of Minnesota, 1943.
- Cheves, Antonio F.** Lecturer, Part-time, Geography, Doctor of Law, University of Havana, 1941, Ph.D., 1946; M.A., Northwestern University, 1948.
- Chen, Alexander** Associate Professor and Acting Chair, Housing and Design, B.A., New York University, 1973; M.U.P., 1976; Ph.D., University of Michigan, 1981.
- Chen, Hsing-Hen** Professor, Physics and Astronomy Institute for Advanced Computer Studies, B.S., National Taiwan University, 1968; M.A., Columbia University, 1970; Ph.D., 1973
- Chen, Jigien** Assistant Professor, Mechanical Engineering B.S., National Taiwan University, 1973; M.S., Stanford University, 1977; Ph.D., 1981.
- Chen, Son-Nan** Professor, College of Business and Management, B.A., National Taiwan University, 1964; M.S., University of Georgia, 1971; Ph.D., 1975.
- Cherniak, Christopher** Associate Professor, Philosophy; Associate Professor, Institute for Advanced Computer Studies, B.A., Harvard University, 1965; M.A., University of California (Berkeley), 1971; B. Litt., University of Oxford, 1973; Ph.D., University of California (Berkeley), 1977.
- Chin, Tsung** Associate Professor, Hebrew and East Asian. B.A., Taiwan Normal University, 1953; M.S., Georgetown University, 1967; Ph.D., 1971.
- Choi, Jin Moo** Assistant Professor, College of Library and Information Services, B.A., Sung Kyun University, Seoul, Korea, 1979; M.L.S., State University of New York, Geneseo, 1980; Ph.D., Rutgers University, N.J., 1985
- Choi, Kyu-Yong** Associate Professor, Chemical and Nuclear Engineering, B.S., Seoul National University, 1976; M.S., 1978; Ph.D., University of Wisconsin, 1984.
- Choi, Young R.** Assistant Professor, Human Nutrition and Food Systems, B.S., Seoul National University, 1961; M.S., 1965; Ph.D., Michigan State University, 1976.
- Chopra, Indjerit** Professor, Aerospace Engineering, B.S., Punjab Engineering College, 1965; M.E., Indian Institute of Science, 1968; Sc.D., Massachusetts Institute of Technology, 1977.
- Christian, Charles M.** Associate Professor, Geography and Urban Studies, B.A., Northeastern State College, 1966; M.A.A.T., 1968; M.A., University of Illinois (Urbana), 1970; Ph.D., 1975.
- Chu, Hsin** Professor, Mathematics, M.S., Tulane University, 1957; Ph.D., University of Pennsylvania, 1959.
- Chu, Yaohan** Professor, Computer Science; Professor, Electrical Engineering, B.S., Chiao-Tung University (China), 1942; M.S., Massachusetts Institute of Technology, 1945; Sc.D., 1953.
- Churaman, Charlotte V.** Assistant Professor, Family and Community Development, B.Sc., Berea College, 1942; M.Ed., Pennsylvania State University, 1964; Ed.D., 1969.
- Churchill, John W.** Associate Professor, Recreation, B.S., State University College (Cortland), 1958; M.S., University of Illinois (Urbana), 1959; Ph.D., University of Wisconsin, 1968.

- Cirricione, Joseph M.** Associate Professor, Curriculum and Instruction; Associate Professor, Geography B.S., State University of New York (Oswego), 1962; M.A., Ohio State University, 1967; M.A., Brooklyn College, 1965, Ph.D., The Ohio State University, 1970.
- Cleague, Christopher K.** Professor, Economics B.A., Swarthmore College, 1960, Ph.D., Harvard University, 1966
- Cleagy, Monique W.** Associate Professor, Education Policy, Planning, and Administration B.A. Swarthmore College, 1959; Ph.D., Harvard University, 1969
- Clark, Eugenie** Professor, Zoology, B.A., Hunter College, 1942, M.A., New York University, 1946, Ph.D., 1950.
- Clark, Jane E.** Associate Professor, Physical Education B.S., State University of New York (Brookport), 1968; M.S., University of Washington (Seattle), 1970; Ph.D., University of Wisconsin (Madison), 1976.
- Clark, Neri A.** Professor Emeritus, Agronomy, B.S., University of Maryland, 1954, Ph.D., 1959.
- Clarke, David H.** Professor and Chairman, Physical Education B.S., Springfield College, 1952; M.S., 1953; Ph.D., University of Oregon, 1959.
- Claude, Richard P.** Professor, Government and Politics B.A., College of Saint Thomas, 1956; M.S., Florida State University, 1960, Ph.D., University of Virginia, 1965.
- Clearwater, Harvey E.** Associate Professor, Health Education, B.A., State University of New York (Albany), 1955; M.A., Michigan State University, 1967; Ed.D., 1970.
- Cleary, Marilyn F.** Instructor, Mathematics B.A., Montclair State College, 1953; M.A., 1957; Ph.D., University of Maryland, 1976.
- Cleghorn, Reese** Professor and Dean, College of Journalism B.A., Emory University, 1950; M.A., Columbia University, 1956.
- Clement, Linda M.** Assistant Professor, Counseling and Personnel Services; Director, Undergraduate Admissions Office, B.A., State University of New York (Oswego), 1971; M.A., Michigan State University, 1973; Ph.D., University of Maryland, 1981.
- Clignet, Remi P.** Professor, Sociology B.A., University of Paris, 1948; Licence en Lettres, 1951; Licence en Law, 1953; M.A., 1958; Ph.D., 1963.
- Coates, James R., Jr.** Instructor, Physical Education B.S., Maryland State College (UMES), 1972; M.A., University of Maryland, 1982.
- Cockburn, James S.** Professor, History LL.B., Leeds University, 1959; LL.M., 1961; Ph.D., 1970.
- Coddington, Jonathan A.** Adjunct Professor, Entomology B.S., Yale University, 1975; M.A., Harvard University, 1978; Ph.D., 1984.
- Cohen, Ellen** Lecturer, Part-time, Housing and Design B.S., University of Maryland, 1982.
- Cohen, H. Robert** Professor, Music B.A., New York University, 1963; M.A., 1967; Ph.D., 1973.
- Cohen, Jerry D.** Adjunct Associate Professor, Botany B.S., University of California (Riverside), 1972; M.S., San Diego State University, 1974, Ph.D., Michigan State University, 1979.
- Cohen, Joel M.** Professor, Mathematics Sc.B., Brown University, 1963; Ph.D., Massachusetts Institute of Technology, 1966.
- Cohen, Lenore G.** Lecturer, Curriculum and Instruction; Coordinator, Montgomery County Teacher Education Center, B.A., Buffalo State, 1968; M.A.T., University of Pittsburgh, 1969; Ed.D., Temple University, 1982.
- Cohen, Leon W.** Professor Emeritus, Mathematics B.A., Columbia University, 1923; M.A., 1925; Ph.D., University of Michigan, 1928
- Cohen, Michael L.** Assistant Professor, School of Public Affairs B.S., University of Michigan, 1975; M.S., Stanford University, 1977; Ph.D., 1981.
- Cohen, Thomas D.** Assistant Professor, Physics A.B., Harvard University, 1980; Ph.D., University of Pennsylvania, 1985.
- Cole, Wayne S.** Professor, History B.A., Iowa State Teachers College, 1946; M.S., University of Wisconsin, 1948; Ph.D., 1951
- Coleman, Don** Assistant Professor, Communication Arts and Theatre B.F.A., University of Texas, 1969; M.F.A., New York University, 1975.
- Coleman, Linda K.** Associate Professor, English A.B., University of Michigan, 1973; M.A., 1973; Ph.D., University of California (Berkeley), 1982.
- Coletti, Theresa** Associate Professor, English B.A., University of Pittsburgh, 1971; M.A., University of Rochester, 1973; Ph.D., 1975.
- Collier, Michael** Assistant Professor, English B.A., Connecticut College, 1976; M.F.A., University of Arizona, 1979
- Colombini, Marco** Professor, Zoology B.S., McGill University, 1970; Ph.D., 1974
- Colville, James** Professor and Chairman, Civil Engineering B.S., Purdue University, 1959; M.S., 1960; Ph.D., University of Texas at Austin, 1970.
- Colwell, Rita R.** Director, Maryland Biotechnology Institute; Professor, Microbiology B.S., Purdue University, 1956; M.S., 1958; Ph.D., University of Washington, 1961; Professor Extraordinario, Universidad Catolica de Valparaiso, 1978; D.Sc. (Honorary), Heriot-Watt University (Edinburgh, Scotland), 1987; Honorary Professor, University of Queensland, Australia, 1988.
- Combes, Kevin R.** Associate Professor, Mathematics B.A., Lehigh University, 1977; M.S., University of Chicago, 1978; Ph.D., 1982
- Commer, Malcolm Jr.** Assistant Professor, Agricultural and Resource Economics B.B.A., University of Mississippi, 1970; M.S., Mississippi State University, 1986; Ph.D., 1989.
- Conway, Joan M.** Adjunct Assistant Professor, Part-time, Human Nutrition and Food Systems B.A., St. Joseph's College, 1965; M.S., City College of New York, 1970; M.S. Columbia University, 1974; Ph.D., Massachusetts Institute of Technology, 1978.
- Coogash, Robert M.** Associate Professor, English B.A., Iowa College, 1954; M.A., DePaul University, 1958; Ph.D., Loyola University, 1967.
- Cook, Clarence H.** Professor, Mathematics B.A., State University of Iowa, 1948; M.S., 1950; Ph.D., University of Colorado, 1962.
- Cook, Donelda A.** Assistant Professor, Counseling and Student Personnel B.S., Delaware State College, 1977; M.A., Southern Illinois University (Carbondale), 1979; Ph.D., 1983.
- Cook, Neal A.** Lecturer, Part-time, Mechanical Engineering B.S., Oklahoma State University, 1943; M.S., 1950; Ph.D., University of Texas, 1956.
- Cook, Thomas M.** Professor, Microbiology B.S., University of Maryland, 1955; M.S., 1957; Ph.D., Rutgers The State University, 1963.
- Cooke, Todd J.** Associate Professor, Botany B.S., Antioch College, 1974; Ph.D., Cornell University, 1979
- Cooper, David H.** Assistant Professor, Special Education A.B., Brown University, 1975; M.Ed., University of North Carolina (Chapel Hill), 1980; Ph.D., 1984.
- Cooper, Elmer L.** Associate Professor, Retired, Agricultural and Extension Education; Affiliate Associate Professor, Industrial, Technological and Occupational Education B.S., University of Maryland, 1956; M.S., 1965; Ed.D., Virginia Polytechnic Institute & State University, 1974
- Cooper, Jack L.** Associate Chair, Music B.Mus., Curtis Institute, 1958; M.Mus., Catholic University of America, 1963.
- Cooper, Jeffery M.** Professor, Mathematics B.A., Haverford College, 1962; M.S., University of Illinois (Chicago), 1964; Ph.D., 1967
- Cooper, Sherod M., Jr.** Associate Professor, English B.S., Temple University, 1951; M.A., 1953; Ph.D., University of Pennsylvania, 1963
- Cooperman, Bernard D.** Associate Professor, History B.A., University of Toronto, 1968; M.A., Brandeis University, 1969; M.A., Harvard University, 1972; Ph.D., 1976.
- Cooperman, Bernard D.** Associate Professor, History B.A., University of Toronto, 1968; M.A., Brandeis University, 1969; M.A., Harvard University, 1972; Ph.D., 1976.
- Coplan, Michael A.** Professor, Institute for Physical Science and Technology B.A., Williams College, 1960; Ph.D., Yale University, 1963
- Coppelia, Steven J.** Assistant Professor, Chemical and Nuclear Engineering B.S., Pennsylvania State University, 1984; M.S., 1985; Ph.D., University of Delaware, 1987
- Corbett, M. Kenneth.** Professor, Botany B.Sc., McGill University, 1950; Ph.D., Cornell University, 1954.
- Corliss, John O.** Professor Emeritus, Zoology B.S., University of Chicago, 1944; B.A., University of Vermont, 1947; Ph.D., New York University, 1951.
- Cornelius, Llewellyn** Lecturer, Afro-American Studies B.A., Syracuse University, 1982; A.M., University of Chicago, 1985; A.M., 1983; Ph.D., 1988.
- Correl, Ellen** Professor, Mathematics B.S., Douglass College, 1951; M.S., Purdue University, 1953; Ph.D., 1958.
- Corsi, Thomas M.** Associate Professor, College of Business and Management B.A., Case-Western Reserve University, 1971; M.A., Kent State University, 1974; Ph.D., University of Wisconsin, 1976.
- Cortes, Dario** Director of Graduate Minority Affairs, Graduate Studies and Research; Affiliate Associate Professor, Spanish and Portuguese B.A., Queens College (CUNY), 1974; M.A., University of Virginia, 1975; Ph.D., University of Illinois, 1978
- Cossa, Dominic F.** Professor, Music B.S., University of Scranton, 1957; M.A., University of Detroit, 1960.
- Costantino, Patricia M.** Lecturer, Curriculum and Instruction; Coordinator, Prince George's County Professional Development Center, B.S., University of Maryland, 1966; M.Ed., 1969.
- Coughlin, Peter J.** Associate Professor, Economics B.A., State University of New York at Albany, 1973; M.A., 1974; Ph.D., 1976
- Coursey, Robert D.** Associate Professor, Psychology B.S., Spring Hill College, 1966; Ph.D., University of Rochester, 1970.
- Coustaut, Carmen** Assistant Professor, Radio, TV, Film; Assistant Professor, Affiliate, Afro-American Studies, B.A., University of California, 1971; M.A., Harvard University, 1972; M.A., University of Southern California, 1982
- Craig, Patrick M.** Associate Professor, Art B.F.A., Western Michigan University, 1974; M.F.A., University of Cincinnati, 1976.
- Craig, Randall J.** Associate Professor, Curriculum and Instruction B.S., Morgan State University, 1955; M.F.A., Temple University, 1963; Ph.D., University of Maryland, 1974.
- Crandall, Robert W. A. B.** University of Cincinnati, 1962; M.A., Northwestern University, 1965; Ph.D., 1968
- Creech, Patsy L.** Lecturer, Part-time, Institute of Applied Agriculture B.S., Purdue University, 1961; M.A., University of Wisconsin-Milwaukee, 1970; M.A., University of Wisconsin-Madison, 1973; Ph.D., Indiana University-Bloomington, 1979.

- Cropper, Maureen L.** Associate Professor, Economics. B.A., Bryn Mawr College, 1969; M.A., Cornell University, 1972; Ph.D., 1973
- Cross, Richard K.** Professor, English. A.B., Princeton University, 1962; M.A., Stanford University, 1966; Ph.D., 1967.
- Crowell, Alfred A.** Professor Emeritus, College of Journalism. B.A., University of Oklahoma, 1929; M.A., 1934; M.S.J., Northwestern University, 1940.
- Cumberland, John H.** Professor, Economics, Director, Bureau of Business and Economic Research. B.A., University of Maryland, 1947; M.A., Harvard University, 1949; Ph.D., 1951.
- Cunniff, Patrick F.** Professor, Mechanical Engineering, Acting Associate Dean for Student Affairs, Graduate Studies and Research. B.C.E., Manhattan College, 1955; M.S., Virginia Polytechnic Institute of State University, 1956; Ph.D., 1962.
- Cunningham, William D.** Lecturer, College of Library and Information Services. B.A., University of Kansas, 1959; M.L.S., University of Texas, 1963.
- Currie, Douglas G.** Professor, Physics and Astronomy. B.E.P., Cornell University, 1958; Ph.D., University of Rochester, 1962.
- Currier, Albert W.** Assistant Professor, Mathematics. B.A., State University of Iowa, 1954; M.A., Johns Hopkins University, 1959; Ph.D., 1968.
- Curry, William A.** Associate Specialist, Animal Sciences. B.S., University of Maryland, 1960.
- Curtis, Suzanne R.** Lecturer, Human Nutrition and Food Systems. B.A., Lewis & Clark College, 1974; M.S., Virginia Polytechnic Institute, 1979; Ph.D., 1982.
- Cuyjet, Carol L.** Instructor, Hearing and Speech Sciences. B.S., Northern Illinois University, 1968; M.A., 1971; Certificate Advanced Study, 1978.
- Dagenais, Mario** Associate Professor, Electrical Engineering. B.Sc., Université de Montreal, 1974; M.S., University of Rochester, 1976; Ph.D., 1978.
- Dager, Edward Z.** Professor, Sociology. A.B., Kent State University, 1950; A.M., Ohio State University, 1951; Ph.D., 1956.
- Dalley, John** Professor, Part-time, Music, Artist Diploma, Curtis Institute of Music, 1958; Member, Guarneri Quartet.
- Dally, James W.** Professor, Mechanical Engineering. B.S., Carnegie Institute of Technology, 1951; M.S., 1953; Ph.D., Illinois Institute of Technology, 1958.
- Dancs, Jerome** Associate Professor, Mathematics. B.A., Polytechnic Institute of Brooklyn, 1961; M.S., University of Wisconsin, 1963; Ph.D., 1966.
- Daniel, Marilyn J.** Instructor, Hearing and Speech Sciences. B.A., Western Kentucky University, 1970; M.S., Vanderbilt University, 1974.
- Darden, Lindley** Associate Professor, Philosophy; Associate Professor, History. B.A., Southwestern University, 1968; A.M., University of Chicago, 1969; S.M., 1972; Ph.D., 1974.
- Dards, Rachel** Professor, Textiles and Consumer Economics. B.S., Saint Mary's College (Dublin), 1949; M.S., University of Minnesota, 1963; Ph.D., 1965.
- Dasgupte, Abhijit** Assistant Professor, Mechanical Engineering. B.S., Indian Institute of Technology, 1976; M.S., Villanova University, 1981; Ph.D., University of Illinois, 1988.
- DasSarma, Sankar** Professor, Physics and Astronomy. B.S., Presidency College (Calcutta), 1973; Sc.M., Brown University, 1976; Ph.D., 1979.
- Davey, H. Beth** Associate Professor, Curriculum and Instruction. B.S., University of Miami, 1965; M.A., University of Rochester, 1969; Ph.D., Case-Western Reserve University, 1971.
- David, Deldre** Professor and Chair, English. B.A., Columbia University, 1972; M.A., 1973; M.Phil., 1975; Ph.D., 1978.
- Davidson, Dan E.** Professor, Germanic and Slavic Languages and Literatures. B.A., University of Kansas, 1966; M.A., Harvard University, 1971; Ph.D., 1972.
- Davidson, John A.** Professor, Entomology. B.A., Columbia Union College, 1955; M.S., University of Maryland, 1957; Ph.D., 1960.
- Davidson, Merie S.** Acting Executive Assistant to the President, Academic Affairs. B.S., Dillard University, 1959; M.S., University of Maryland, 1967; Ph.D., 1971.
- Davidson, Neil A.** Associate Professor, Curriculum and Instruction. B.S., Case Institute of Technology, 1961; M.A., University of Wisconsin (Madison), 1963; Ph.D., 1970.
- Davidson, Roger H.** Professor, Government and Politics. A.B., University of Colorado, 1958; Ph.D., Columbia University, 1963.
- Devis, Allen P.** Assistant Professor, Civil Engineering. B.S., University of Delaware, 1984; M.S., 1986; Ph.D., 1989.
- Davis, Christopher C.** Professor and Associate Chairman, Electrical Engineering. B.A., Cambridge University, 1965; M.A., 1970; Ph.D., Manchester University (England), 1970.
- Davis, Larry S.** Professor, Computer Science; Director, Institute for Advanced Computer Studies. B.A., Colgate University, 1970; M.S., University of Maryland, 1972; Ph.D., 1976.
- Davis, Sharon A.** Lecturer, Part-time, Housing and Design. B.S., University of Maryland, 1981.
- Davis, Shelley G.** Associate Professor, Music. A.B., New York University, 1957; M.A., 1960; Ph.D., 1971.
- Davidson, Stowell W.** Assistant Professor, Chemical and Nuclear Engineering. B.A., University of Chicago, 1971; M.S., University of Maryland, 1978; Ph.D., 1984.
- Devisson, Lee D.** Professor, Electrical Engineering. B.S.E., Princeton University, 1958; M.S.E., University of California (Los Angeles), 1961; Ph.D., 1964.
- Dawisha, Karen L.** Professor, Government and Politics. B.A., University of Lancaster, 1971; Ph.D., London School of Economics, 1975.
- Dayawansa, Wijesuriya** Assistant Professor, Electrical Engineering, Assistant Professor, Systems Research Center. B.Sc., University of Peradeniya (Sri Lanka), 1978; M.Sc., Clark University, 1982; D.Sc., Washington University, 1986.
- Dayton, C. Mitchell.** Professor, Measurement, Statistics, and Evaluation. B.A., University of Chicago, 1955; M.A., University of Maryland, 1963; Ph.D., 1964.
- Dean, Shirley R.** Lecturer, Housing and Design. B.A., University of Maryland, 1958; M.F.A., American University, 1966.
- DeAyala, Rafael Jaime** Assistant Professor, Measurement, Statistics, and Evaluation. B.A., University of Connecticut (Storrs), 1979; Ph.D., University of Texas (Austin), 1987.
- DeBarthe, Jerry V.** Associate Professor, Animal Sciences. B.S., Iowa State University, 1961; Ph.D., 1966.
- Decker, A. Morris** Professor Emeritus, Agronomy. B.S., Colorado State University, 1949; M.S., Utah State University, 1950; Ph.D., University of Maryland, 1953.
- DeClaris, Nicholas** Professor, Electrical Engineering; Professor, Department of Epidemiology and Preventive Medicine. B.S., Texas Agricultural and Mechanical University, 1952; S.M., Massachusetts Institute of Technology, 1954; Sc.D., 1959.
- de Colon, Maria M.** Affiliate Associate Professor, Agricultral and Extension Education. B.S., University of Puerto Rico, 1953; M.A., Michigan State University, 1969; Ed.D., 1978.
- DeLio, Thomas J.** Associate Professor, Music. B.M., New England Conservatory of Music, 1972; Ph.D., Brown University, 1979.
- Dellas, Harris** Assistant Professor, Economics. B.A., Athens School of Business & Economics, 1980; Ph.D., University of Rochester, 1985.
- DeLorenzo, Willem E.** Associate Professor, Curriculum and Instruction. B.A., Montclair State College, 1959; M.A., 1964; Ph.D., Ohio State University, 1971.
- Demaitre, Ann** Associate Professor, French and Italian. B.A., Columbia University, 1950; M.A., University of California (Berkeley), 1951; M.S., Columbia University, 1952; Ph.D., University of Maryland, 1965.
- Demaree, Constance H.** Instructor, English. B.A., University of Maryland, 1944; M.A., 1945.
- DeMonte, Claudia A.** Associate Professor, Art. B.A., College of Notre Dame of Maryland, 1969; M.F.A., Catholic University of America, 1971.
- Denman III, Daniel W.** Manager, Statistical Services, Computer Science Center, Instructor, General Honors Program. B.A., Cornell University, 1976; M.A., University of Maryland, 1980.
- Denno, Robert F.** Professor, Entomology. B.S., University of California (Davis), 1967; Ph.D., 1973.
- Denny, Don W.** Professor, Art History. B.A., University of Florida, 1959; M.A., New York University, 1961; Ph.D., 1965.
- Deroeden, Peter H.** Associate Professor, Agronomy. B.S., Colorado State University, 1970; M.S., 1976; Ph.D., University of Rhode Island, 1980.
- Deshler, Walter W.** Lecturer, Part-time, Geography. B.S., Lafayette College, 1943; M.A., University of Maryland, 1953; Ph.D., 1957.
- DeShong, Philip R.** Associate Professor, Chemistry and Biochemistry. B.S., University of Texas, 1971; Sc.D., Massachusetts Institute of Technology, 1976.
- DeSilva, Alan W.** Professor, Physics and Astronomy. B.S., University of California (Los Angeles), 1954; Ph.D., University of California (Berkeley), 1961.
- Desmond, Sharon** Assistant Professor, Health Education. B.A., The University of Toledo, 1982; M.S. & Ed., 1984; Ph.D., 1988.
- Destler, I.M.** Professor, School of Public Affairs. B.A., Harvard College, 1961; M.P.A., Princeton University, 1965; Ph.D., 1971.
- Destler, William W.** Professor and Chairman, Electrical Engineering. B.S., Stevens Institute of Technology, 1968; Ph.D., Cornell University, 1972.
- Deuster, Patricia A.** Adjunct Assistant Professor, Part-time, Human Nutrition and Food Systems. B.A., College of William and Mary, 1971; M.A., 1978; Ph.D., University of Maryland, 1982.
- Devitt, Michael** Professor, Philosophy. B.A., University of Sydney, 1965; M.A., Harvard University, 1970; Ph.D., 1972.
- DeVoe, Howard J.** Associate Professor, Chemistry and Biochemistry. A.B., Oberlin College, 1955; Ph.D., Harvard University, 1960.
- Dexter, Caroline** Lecturer, Classics. B.A., Manhattanville College, 1969; M.A., Duke University, 1970; Ph.D., 1975.
- Dick, Richard D.** Associate Professor, Mechanical Engineering. B.S., Arizona State College, 1957; M.S., Arizona State University, 1959; Ph.D., 1968.
- Dickerson, Russell R.** Assistant Professor, Meteorology. B.A., University of Chicago, 1975; M.S., University of Michigan, 1978; Ph.D., 1980.
- Dierking, Lynn D.** Assistant Professor, Curriculum and Instruction. B.S., University of Miami, 1978; M.A.Ed., University of Florida, 1981; Ph.D., 1987.
- Dies, Robert R.** Professor, Psychology. B.S., Carroll College, 1962; M.A., Bowling Green State University, 1964; Ph.D., University of Connecticut, 1968.

- Dieter, George E.** Dean, College of Engineering, Professor, Mechanical Engineering, B.S., Drexel University, 1950; Sc.D., Carnegie-Mellon University, 1953
- Dietzer, Gerald F.** Associate Professor, Horticulture B.S., State University of New York (Buffalo), 1966, Ph.D., University of Georgia, 1971.
- Dillard, Dudley** Professor Emeritus, Economics, B.S., University of California (Berkeley), 1935, Ph.D., 1940.
- Dimerzo, Marino** Associate Professor, Mechanical Engineering, Dr. Ing., University of Naples (Italy), 1976, Ph.D., Catholic University, 1982.
- DiNenno, Phillip J.** Lecturer, part-time, Fire Protection Engineering, B.S., University of Maryland, 1977.
- Diner, Hasia R.** Associate Professor, American Studies, B.A., University of Wisconsin, 1968; M.A.T., University of Chicago, 1970, Ph.D., University of Illinois, 1975.
- Dingwall, William O.** Associate Professor, Hearing and Speech Sciences, B.S., Georgetown University, 1957; Ph.D., 1964.
- DiPaolo, Theresa** Academic Advisor, College of Arts and Humanities; Instructor, English, B.A., University of Maryland, 1979, M.A., 1982.
- Dittmann, Laura L.** Professor Emerita, Human Development, B.S., University of Colorado, 1938; M.A., University of Maryland, 1963, Ph.D., 1967.
- Dively, Galen P.** Associate Professor, Entomology B.S., Juniata College, 1966; M.S., Rutgers University, 1968; Ph.D., 1974.
- Dobbins, Sandra N.** Faculty Research Assistant, Special Education, B.S., East Carolina University, 1976; M.A., University of Maryland, 1986.
- Dobin, Howard** Associate Professor, English, B.A., Yale University, 1974; Ph.D., Stanford University, 1982.
- Doerr, John A.** Associate Professor and Acting Chair, Poultry Science, B.A., North Carolina State University, 1968; B.S., 1972; M.S., 1975; Ph.D., 1978.
- Doetsch, Raymond N.** Professor, Emeritus, Microbiology, B.S., University of Illinois (Urbana), 1942; M.A., Indiana University, 1943, Ph.D., University of Maryland, 1948.
- Doherty, Lillian E.** Assistant Professor, Classics, B.A., St. Mary's College, 1974, M.A., University of Chicago, 1977; Ph.D., 1982.
- Donaldson, Bruce K.** Professor, Aerospace Engineering, A.B., Columbia University, 1954; B.S., 1955; M.S., University of Wichita, 1963, Ph.D., University of Illinois (Urbana), 1968.
- Donawerth, Jane L.** Associate Professor, English, B.A., Miami University, 1969; M.A., University of Wisconsin, 1970; Ph.D., 1975.
- Donnelly, Dina** Lecturer, Theatre, B.A., University of Virginia, 1985; M.F.A., 1988.
- Dooling, Robert J.** Professor, Psychology, B.S., Creighton University, 1967; M.S., St. Louis University, 1969; Ph.D., 1975.
- Dorfman, J. Robert** Professor, Physics and Astronomy; Vice President for Academic Affairs and Provost, Professor, Institute for Physical Science and Technology, A.B., Johns Hopkins University, 1957; Ph.D., 1961.
- Dorsey, John W.** Professor, Economics; Professor, Bureau of Business and Economic Research, B.S., University of Maryland, 1958; Certificate, London School of Economics (England), 1959; M.A., Harvard University, 1962; Ph.D., 1964.
- Dotson, Charles O.** Professor, Physical Education, B.A., Morehead State University, 1963, M.S., Purdue University, 1964; Ph.D., 1968.
- Douglass, Larry W.** Associate Professor, Animal Sciences, B.S., Purdue University, 1964; M.S., 1966; Ph.D., Oregon State University, 1969.
- Douglas, Avron.** Professor Emeritus, Mathematics, A.B., University of Chicago, 1938, M.S., New York University, 1948, Ph.D., 1949.
- Downey-Vanover, Jeanne M.** Instructor, Spanish and Portuguese, B.A., West Chester State College, 1983, M.A., University of Maryland, 1986.
- Dragi, Alex J.** Professor, Physics and Astronomy, A.B., Calvin College, 1958, Ph.D., University of California (Berkeley), 1963
- Drake, James F.** Associate Professor, Laboratory for Plasma and Fusion Energy Studies, Associate Professor, Institute for Physical Science and Technology, Associate Professor, Physics and Astronomy, B.S., University of Colorado (Los Angeles), 1969, M.S., 1972, Ph.D., 1975
- Dreher, M. Jean** Associate Professor, Curriculum and Instruction, B.A., University of California (Riverside), 1970, M.A., 1976; Ph.D., 1980.
- Dresner, Martin E.** Assistant Professor, College of Business and Management, B.Comm., University of Toronto, 1979, M.B.A., York University, 1980; Ph.D., The University of British Columbia, 1989.
- Drew, H. Dennis.** Professor, Physics and Astronomy, B.S., University of Pittsburgh, 1962; Ph.D., Cornell University, 1968.
- Driskell, David C.** Professor, Art, A.B., Howard University, 1955; M.F.A., The Catholic University of America, 1962, Doctor of Fine Arts, Tougaloo College, ; Doctors of Letters, David Payne College, ; Doctor of Fine Arts, Bowdoin College. ; Doctor of Fine Arts, Westbury College. .
- Drost, Uwe** Lecturer, School of Architecture, Dipl. Ing Arch & Urban Design , Stuttgart University, 1986; M.ARCH II, Syracuse University, 1987.
- Druker, Sylvia** Lecturer, Part time, Dance
- Drum, Barbara A.** Instructor, Physical Education, B.S., Pennsylvania State University, 1958, M.A., University of Iowa, 1963
- Dudash, Michele R.** Assistant Professor, Botany, B.A., Millersville University, 1977; Ph.D., University of Illinois at Chicago, 1987.
- Dudley, James** Professor, Education Policy, Planning, and Administration, B.A., Southern Illinois University, 1951; M.S., 1957, Ed.D., University of Illinois (Urbana), 1964
- Duffey, Dick** Professor, Chemical and Nuclear Engineering, B.S., Purdue University, 1939; M.S., University of Iowa, 1940, Ph.D., University of Maryland, 1956.
- Duffy, John** Professor Emeritus, History, B.A., Louisiana State University, 1941; M.A., 1943; Ph.D., University of California (Los Angeles), 1946.
- Duffy, John M.** Associate Professor, Classics, B.A., Maynooth College (Ireland), 1965; M.A., National University of Ireland, 1967; Ph.D., State University of New York (Buffalo), 1975
- Dunaway-Mariano, Debra** Associate Professor, Chemistry and Biochemistry, B.S., Texas A&M, 1973, Ph.D., 1975
- Duncan, James H.** Associate Professor, Mechanical Engineering, B.S., Brown University, 1971, M.A., Johns Hopkins University, 1973, Ph.D., 1979.
- Dunn, Norm E.** Assistant Professor, English, B.A., Madison College, 1946, M.A., University of Pennsylvania, 1952; Ph.D., 1968.
- Dunn, Robert Ellis** Associate Professor, Dance, B.M., New England Conservatory of Music, 1958, M.L.S., Rutgers University, 1966.
- DuPuy, Karl F.G.** Associate Professor, School of Architecture, B.A., Dartmouth College, 1964, M.Arch., University of Pennsylvania, 1967, M. Arch., Delft University of Technology (The Netherlands), 1969
- Durand, Richard M.** Professor, College of Business and Management, B.A., University of Florida, 1968, M.B.A., 1970, Ph.D., 1975
- Dutta, Sukanta K.** Associate Professor, College of Veterinary Medicine, B.Sc (Vet.), Bombay University (India), 1956, M.S., University of Minnesota, 1960; Ph.D., 1962.
- Dynerman, Alan B.** Lecturer, Part-time, School of Architecture, B.A., Columbia University, 1976, M.ARCH, University of Virginia, 1981
- Earl, James A.** Professor, Physics and Astronomy, B.S., Massachusetts Institute of Technology, 1953; Ph.D., 1957.
- Eastman, Timothy E.** Associate Research Scientist, Institute for Physical Science and Technology, B.S., University of Minnesota, 1967; M.S., University of Colorado, 1972, Ph.D., University of Alaska, 1979
- Ebert, David** Research Associate, Chemical and Nuclear Engineering, B.S., University of Wisconsin, 1963; M.S., Georgia Tech, 1965, Ph.D., 1972.
- Eckersley, Michael D.** Assistant Professor, Housing and Design, B.A., Weber State College, 1978, M.F.A., Washington University, 1980, Ed.D., Ball State University, 1985
- Eckstein, Arthur M.** Associate Professor, History, B.A., University of California (Los Angeles), 1968, M.A., 1970; Ph.D., University of California (Berkeley), 1978.
- Edelson, Charles B.** Associate Professor, College of Business and Management, B.B.A., University of New Mexico, 1949, M.B.A., Indiana University, 1950.
- Edelstein, Stewart L.** Associate Dean, College of Behavioral and Social Sciences, Affiliate Assistant Professor, Education Policy, Planning, and Administration, Affiliate Associate Professor, Government and Politics, B.A., State University of New York (Buffalo), 1968, M.A., University of California (Berkeley), 1973, Ph.D., 1979
- Edgar, Timothy M.** Assistant Professor, Communication Arts and Theatre, B.A., Eastern Illinois University, 1979; M.A., Purdue University, 1982; Ph.D., 1986.
- Edmundson, Harold P.** Professor, Computer Science; Professor, Mathematics, B.A., University of California, 1946; M.A., 1948, Ph.D., 1953.
- Egel, Andrew L.** Associate Professor, Special Education, B.A., University of California, 1976, M.A., 1977; Ph.D., 1979.
- Ehrlich, Gertrude** Professor, Mathematics, B.S., Georgia College, 1943; M.A., University of North Carolina, 1945; Ph.D., University of Tennessee, 1953
- Eichhorn, Bryan W.** Assistant Professor, Chemistry and Biochemistry, A.B., Rollins College, 1983; Ph.D., Indiana University, 1987
- Eichler, David S.** Associate Professor, Physics and Astronomy, Astronomy Program, S.B., Massachusetts Institute of Technology (Physics), 1972; S.B. (Math), 1972; Ph.D., 1969.
- Eidson, John R.** Lecturer, Part-time, Anthropology, B.A., Duke University, 1976, Ph.D., Cornell University, 1983.
- Einstein, Theodore L.** Professor, Physics and Astronomy, B.A., Harvard University, 1969, M.A., 1969, Ph.D., University of Pennsylvania, 1973
- Elam, Harry J., Jr.** Assistant Professor, Communication Arts and Theatre, A.B., Harvard University, 1978, Ph.D., University of California (Berkeley), 1983.
- Eley, George, Jr.** Associate Professor, Curriculum and Instruction, B.S., Ohio State University, 1952; M.Ed., 1957; Ph.D., 1966.
- Elliot, John** Professor, Human Development, A.B., Harvard University, 1956; A.M.T., 1958, Ed.D., Stanford University, 1966.
- Elkin, Stephen L.** Associate Professor, Government and Politics, B.A., Alfred University, 1961, Ph.D., Harvard University, 1969
- Elkins, Richard L.** Assistant Professor, Industrial, Technological and Occupational Education, B.S., University of Maryland, 1953, M.A., 1958, Ed.D., 1972.

- Elkins, Wilson H.** President Emeritus. B.A., University of Texas, 1932; M.A., 1932; B.Lit., Oxford University, 1936; Ph.D., 1936.
- Ellingson, R. G.** Associate Professor, Meteorology B.S., Florida State University, 1967; M.S., 1968; Ph.D., 1972
- Ellis, Richard F.** Associate Professor, Physics and Astronomy; Assistant Dean, College of Computer, Mathematical and Physical Sciences. B.S., Cornell University, 1966; M.A., Princeton University, 1968; Ph.D., 1970.
- Ellis, Robert L.** Associate Professor, Mathematics. A.B., Miami University (Ohio), 1960; Ph.D., Duke University, 1966.
- Elliston, Ronald J.** Associate Professor, Music. B.S., University of Illinois (Urbana), 1970, M.S., 1973.
- Ellsworth, Robert W.** Visiting Associate Professor, Physics and Astronomy. B.S., Yale University, 1960; Ph.D., University of Rochester, 1965
- Elsing, Evelyn L.** Associate Professor, Music. B.Mus., University of Michigan, 1970; M.Mus., 1971.
- Emad, Fewzi P.** Professor and Associate Chairman, Electrical Engineering. B.S.E.E., American University (Beirut), 1961; M.S., Northwestern University, 1963; Ph.D., 1966.
- Emberall, James A.** Lecturer, Part-time, College of Business and Management. B.A., The American University, 1974; M.A., Boston College, 1979; M.B.A., George Washington University, 1982.
- Ennia, Catherine D.** Assistant Professor, Physical Education. B.S., Lynchburg College, 1975; M.S., University of North Carolina - Greensboro, 1977; Ph.D., University of Georgia, 1984.
- Ensor, Bruce D.** Lecturer, Part-time, Textiles and Consumer Economics. B.A., University of Maryland, 1979; M.S., 1982; J.D., University of Baltimore, 1985.
- Ensrmedes, Anthony** Professor, Electrical Engineering; Professor, Systems Research Center B.S., National Technical University of Athens, 1967; M.A., 1969; Ph.D., Princeton University, 1971.
- Epstein, Norman B.** Associate Professor, Family and Community Development. B.A., University of California (Los Angeles), 1969; M.A., 1970; Ph.D., 1974
- Erdman, Richard A.** Associate Professor, Animal Sciences. B.S., University of Wisconsin, 1974; M.S., University of Kentucky, 1977; Ph.D., 1979.
- Erekson, Thomas L.** Professor and Chair, Industrial, Technological and Occupational Education. B.S., Northern Illinois University, 1974; M.Ed., University of Illinois, 1975; Ed.D., 1979.
- Erickson, William C.** Professor Emeritus, Physics and Astronomy, Astronomy Program. B.A., University of Minnesota, 1951; M.A., 1955; Ph.D., 1956.
- Ernst, John A.** Lecturer, Geography. B.S., St. Louis University, 1970; M.S., 1974; Ph.D., University of Maryland, 1987.
- Erwin, Terry L.** Adjunct Professor, Entomology. B.A., San Jose State College, 1964; M.A., 1966; Ph.D., University of Alberta, 1969.
- Etheridge, Jeffery M.** Lecturer, Part-time, Mechanical Engineering. B.S., University of Maryland, 1966; M.S., MIT, 1967; Ph.D., University of Maryland, 1976.
- Etlin, Richard A.** Professor, School of Architecture. A.B., Princeton University, 1969; M.Arch., 1972; Ph.D., 1978.
- Ettenson, Thomas Richard** Assistant Professor, Textiles and Consumer Economics. B.A., Fairleigh Dickinson University, 1978; M.S., Kansas State University, 1981; Ph.D., 1984.
- Eun, Choi S.** Associate Professor, College of Business and Management. B.A., Seoul National University, 1968; M.A., 1971; Ph.D., New York University, 1981.
- Evans, Emory G.** Professor, History. B.A., Randolph-Macon College, 1950; M.A., University of Virginia, 1954; Ph.D., 1957.
- Evans, Lawrence Craig** Professor, Mathematics. B.A., Vanderbilt University, 1971; Ph.D., University of California, 1975.
- Evans, William** Assistant Professor, Economics. B.A., Wake Forest, 1983; M.A., Duke University, 1985; Ph.D., 1987.
- Eyler, Marvin H.** Professor Emeritus, Physical Education; Dean Emeritus, College of Physical Education, Recreation, and Health. A.B., Houghton College, 1942; M.S., University of Illinois (Urbana), 1948; Ph.D., 1956.
- Eyo, Ekpo** Professor, Art History. B.A., Pembroke College, Univ. of Cambridge (England), 1963; M.A., 1967; Ph.D., University of Ibadan (Nigeria), 1974
- Faber, John E.** Professor Emeritus, Microbiology. B.S., University of Maryland, 1926; M.S. 1927; Ph.D., 1937.
- Fabiano, Fabio N.** Professor, Housing and Design. B. Arch., University of Rome (Italy), 1958; Dr. Arch., University of Florence (Italy), 1964; M.I.D., Syracuse University, 1972.
- Fagan, Sarah M. B.** Assistant Professor, Germanic and Slavic Languages and Literatures. B.A., University of Hawaii, 1977; M.A., 1979; Ph.D., Cornell University, 1985.
- Fahnestock, Joanne** Associate Professor, English; Director, Professional Writing Program. B.A., University of Illinois, 1966; M.A., Indiana University, 1967; Ph.D., University of London, 1970.
- Falla, Mark L.** Adjunct Associate Professor, Poultry Science. B.S., St. Francis College, 1970; M.S., Indiana University, 1975; Ph.D., 1976.
- Fakhr-Zakeri, Issa** Assistant Professor, Mathematics. B.S., University of Tehran (Iran), 1972; M.S., George Washington University, 1979; M.S., University of Illinois (Urbana-Champaign), 1984; Ph.D., 1987.
- Falcone, Raymond L.** Associate Professor, Communication Arts and Theatre. B.A., University of Akron, 1965; M.A., 1967; Ph.D., Kent State University, 1972.
- Falk, David S.** Professor, Physics and Astronomy; Assistant Vice President, Academic Affairs. B.Eng. Phys., Cornell University, 1954; M.S., Harvard University, 1955; Ph.D., 1959.
- Falk, William W.** Professor and Chair, Sociology. B.A., North Texas State University, 1969; M.A., 1970; Ph.D., Texas A & M University, 1975.
- Faller, Alan J.** Research Professor Emeritus, Institute for Physical Science and Technology. B.S., Massachusetts Institute of Technology, 1951; M.S., 1953; D.Sc., 1957.
- Faloutsos, Christos** Assistant Professor, Computer Science; Assistant Professor, Institute for Advanced Computer Studies. B.Sc., National Technical University of Athens, 1981; M.Sc., University of Toronto, 1982; Ph.D., 1985.
- Falvey, Daniel E.** Assistant Professor, Chemistry and Biochemistry. B.S., North Dakota State University, 1983; Ph.D., University of Illinois, 1988.
- Falvo, Giuseppe** Assistant Professor, French and Italian. B.A., Loyola University, 1974; M.A., Catholic University, 1979; Ph.D., Johns Hopkins University, 1985.
- Fanning, Delvin S.** Professor, Agronomy. B.S., Cornell University, 1954; M.S., 1959; Ph.D., University of Wisconsin, 1964.
- Fanos, Stavroula A.** Associate Professor, Music; Assistant Vice President, Academic Affairs. B. Mus. Ed., Oberlin College, 1957; M.Ed., University of Maryland, 1963; Ed.D., 1970.
- Farquhar, James D.** Professor and Chairman, Art History. B.A., Washington and Lee University, 1963; M.A., University of Chicago, 1966; Ph.D., 1972.
- Farrell, Richard T.** Associate Professor, History. B.A., Associate Professor, Curriculum and Instruction. B.A., Wabash College, 1954; M.S., Indiana University, 1958; Ph.D., 1967.
- Farvardin, Nariman** Associate Professor, Electrical Engineering; Associate Professor, Institute for Advanced Computer Studies. B.S., Rensselaer Polytechnic Institute, 1979; M.S., 1980; Ph.D., 1983
- Fassinger, Ruth E.** Assistant Professor, Counseling and Student Personnel. B.A., State University of New York (Fredonia), 1973; M.A., 1978; M.A., Ohio State University (Columbus), 1984; Ph.D., 1987
- Faust, Miklos** Adjunct Professor, Horticulture. B.S., University of Budapest, 1952; M.S., Rutgers University, 1960; Ph.D., Cornell University, 1965
- Fein, Greta** Professor, Curriculum and Instruction. B.A., Queens College, 1951; M.S., Bank Street College of Education, 1961; Ph.D., Yale University, 1969
- Felder, Henry** Lecturer, Afro-American Studies. B.S., Oakwood College, 1984; M.A., Stanford University, 1975; Ph.D., 1975.
- Feldman, Robert H.L.** Associate Professor, Health Education. B.A., City University of New York, 1964; M.A., Pennsylvania State University, 1966; M.S., Syracuse University, 1972; Ph.D., 1974
- Felton, Kenneth E.** Professor Emeritus, Agricultural Engineering. B.S. (Agriculture), University of Maryland, 1950; B.S. (Civil Eng.), 1951; M.S., Pennsylvania State University, 1962
- Fenster, Charles B.** Assistant Professor, Botany. B.A., Amherst College, 1979; Ph.D., University of Chicago, 1988.
- Ferguson, Alexander D.** Adjunct Professor, Entomology. B.Sc., Dalhousie University, 1950; M.S., Cornell University, 1956; Ph.D., 1967.
- Ferguson, Marjorie Ruth** Associate Professor, RTV/F. B.Sc., London School of Economics, 1973; Ph.D., University of London, 1979.
- Ferrell, Richard A.** Professor, Physics and Astronomy. B.S., California Institute of Technology, 1948; M.S., 1949; Ph.D., Princeton University, 1952.
- Fetter, Steve** Assistant Professor, School of Public Affairs. S.B., Massachusetts Institute of Technology, 1981; M.S., University of California, 1985; Ph.D., 1985.
- Fettus, Sharon** Lecturer, part-time, School of Public Affairs. B.A., University of Maryland, 1975; Ph.D., 1989.
- Fey, James T.** Professor, Mathematics and Curriculum; Professor, Curriculum and Instruction. B.S., University of Wisconsin, 1962; M.A., 1963; Ph.D., Columbia University, 1968.
- Fink, Beatrice C.** Associate Professor, French and Italian. B.A., Bryn Mawr College, 1953; M.A., Yale University, 1956; Ph.D., University of Pittsburgh, 1966.
- Fink, Edward** Professor, Communication Arts and Theatre. B.A., Columbia University, 1966; M.S., University of Wisconsin (Madison), 1969; Ph.D., 1975.
- Finkelstein, Barbara J.** Professor, Education Policy, Planning, and Administration; Director, Intl. Center for the Study of Education Policy and Human Values. B.A., Barnard College, 1959; M.A., Teachers College, Columbia University, 1960; Ed.D., 1970.
- Finsterbusch, Kurt** Associate Professor, Sociology. B.A., Princeton University, 1957; B.D., Grace Theological Seminary, 1960; Ph.D., Columbia University, 1969.
- Fischbach, Gerald** Professor, Music. B.F.A., University of Wisconsin, 1964; M.M., University of Illinois, 1965; D.M.A., University of Iowa, 1972.
- Fisher, Allan J.** Professor Emeritus, College of Business and Management. B.S., University of Pennsylvania, 1928; Lit.M., University of Pittsburgh, 1936; Ph.D., 1937.
- Fisher, Michael E.** Institute for Physical Science and Technology, Elkins Prof.) B.S., King's College (London), 1951; Ph.D., 1957.

- Fitzpatrick, Patrick M.** Professor, Mathematics. B.A., Rutgers University, 1966; Ph.D., 1971.
- Fival, Daniel I.** Associate Professor, Physics and Astronomy. B.A., Johns Hopkins University, 1953; Ph.D., 1959.
- Flack, James K., Jr.** Associate Professor, History. B.A., Albion College, 1959; M.A., Wayne State University, 1963; Ph.D., 1968.
- Flatter, Charles H.** Associate Professor, Human Development. B.A., DePauw University, 1961; E.Ed., University of Toledo, 1965; Ed.D., University of Maryland, 1968.
- Fleck, Jere** Associate Professor, Germanic and Slavic Languages and Literatures. Ph.D., University of Munich, 1966.
- Flietell, Sandra M.** Instructor, Part-time, Dance. B.A., State University of New York (Brookport), 1975; M.A., University of Colorado, 1977.
- Fleming, Leon B.** Associate Professor, Music. B.S., East Carolina College, 1948; M.Mus., Westminster Choir College, 1950.
- Fleiger, Verilyn B.** Associate Professor, English. B.A., George Washington University, 1955; M.A., Catholic University of America, 1972; Ph.D., 1977.
- Florestano, Patricia S.** Vice Chancellor, Governmental Relations. B.A., University of Maryland, 1958; M.A., 1970; Ph.D., 1974.
- Florian, Lani D.** Research Associate, Special Education. B.S., Southern Connecticut State University, 1978; M.S., 1980; Ph.D., University of Connecticut, 1985.
- Flyger, Vagn** Professor Emeritus, Animal Science. B.S., Cornell University, 1948; M.S., Pennsylvania State University, 1952; Sc.D., Johns Hopkins University, 1956.
- Flynn, Maureen** Assistant Professor, History. B.A., University of Wisconsin-Parkside, 1977; M.A., University of Wisconsin-Madison, 1979; Ph.D., 1985.
- Fogde, David P.** Associate Professor, School of Architecture; Affiliate Associate Professor, Urban Studies. A.B., Princeton University, 1951; M.C.R.P., University of California (Berkeley), 1958.
- Folstrom, Roger J.** Professor, Music; Professor, Curriculum and Instruction. B.S., College of St. Thomas, 1956; M.Ed., 1959; M.M., Northwestern University, 1962; Ph.D., 1967.
- Fonaroff, L. Schuyler** Professor, Geography. B.A., University of Arizona, 1955; Ph.D., Johns Hopkins University, 1961.
- Fontecilla, Rodrigo** Assistant Professor, Computer Science. B.S., Université de Grenoble (France), 1978; Ph.D., Rice University, 1983.
- Forbes, James** Associate Professor, Art. B.A., University of Maryland, 1964; M.A., 1966.
- Forsath, Irwin N.** Associate Professor, Botany. B.A., Hamline University, 1976; Ph.D., University of Utah, 1982.
- Foster, Phillips W.** Professor, Agricultural and Resource Economics. B.S., Cornell University, 1953; M.S., University of Illinois (Urbana), 1956; Ph.D., 1958.
- Foster, Valerie** Lecturer, Part-time, Music. B.S., Morgan State University, 1977.
- Fourney, William L.** Professor and Chairman, Mechanical Engineering. B.S.A.E., West Virginia University, 1962; M.S., 1963; Ph.D., University of Illinois (Urbana), 1966.
- Foust, Clifford M.** Professor, History. B.A., Syracuse University, 1949; M.A., University of Chicago, 1951; Ph.D., 1959.
- Fox, Nathan A.** Associate Professor, Human Development. A.B., Williams College, 1970; Ph.D., Harvard University, 1975.
- Francescato, Guido** Professor, Housing and Design. B.Arch., University of Illinois, 1959; M.Arch., 1966.
- Franklin, Alan D.** Visiting Professor, Physics and Astronomy. A.B., Princeton University, 1946; Ph.D., 1949.
- Franklin, Arley Tom** Development Officer, College of Education. B.S., Southwest Missouri State University, 1959; M.A., George Washington University, 1978; AGS, Columbia University, 1981.
- Frederiksen, Elke P.** Associate Professor, Germanic and Slavic Languages and Literatures. M.A., University of Kiel (Germany), 1962; M.A., University of Wisconsin, 1965; Ph.D., University of Colorado, 1973.
- Freedman, Morris** Professor, English. B.A., City University of New York (City College), 1941; M.A., Columbia University, 1950; Ph.D., 1953.
- Freeman, David H.** Professor, Chemistry and Biochemistry. B.S., University of Rochester, 1952; M.S., Carnegie Institute of Technology, 1954; Ph.D., Massachusetts Institute of Technology, 1957.
- Freeman, Robert** Assistant Professor, Counseling and Personnel Services. B.A., Haverford College, 1951; M.A., Wesleyan College, 1954; Ph.D., University of Maryland, 1964.
- Friedlin, Mark** Professor, Mathematics. M.A., Moscow State University, 1959; Ph.D., Steklov Mathematical Institute, 1962; Doctor, Moscow State University, 1970.
- Freimuth, Vicki S.** Associate Professor, Communication Arts and Theatre. B.S., Eastern Illinois University, 1968; M.A., University of Iowa, 1967; Ph.D., Florida State University, 1974.
- Freivogel, David C.** Associate Staff, Accompanist, Dance. B.A., Washington University (St. Louis), 1958.
- Fretz, Bruce R.** Professor, Psychology. B.A., Gettysburg College, 1961; M.A., Ohio State University, 1963; Ph.D., 1965.
- Frey, Jeffrey** Professor, Electrical Engineering. B.S.E.E., Cornell University, 1960; M.A.Sc., University of California (Berkeley), 1963; Ph.D., 1965.
- Friedel, Robert D.** Associate Professor, History. A.B., Brown University, 1971; M.Sc., University of London, 1972; Ph.D., Johns Hopkins University, 1977.
- Frieswyk, Henry** Lecturer, Part-time, Geography. A.B., Clark University, 1942.
- Fromovitz, Stan** Associate Professor, College of Business and Management. B.A.Sc., University of Toronto, 1960; M.A., 1961; Ph.D., Stanford University, 1965.
- Frosch-Schroder, Joan D.** Assistant Professor, Dance. B.F.A., California Institute of the Arts, 1973; M.A., Columbia University, 1976.
- Fry, Gladys-Marie** Associate Professor, English. B.A., Howard University, 1952; M.A., 1954; Ph.D., Indiana University, 1967.
- Fu, Michael C.** Assistant Professor, College of Business and Management. S.B., Massachusetts Institute of Technology, 1965; S.M., 1985; S.M., Harvard University, 1986; Ph.D., 1989.
- Fuje, Thomas E.** Assistant Professor, Electrical Engineering; Assistant Professor, Systems Research Center. B.S. and B.S.E.E., University of Michigan, 1981; M.E., Cornell University, 1983; Ph.D., 1987.
- Fullinwider, Robert K.** Research Scholar, Institute for Philosophy and Public Policy. B.A., University of Kentucky, 1964; M.A., Purdue University, 1967; Ph.D., 1970.
- Furuta, Richard** Assistant Professor, Computer Science. B.A., Reed College, 1974; M.S., University of Oregon, 1978; Ph.D., University of Washington, 1986.
- Gaines, Robert N.** Associate Professor, Communication Arts and Theatre. B.A., University of California (Davis), 1972; M.A., 1975; Ph.D., University of Iowa, 1982.
- Gallman, Vanessa J.** Lecturer, College of Journalism. B.A., University of North Carolina, 1976.
- Galston, William A.** Research Scholar, Institute for Philosophy and Public Policy; Professor, Public Affairs. B.A., Cornell University, 1967; M.A., University of Chicago, 1969; Ph.D., 1973.
- Gambrell, Linda B.** Professor, Curriculum and Instruction. A.A., Anderson College, 1962; B.S., University of Maryland, 1966; M.Ed., 1970; Ph.D., 1973.
- Gammon, R. W.** Associate Professor, Institute for Physical Science and Technology. A.B., Johns Hopkins University, 1961; M.S., California Institute of Technology, 1963; Ph.D., Johns Hopkins University, 1967.
- Gandhi, Natwar M.** Lecturer, Part-time, College of Business and Management. LL.B., University of Bombay, 1964; M.B.A., Atlanta University, 1967; Ph.D., Louisiana State University, 1974.
- Gannon, John D.** Professor, Computer Science; Professor, Institute for Advanced Computer Studies. A.B., Brown University, 1970; M.S., 1972; Ph.D., University of Toronto, 1975.
- Gannon, Martin J.** Professor, College of Business and Management. B.A., University of Scranton, 1961; Ph.D., Columbia University, 1969.
- Gantt, Elisabeth** Adjunct Professor, Botany. B.A., Blackburn College, 1958; M.S., Northwestern University, 1960; Ph.D., 1963.
- Garber, Daniel L.** Associate Professor, Civil Engineering. B.S., University of Maryland, 1952; M.S., 1959; Ph.D., 1965.
- Gardner, Albert H.** Associate Professor, Human Development. B.S., State University of New York (Cortland), 1958; M.A., Syracuse University, 1964; Ph.D., 1967.
- Gardner, Amy E.** Instructor, School of Architecture. B.Sc., University of Virginia, 1981; M.A.RCH., 1985.
- Gardner, Bruce L.** Professor, Agricultural and Resource Economics. B.S., University of Illinois, 1964; Ph.D., University of Chicago, 1968.
- Gardner, Leiland L.** Lecturer, Part-time, College of Business and Management. B.S., University of Maryland, 1970; M.B.A., 1976.
- Garlick, Karen** Lecturer, Part-time, College of Library and Information Services. B.A., Catholic University, 1974; M.A., 1980; M.S., George Washington University, 1984.
- Garvey, Evelyn F.** Professor, Music. B.S., Temple University, 1943; M.M., University of Rochester, 1946.
- Gesarch, William** Assistant Professor, Computer Science; Assistant Professor, Institute for Advanced Computer Studies. B.S., SUNY (Stony Brook), 1980; M.S., Harvard University, 1982; Ph.D., 1985.
- Gesner, Larry L.** Associate Professor, Chemical and Nuclear Engineering. B.S., University of Minnesota, 1965; M.S., Massachusetts Institute of Technology, 1967; Ph.D., 1971.
- Gess, Saul J.** Professor, College of Business and Management. B.A., Boston University, 1949; M.A., 1949; Ph.D., University of California (Berkeley), 1965.
- Gest, Linda K.** Director, Career Development Center; Affiliate Assistant Professor. Part-time, Counseling and Personnel Services. B.A., Indiana University, 1974; M.S., Purdue University, 1978; Ph.D., 1981.
- Gates, Jeffrey S.** Lecturer, Part-time, Housing and Design. B.A., Michigan State University, 1971; M.A., University of California, 1973; M.F.A., 1975.
- Gates, S. James** Associate Professor, Physics and Astronomy. B.S., Massachusetts Institute of Technology, 1973; Ph.D., 1977.
- Gaylin, Ned L.** Professor, Family and Community Development. B.A., University of Chicago, 1956; M.A., 1961; Ph.D., 1965.
- Gelman, Ellen P.** Associate Professor, Art. A.B., Brandeis University, 1961; M.F.A., Columbia University, 1964.

- Gelso, Charles J.** Professor, Psychology. B.S., Bloomburg State College, 1963; M.S., Florida State University, 1964; Ph.D., Ohio State University, 1970
- Gentry, James W.** Professor, Chemical and Nuclear Engineering. B.S., Oklahoma State University, 1961; M.S., University of Birmingham, 1963; Ph.D., University of Texas, 1969
- Geraniotis, Evaggelos** Associate Professor, Electrical Engineering, Associate Professor, Systems Research Center. B.S., National Tech. University of Athens, 1978; M.S., University of Illinois, 1980; Ph.D., 1983
- Gerlt, John A.** Professor, Chemistry and Biochemistry. B.S., Michigan State University, 1969; A.M., Ph.D., Harvard University, 1974
- Gessow, Alfred** Professor and Chairman, Aerospace Engineering. B.C.E., City College of New York, 1943; M.S., New York University, 1944
- Gibson, Robert L.** Associate Professor, Music. B.M., University of Miami, 1972; M.M., Catholic University, 1975; D.M.A., University of Maryland, 1980
- Giffin, Donald W.** Associate Professor, History; Acting Assistant Dean, College of Arts and Humanities. B.A., University of California, 1950; M.A., Vanderbilt University, 1956; Ph.D., 1962
- Gilbert, Glen G.** Professor and Chairman, Health Education. B.S., University of Oregon, 1968; M.S., 1971; Ph.D., The Ohio State University, 1975
- Gilbert, James B.** Professor, History. B.A., Carleton College, 1961; M.A., University of Wisconsin, 1963; Ph.D., 1966
- Gill, Douglas E.** Professor, Zoology. B.S., Marietta College, 1965; M.A., University of Michigan, 1967; Ph.D., 1971
- Gillespie, Patti P.** Professor and Chairperson, Communication Arts and Theatre. B.S., University of Kentucky, 1958; M.A., Western Kentucky University, 1962; Sp.Ed., 1964; Ph.D., Indiana University, 1970
- Gillan, Lonnie Ray** Assistant to the President. B.S., Ohio State University, 1970; M.A., 1971
- Ginter, Marshall L.** Professor, Institute for Physical Science and Technology. A.B., Chico State College, 1958; Ph.D., Vanderbilt University, 1961
- Gips, C. L. Terry** Assistant Professor, Housing and Design. B.S., Cornell University, 1967; M. Arch., Yale University, 1971
- Gird, John W.** Faculty Extension Assistant, Agricultural Engineering. B.S., University of Massachusetts, 1971; M.S., University of Maryland, 1977
- Glad, John** Associate Professor, Germanic and Slavic Languages and Literatures. B.A., Indiana University, 1962; M.A., 1964; Ph.D., New York University, 1970
- Glass, James M.** Professor, Government and Politics. B.A., University of California (Berkeley), 1961; M.A., 1964; Ph.D., 1970
- Glaz, Harland M.** Associate Professor, Mathematics. B.A., University of Pennsylvania, 1971; M.A., University of California (Berkeley), 1975; Ph.D., 1977
- Glendening, Parris N.** Associate Professor, Government and Politics. B.A., Florida State University, 1964; M.A., 1965; Ph.D., 1967
- Glenn, Donald S.** Associate Professor, Agronomy. B.S., University of Kentucky, 1975; Ph.D., 1979
- Glick, Arnold J.** Professor, Physics and Astronomy. B.A., City University of New York (Brooklyn), 1955; Ph.D., University of Maryland, 1961
- Gligor, Virgil D.** Associate Professor, Electrical Engineering. B.S., University of California (Berkeley), 1972; M.S., 1973; Ph.D., 1976
- Gloekler, George** Professor, Physics and Astronomy. B.S., University of Chicago, 1960; S.M., 1961; Ph.D., 1965
- Glover, Rolfe E., III.** Professor Emeritus, Physics and Astronomy. A.B., Bowdoin College, 1948; B.S., Massachusetts Institute of Technology, 1948; Ph.D., University of Goettingen (Germany), 1953
- Gluckstern, Robert L.** Professor, Physics and Astronomy. B.E.E., City University of New York (City College), 1944; Ph.D., Massachusetts Institute of Technology, 1948
- Goering, Jacob D.** Professor Emeritus, Human Development. B.A., Bethel College, 1941; Ph.D., University of Maryland, 1959
- Gold, Robert S.** Professor, Health Education. A.S., Orange County Comm., 1967; B.S., State University of New York (Brookport), 1969; M.S., State University of New York, 1971; Ph.D., University of Oregon, 1976; Dr. Ph.H., University of Texas, 1980
- Goldberg, Andrew P.** Adjunct Associate Professor, Part-time, Human Nutrition and Food Systems. B.A., Clark University, 1965; M.D., State University of New York, 1969
- Goldberg, Frederick B.** Lecturer, Part-time, Textiles and Consumer Economics. B.A., University of Maryland, 1972; J.D., John Marshall Law School, 1976
- Goldberg, Seymour** Professor, Mathematics. A.S., Hunter College, 1950; M.A., Ohio State University, 1952; Ph.D., U.C.L.A., 1958
- Golden, Bruce L.** Professor, College of Business and Management. B.A., University of Pennsylvania, 1972; S.M., Massachusetts Institute of Technology, 1974; Ph.D., 1976
- Goldensbaum, George C.** Professor, Physics and Astronomy. B.S., Muhlenberg College, 1957; Ph.D., University of Maryland, 1966
- Goldhaber, Jacob K.** Professor, Mathematics; Acting Dean, Graduate Studies and Research. B.A., City University of New York (Brooklyn College), 1944; M.A., Harvard University, 1945; Ph.D., University of Wisconsin, 1950
- Goldhar, Julius** Associate Professor, Electrical Engineering. B.S., Massachusetts Institute of Technology, 1971; Ph.D., 1976
- Golding, Kathleen** Lecturer, Part-time, Music. B.M., Northwestern University, 1975
- Goldman, Harvey** Associate Professor, Education Policy, Planning, and Administration. B.A., University of Rhode Island, 1960; M.A., John Carroll University, 1962; Ed.D., Michigan State University, 1966
- Goldman, William** Associate Professor, Mathematics; Associate Professor, Institute for Advanced Computer Studies. A.B., Princeton, 1977; University of California, Berkeley, 1980
- Goldman, William M.** Associate Professor, Mathematics. A.B., Princeton University, 1977; Ph.D., University of California (Berkeley), 1980
- Goldsman, Neil** Assistant Professor, Electrical Engineering. B.A., Cornell University, 1981; MEE, 1983; Ph.D., 1988
- Goldstein, Irwin L.** Professor and Chairman, Psychology. B.B.A., City University of New York (City College), 1959; M.A., University of Maryland, 1962; Ph.D., 1964
- Gollub, Lewis R.** Professor, Psychology. A.B., University of Pennsylvania, 1955; Ph.D., Harvard University, 1958
- Gomery, J. Douglas** Professor, Communication Arts and Theatre. B.S., Lehigh University, 1967; M.A., University of Wisconsin (Madison), 1970; Ph.D., 1975
- Gomezplata, Albert** Professor Emeritus, Chemical and Nuclear Engineering. B.S., Brooklyn Polytechnic Institute, 1952; M.S., Rensselaer Polytechnic Institute, 1954; Ph.D., 1959
- Gonzalez, Nancie L.** Professor, Anthropology; Professor, Affiliate, Sociology. B.S., University of North Dakota, 1951; M.A., University of Michigan, 1955; Ph.D., 1959
- Good, Richard A.** Professor Emeritus, Mathematics. A.B., Ashland College, 1939; M.A., University of Wisconsin, 1940; Ph.D., 1945
- Goode, M. Dennis** Associate Professor, Zoology. B.S., University of Kansas, 1963; Ph.D., Iowa State University, 1967
- Goodings, Deborah J.** Associate Professor, Civil Engineering. B.S., University of Toronto, 1975; Ph.D., Cambridge University, 1979
- Goodman, Jordan** Associate Professor, Physics and Astronomy. B.S., University of Maryland, 1973; M.S., 1975; Ph.D., 1978
- Goodrich, Charles C.** Associate Research Scientist, Physics and Astronomy, Astronomy Program. B.S., Massachusetts Institute of Technology, 1972; Ph.D., 1978
- Goodwyn, Frank** Professor Emeritus, Spanish and Portuguese. B.A., College of Arts and Industries, 1939; M.A., 1940; Ph.D., University of Texas, 1946
- Gordo, Manoel** Instructor, Spanish and Portuguese. B.A., University of Maryland, 1985; M.A., 1987
- Gordon, Donald C.** Professor Emeritus, History. B.A., College of William and Mary, 1934; M.A., Columbia University, 1937; Ph.D., 1947
- Gordon, Glen E.** Professor, Chemistry and Biochemistry; Acting Director, Water Resources Research Center. B.S., University of Illinois, 1956; Ph.D., University of California (Berkeley), 1960
- Gordon, Lawrence A.** Professor, College of Business and Management. B.S., State University of New York (Albany), 1966; M.B.A., 1967; Ph.D., Rensselaer Polytechnic Institute, 1973
- Gordon-Salant, Sandra M.** Associate Professor, Hearing and Speech Sciences. B.A., State University of New York (Albany), 1974; M.A., Northwestern University, 1976; Ph.D., 1981
- Gore, Jayavant P.** Assistant Professor, Mechanical Engineering. B.E., University of Poona, 1978; M.S., Pennsylvania State University, 1982; Ph.D., 1986
- Gorrell, Paul G.** Assistant Professor, Linguistics Department. B.A., University of Connecticut, 1982; M.A., 1983; Ph.D., 1987
- Gossage, John** Assistant Professor, Art. Studies at Walden School, 1966
- Gottfredson, Denise C.** Assistant Professor, Institute of Criminal Justice and Criminology. B.A., Fairleigh Dickinson University, 1974; Ph.D., The Johns Hopkins University, 1980
- Gouin, Francis R.** Professor, Horticulture; Acting Chair, Horticulture. B.S., University of New Hampshire, 1962; M.S., University of Maryland, 1965; Ph.D., 1969
- Gould, William, Jr.** Associate Professor, Horticulture. B.A., Albion College, 1940; M.L.A., University of Georgia, 1975
- Goward, Samuel N.** Associate Professor, Geography. B.A., Boston University, 1967; M.A., 1974; Ph.D., Indiana State University, 1979
- Gowen, Bradford** Associate Professor, Music. B.M., Eastman School of Music, 1968; M.M., 1969
- Grabs-Bunker, Jackie M.** Lecturer, Curriculum and Instruction; Coordinator, Charles County Education Center. B.S., Frostburg, 1971; M.Ed., George Washington University, 1981
- Graeber, Anna O.** Assistant Professor, Curriculum and Instruction. B.S., State University (Buffalo), 1964; M.S., Indiana State University, 1965; Ed.D., Teachers College, Columbia University, 1974
- Graham, Steven** Associate Professor, Special Education. B.A., Valdosta State College, 1972; M.S., 1975; Ed.D., University of Kansas, 1978
- Granatstein, Victor L.** Professor, Electrical Engineering; Director, Lab for Plasma Research. B.S., Columbia University, 1960; M.S., 1961; Ph.D., 1963

- Grant, Lee P.** Associate Professor, Agricultural Engineering, Affiliate Associate Professor, Industrial, Technological and Occupational Education, B.S., University of Connecticut, 1962; M.S., Pennsylvania State University, 1971; Ph.D., 1974
- Grant-Davie, Keith A.** Assistant Professor, English, B.A., University of Exeter (England), 1979; M.A., University of California (San Diego), 1980; C. Phil., 1983; Ph.D., University of California (San Diego), 1985
- Graves, William R.** Assistant Professor, Horticulture, B.S., Iowa State University, 1981; M.S., 1984; Ph.D., Purdue University, 1988
- Gray, Alfred** Professor, Mathematics, B.A., University of Kansas, 1960; M.A., 1961; Ph.D., University of California (Los Angeles), 1964
- Green, Harry B., Jr.** Assistant Professor, Human Development, B.A., University of Virginia, 1959; M.Ed., 1963; Ph.D., 1965
- Green, Paul S.** Associate Professor, Mathematics, B.A., Cornell University, 1959; M.A., Harvard University, 1960; Ph.D., Cornell University, 1964
- Green, Rebecca** Assistant Professor, College of Library and Information Services, A.B., Harvard University, 1973; M.L.S., University of Maryland, 1977; M.A., University of California at Berkeley, 1982; Ph.D., University of Maryland, 1989
- Green, Robert L.** Professor Emeritus, Agricultural Engineering, B.S.A.E., University of Georgia, 1934; M.S., State College of Iowa, 1939; Ph.D., Michigan State University, 1953
- Greenberg, Jerrold S.** Professor, Health Education, B.S., City College of New York, 1964; M.S., 1965; Ed.D., Syracuse University, 1969
- Greenberg, Kenneth R.** Associate Professor, Counseling and Personnel Services, B.S., Ohio State University, 1951; M.A., 1952; Ph.D., Case-Western Reserve University, 1960
- Greenberg, Leon** Professor, Mathematics, B.S., City University of New York (City College), 1953; M.A., Yale University, 1955; Ph.D., 1958
- Greenberg, Oscar W.** Professor, Physics and Astronomy, B.S., Rutgers The State University, 1952; A.M., Princeton University, 1954; Ph.D., 1956
- Greenberg, Ronald** Assistant Professor, Electrical Engineering; Assistant Professor, Institute for Advanced Computer Studies, A.B., Washington University, 1983; B.S., 1983; M.S., 1983; Ph.D., Massachusetts Institute of Technology, 1989
- Greenberg, Ronald I.** Assistant Professor, Electrical Engineering, A.B., Washington University, 1983; B.S., 1983; M.S., 1983; Ph.D., Massachusetts Institute of Technology, 1989
- Greene, Richard L.** Professor, Physics and Astronomy, Director, Center for Superconductivity, B.S., Massachusetts Institute of Technology, 1960; Ph.D., Stanford University, 1967
- Greenfield, Alexander** Lecturer, College of Journalism, B.A., University of Delaware, 1949; J.D., University of Pennsylvania Law School, 1953
- Greenspan, Patricia** Professor, Philosophy, A.B., Columbia University, 1966; A.M., Harvard University, 1968; Ph.D., 1972
- Graer, Sandra C.** Professor, Chemistry and Biochemistry, B.S., Furman University, 1966; M.S., University of Chicago, 1968; Ph.D., 1969
- Graer, Thomas V.** Professor, College of Business and Management, B.A., University of Texas, 1953; M.B.A., Ohio State University, 1957; Ph.D., University of Texas, 1964
- Griem, Hans** Professor, Physics and Astronomy, Bach, Max Planck Schule, 1948; Ph.D., University of Kiel, 1954
- Griffin, James J.** Professor, Physics and Astronomy, B.S., Villanova College, 1952; M.S., Princeton University, 1955; Ph.D., 1956
- Griffith, Robert** Professor, History, Dean, College of Arts and Humanities, B.A., DePaul University, 1968; M.A., University of Wisconsin, 1964; Ph.D., 1967
- Grillakis, Manoussos** Assistant Professor, Mathematics, B.A., National Technical University, Athens, Greece, 1981; M.A., Brown University, 1983; Ph.D., 1986
- Grim, Samuel O.** Professor, Chemistry and Biochemistry, B.S., Franklin and Marshall College, 1956; Ph.D., Massachusetts Institute of Technology, 1960
- Grimm, Curtis M.** Associate Professor, College of Business and Management, B.A., University of Wisconsin, 1975; M.A., University of California, 1980; Ph.D., 1983
- Grimshaw, Scott D.** Assistant Professor, College of Business and Management, B.S., Southern Utah State University, 1983; M.S., Texas A&M University, 1985; Ph.D., 1989
- Grimsted, David A.** Associate Professor, History, A.B., Harvard University, 1957; M.A., University of California (Berkeley), 1958; Ph.D., 1963
- Grossman, Marshall** Associate Professor, English, B.A., State University of New York, Binghamton, 1965; M.A., Brooklyn College, Ph.D., New York University, 1967
- Grove, Karsten** Professor, Mathematics, Cand. Scient., University of Aarhus, 1971; Lic. Scient., 1974
- Groves, Paul A.** Associate Professor, Geography, B.S., University of London, 1956; M.A., University of Maryland, 1960; Ph.D., University of California (Berkeley), 1969
- Grunig, James E.** Professor, College of Journalism, B.S., Iowa State University, 1964; M.S., University of Wisconsin, 1966; Ph.D., 1968
- Grunig, Larissa A.** Assistant Professor, College of Journalism, B.A., North Dakota State University, 1967; M.A., University of Maryland, 1978; Ph.D., 1985
- Grybauskas, Arvydas P.** Associate Professor, Botany, B.S., University of Illinois (Urbana), 1976; M.S., 1977; Ph.D., Oregon State University, 1983
- Gulick, Sidney L., III** Professor, Mathematics, B.A., Oberlin College, 1958; M.A., Yale University, 1960; Ph.D., 1963
- Gullickson, Gay L.** Associate Professor, History, B.A., Pomona College, 1965; B.D., Yale University Divinity School, 1968; S.T.M., 1970; Ph.D., University of North Carolina (Chapel Hill), 1978
- Gupta, Anil K.** Associate Professor, College of Business and Management, B. of Tech., Indian Institute of Technology, 1970; D.B.A., Harvard Business School, 1980
- Gupta, Ashwani K.** Professor, Mechanical Engineering, B.Sc., Panjab University (India), 1966; M.Sc., University of Southampton (England), 1970; Ph.D., University of Sheffield, 1973
- Gurevitch, Michael** Professor, College of Journalism, B.A., Hebrew University of Jerusalem, 1953; M.A., University of Chicago, 1958; Ph.D., MIT, 1961
- Guthrie, John T.** Professor, Curriculum and Instruction, Director of Center for Educational Research & Development, College of Education, B.A., Earlham College, 1964; M.A., University of Illinois, 1966; Ph.D., 1968
- Guzzo, Richard A.** Associate Professor, Psychology, B.S., Ohio State University, 1974; M.A., Yale University, 1976; Ph.D., 1979
- Gwadz, Robert W.** Adjunct Professor, Entomology, B.S., University of Notre Dame, 1962; Ph.D., 1970
- Haber, Francis C.** Professor, History, B.A., University of Connecticut, 1948; M.A., Johns Hopkins University, 1952; Ph.D., 1957
- Hadley, Nicholas J.** Associate Professor, Physics, B.S., Yale University, 1976; M.A., University of California, Berkeley, 1978; Ph.D., 1983
- Hager, Jr., Hamilton** Lecturer, Part-time, Aerospace Engineering, B.S., USAF Academy, 1963; M.S., University of Houston, 1970; Ph.D., University of Texas, 1973
- Hagberg, James M.** Associate Professor, Physical Education, Associate Director, Center on Aging, B.S., Carthage College, 1972; M.S., University of Wisconsin (Madison), 1974; Ph.D., 1976
- Hage, Jerald** Professor, Sociology, B.B.A., University of Wisconsin, 1955; Ph.D., Columbia University, 1963
- Hage, Madeleine** Associate Professor, French and Italian, C.A.P.E.T., Ecole Normale Supérieure de l'Enseignement Technique, 1955; Agrégation (English), University of Paris, Sorbonne, 1965; Doctorat de Troisième Cycle, University of Nancy (France), 1973
- Haldemann, Paul R.** Engineering Physicist, Electrical Engineering, B.S., University of Maryland, 1959; M.S., 1964
- Haley, A. James** Professor Emeritus, Zoology, B.S., University of New Hampshire, 1949; M.S., 1950; Sc.D., Johns Hopkins University, 1955
- Hallassos, Michael** Assistant Professor, Economics, B.A., University of Cambridge (U.K.), 1981; M.A., 1986; Ph.D., Yale University, 1987
- Hall, William S.** Professor, Psychology, A.B., Roosevelt University (Chicago), 1957; Ph.D., University of Chicago, 1968
- Hallett, Judith P.** Associate Professor, Classics, A.B., Wellesley College, 1966; A.M., Harvard University, 1967; Ph.D., 1971
- Hallfrisch, Judith** Adjunct Assistant Professor, Part-time, Human Nutrition and Food Systems, B.A., Indiana University, 1965; M.S., University of Maryland, 1978; Ph.D., 1982
- Haltiwanger, John** Associate Professor, Economics, B.Sc., Brown University, 1977; Ph.D., Johns Hopkins University, 1981
- Hamby, Trudy M.** Associate Research Scholar, Human Development, B.A., Eastern Washington College, 1943; M.Ed., University of Maryland, 1963; Ph.D., 1966
- Hamed, Sefel E.** Assistant Professor, Horticulture, B.S., Caro University, 1968; M.L.A., University of Georgia, 1973; Ph.D., Virginia Polytechnic Institute & State University, 1988
- Hamilton, David H.** Associate Professor, Mathematics, B.Sc., Tasmania University, 1977; M.Sc., University of London, 1978; Ph.D., 1980
- Hamilton, Donna B.** Associate Professor, English, B.A., Saint Olaf College, 1963; Ph.D., University of Wisconsin, 1968
- Hamilton, Douglas C.** Assistant Professor, Institute for Physical Science and Technology; Assistant Professor, Physics and Astronomy, A.B., University of Kansas, 1969; S.M., University of Chicago, 1971; Ph.D., 1977
- Hamilton, Gary D.** Associate Professor, English, B.A., Saint Olaf College, 1962; M.A., University of Wisconsin, 1965; Ph.D., 1968
- Hamilton, V. Lee** Associate Professor, Sociology, B.A., College of William and Mary, 1970; Ph.D., Harvard University, 1975
- Hammond, Eugene R.** Associate Professor and Associate Chair, English, B.A., University of Notre Dame, 1969; B.A., Oxford University, 1973; Ph.D., Yale University, 1977
- Hamosh, Mergit** Adjunct Professor, Part-time, Human Nutrition and Food Systems, M.Sc., Hebrew University, 1956; Ph.D., 1959
- Handelman, Susan** Associate Professor, English, B.A., Smith College, 1971; M.A., State University of New York (Buffalo), 1977; Ph.D., 1979



- Hanges, Paul J.** Assistant Professor, Psychology. B.A., New York University, 1980, M.A., University of Akron, 1984, Ph.D., 1987
- Hanna, Judith L.** Senior Faculty Research Associate, Family and Community Development. B.A., University of California (Los Angeles), 1958; M.A., Michigan State University, 1962; M.A., Columbia University, 1975, Ph.D., 1976.
- Hanna, William J.** Professor, Family and Community Development. B.S., University of California (Los Angeles), 1957; M.A., 1960, Ph.D., 1962
- Hansen, Barbara** Professor, Physiology. B.S., University of California, 1964, M.S., 1965, Ph.D., University of Washington, 1971.
- Hansen, J. Norman** Professor, Chemistry and Biochemistry. B.A., Drake University, 1964, Ph.D., University of California (Los Angeles), 1968.
- Hanson, James** Farm Management Specialist, Agricultural and Resource Economics. B.S., University of Maryland, 1972; M.Sc., University of Minnesota, St. Paul, 1974; M.Sc., University of Maryland, 1978, Ph.D., 1983.
- Hao, Oliver J.** Associate Professor, Civil Engineering. B.S., Cheng Kung University, Taiwan, 1980, M.S., Colorado State University, 1971; Ph.D., University of California (Berkeley), 1982.
- Harbour, Frances** Faculty Research Associate, School of Public Affairs. A.B., Barnard College, 1975, M.A., Columbia University, 1977; M.Phil., 1979; Ph.D., Columbia University, 1986.
- Hardie, Ian W.** Associate Professor, Agricultural and Resource Economics. B.S., University of California (Davis), 1960; Ph.D., University of California (Berkeley), 1965.
- Hardy, Kendall C.** Lecturer, Part-time, College of Business and Management. B.A., University of Baltimore, 1968; J.D., 1972.
- Hardy, Robert C.** Professor and Director, Human Development. B.S.Ed., Bucknell University, 1961; M.S.Ed., Indiana University, 1964, Ed.D., 1969
- Harger, Robert O.** Professor, Electrical Engineering. B.S., University of Michigan, 1955; M.S., 1959; Ph.D., 1961.
- Hargrove, June E.** Associate Professor, Art History. B.A., University of California (Berkeley), 1968; M.A., New York University, 1971; Ph.D., 1976.
- Herhalakis, George** Associate Professor, Mechanical Engineering; Associate Professor, Systems Research Center. B.S., National Technical University of Athens (Greece), 1971; M.S., Univ. of Manchester Inst. of Sci. & Tech. (England), 1981; Ph.D., 1984
- Harlan, Louis R.** Distinguished Professor, History. B.A., Emory University, 1943; M.A., Vanderbilt University, 1948; Ph.D., Johns Hopkins University, 1955.
- Harley, Sharon** Associate Professor, Afro-American Studies. B.A., St. Mary of The Woods College, 1970; M.A., Antioch College, 1971; Ph.D., Howard University, 1978.
- Harper, Glenn** Assistant Professor, Sociology. B.S., Purdue University, 1958; M.S., 1961, Ph.D., 1968.
- Harper, Robert A.** Professor, Emeritus, Geography. Ph.B., University of Chicago, 1946; B.S., 1947; M.S., 1948; Ph.D., 1950.
- Harrington, J. Patrick** Professor, Physics and Astronomy, Astronomy Program. B.S., University of Chicago, 1961; M.S., Ohio State University, 1964; Ph.D., 1967.
- Harris, Curtis C.** Professor, Economics. B.S., University of Florida, 1956; M.A., Harvard University, 1959, Ph.D., 1960.
- Harris, James F.** Associate Professor, History. B.S., Loyola University, 1962; M.S., University of Wisconsin, 1964; Ph.D., 1968.
- Harris, Karen R.** Assistant Professor, Special Education. B.A., University of Northern Colorado, 1974, M.A., University of Nebraska, 1978, Ed.D., Auburn University, 1981
- Harris, Richard W.** Lecturer, College of Business and Management. B.S., University of Maryland, 1974; M.B.A., 1977; J.D., 1982
- Harris, Wesley L.** Professor Emeritus, Agricultural Engineering. B.S.A.E., University of Georgia, 1953; M.S., 1958, Ph.D., Michigan State University, 1969
- Harrison, Floyd P.** Professor Emeritus, Entomology. B.S., Louisiana State University, 1951, M.S., 1953, Ph.D., University of Maryland, 1955
- Harrison, Horace V.** Professor Emeritus, Government and Politics. B.A., Trinity University (Texas), 1932; M.A., University of Texas, 1941; Ph.D., 1951
- Harter, Phillip J.** Lecturer, part-time, School of Public Affairs. A.B., Kenyon College, 1964, M.A., University of Michigan, 1966, J.D., 1969.
- Hartssock, Thomas G.** Associate Professor, Animal Sciences. B.S., Pennsylvania State University, 1968; M.S., 1969; Ph.D., 1974
- Harwood, William S.** Undergraduate Program Coordinator, Chemistry and Biochemistry. B.S., University of Massachusetts (Amherst), 1980; Ph.D., Purdue University, 1986.
- Haslach, Henry W., Jr.** Assistant Professor, Mechanical Engineering. B.S., Trinity College, 1964; M.S., University of Chicago, 1965; M.S., University of Wisconsin, 1979; Ph.D., 1979.
- Haslem, John A.** Professor, College of Business and Management. A.B., Duke University, 1956; M.B.A., University of North Carolina, 1961; Ph.D., 1967.
- Hassam, Adil B.** Associate Professor, Physics and Astronomy. S.B.S.M., MIT, 1974; M.A., Princeton University, 1976; Ph.D., 1978.
- Hatfield, Bradley D.** Associate Professor, Physical Education. B.P.E., University of New Brunswick, 1975; B.A., 1975; M.S., Pennsylvania State University, 1976; Ph.D., 1982.
- Haviland, Elizabeth E.** Assistant Professor Emerita, Entomology. A.B., Wilmington (Ohio) College, 1923; M.A., Cornell University, 1926; M.S., University of Maryland, 1936; Ph.D., 1945.
- Havvy, Grace E.** Assistant Professor, Special Education. B.A., University of Toronto, 1967; M.Ed., 1973.
- Hawkins, William** Lecturer, Part-time, Electrical Engineering. B.S., Cornell University, 1967; S.M., Massachusetts Institute of Technology, 1971.
- Head, Emerson W.** Professor, Music. B.Mus., University of Michigan, 1957; M.Mus., 1961; D.M.A., Catholic University of America, 1980.
- Heald, Felix P.** Affiliate Professor, Part-time, Human Nutrition and Food Systems. B.A., Colorado College, 1943; M.D., University of Pennsylvania, 1946.
- Healy, William E.** Assistant Professor, Horticulture. B.S., University of Minnesota, 1977; M.S., 1980; Ph.D., 1982
- Heath, James L.** Professor, Poultry Science. B.S., Louisiana State University, 1963; M.S., 1968; Ph.D., 1970.
- Hebeler, Jean R.** Professor, Special Education. B.S., State University of New York (Albany), 1953; M.S., University of Illinois (Urbana), 1956; Ed.D., Syracuse University, 1960.
- Hebert, Mitchell Patrick** Assistant Professor, Communication Arts and Theatre. B.F.A., University of Wisconsin, 1980; M.F.A., University of Washington, 1983.
- Heckman, Timothy M.** Associate Professor, Physics and Astronomy, Astronomy Program. B.A., Harvard University, 1973; Ph.D., University of Washington (Seattle), 1978.
- Hedman, Susan** Assistant Professor, School of Public Affairs. B.A., Ripon College, 1978; M.A., LaFollette Inst. Public Policy & Admin. UWiscensin, 1979; J.D., School of Law, University of Wisconsin, 1987; Ph.D., Institute for Environmental Studies, U.Wiscensin, 1989
- Heid, Camilla A.** Assistant Professor, Education Policy, Planning, and Administration. B.A., Indiana University, 1973, M.S., 1976, Ph.D., 1985
- Heidelbach, Ruth A.** Associate Professor, Curriculum and Instruction. B.S., University of Maryland, 1949; M.Ed., University of Florida, 1957; Ed.D., Teachers College, Columbia University, 1967.
- Heiletz, Daniel** Professor, Music Artist Diploma, Curtis Institute of Music, 1971.
- Heilprin, Laurence B.** Professor Emeritus, College of Library and Information Services. B.S., University of Pennsylvania, 1928; M.A., 1931; Ph.D., Harvard University, 1941.
- Heim, Norman M.** Professor, Music. B.M.Ed., University of Evansville, 1951; M.Mus., University of Rochester, 1952; D.M.A., 1962.
- Heimerdinger, John Daniel** Lecturer, Part-time, Aerospace Engineering. B.S.C., Princeton, 1981; S.M., Massachusetts Institute of Technology, 1984, Ph.D., 1988.
- Heins, Maurice H.** Professor Emeritus, Mathematics. A.B., Harvard University, 1937; A.M., 1939; Ph.D., 1940; A.M., Brown University, 1947
- Heisler, Martin O.** Associate Professor, Government and Politics. B.A., University of California (Los Angeles), 1960; M.A., 1962; Ph.D., 1969
- Hellman, John L.** Associate Professor, Entomology. B.S., University of Maryland, 1966; M.S., 1968; Ph.D., 1975.
- Helm, Eugene E.** Professor, Music. B.Mu.Ed., Southeastern Louisiana College, 1950; M.Mu.Ed., Louisiana State University, 1955; Ph.D., North Texas State Univ., 1958
- Helms, Janet E.** Associate Professor, Psychology. B.A., University of Missouri (Kansas City), 1968; M.A., 1972; Ph.D., Iowa State University, 1975.
- Helz, George R.** Professor, Chemistry and Biochemistry. A.B., Princeton University, 1964; Ph.D., Pennsylvania State University, 1971.
- Helzer, Garry A.** Associate Professor, Mathematics. B.A., Portland State College, 1959; M.A., Northwestern State University, 1962; Ph.D., 1964.
- Henderson, Dale A.** Instructor, Industrial, Technological and Occupational Education. B.S., Park College, 1984; M.S., Central Missouri University, 1986.
- Hendler, James A.** Assistant Professor, Computer Science; Assistant Professor, Systems Research Center; Assistant Professor, Institute for Advanced Computer Studies. B.S., Yale University, 1978; M.A., Southern Methodist University, 1982; M.S., Brown University, 1983; Ph.D., 1985.
- Henry-Logan, Kenneth R.** Professor, Chemistry and Biochemistry. B.Sc., McGill University, 1942; Ph.D., 1946.
- Henkel, Ramon** Associate Professor, Sociology. Ph.B., University of North Dakota, 1958; M.A., University of Wisconsin, 1961; Ph.D., 1967.
- Henkelman, James H.** Associate Professor, Curriculum and Instruction; Acting Director, Office of Laboratory Experiences. B.S., Miami University (Ohio), 1954; M.Ed., 1955; Ed.D., Harvard University, 1965; M.A., Whitworth College, 1981.
- Henretta, James A.** Priscilla Alden Burke Professor, History. B.A., Swarthmore College, 1962; M.A., Harvard University, 1963; Ph.D., 1968.
- Herb, Rebecca A.** Professor, Mathematics. B.A., University of Oregon, 1969; M.A., 1970; Ph.D., University of Washington, 1974.

- Herin, Christoph A.** Professor Emeritus, Germanic and Slavic Languages and Literatures. Ph.D., University of Bonn. 1950.
- Herman, Harold J.** Associate Professor, English. B.A., University of Maryland. 1952. Ph.D., University of Pennsylvania. 1960.
- Herman, Wayne L.** Associate Professor, Curriculum and Instruction. B.A., Ursinus College. 1955. M.Ed., Temple University. 1960; Ed.D., 1965.
- Herndon, James W.** Assistant Professor, Chemistry and Biochemistry. B.S., University of North Carolina (Greensboro). 1979. M.A., Princeton University. 1980; Ph.D., 1983.
- Herold, Keith E.** Assistant Professor, Mechanical Engineering. B.S.M.E., University of Akron. 1977; M.S., Ohio State University. 1979. Ph.D., 1985.
- Herschbach, Dennis R.** Associate Professor, Industrial, Technological and Occupational Education. B.A., San Jose State College. 1960. M.S., University of Illinois (Urbana). 1968. Ph.D., 1972.
- Hershenson, David B.** Professor and Chairperson, Counseling and Personnel Services. A.B., Harvard University. 1955; A.M., Boston University. 1960; Ph.D., 1964.
- Hershey, David R.** Assistant Professor, Horticulture. B.S., The Pennsylvania State University. 1977; M.S., University of California (Davis). 1980; Ph.D., 1983.
- Hetrick, Frank M.** Professor, Microbiology. B.S., Michigan State University. 1954; M.S., University of Maryland. 1960; Ph.D., 1962.
- Hevner, Alan R.** Associate Professor, College of Business and Management. B.S., Purdue University. 1973; M.S., 1976; Ph.D., 1973.
- Hewitt, Mary A.** Instructor, Part-time, Industrial, Technological and Occupational Education. B.S., University of Kentucky. 1969; M.A., Western Michigan University. 1973.
- Heyndels, Ralph** Director and Professor, Comparative Literature. B.A., Free University Brussels. 1971; M.A., 1973; Ph.D., 1978.
- Heyneman, Stephen P.** Adjunct Professor, Education, Policy, Planning and Administration. B.A., University of California (Berkeley). 1964; M.A., University of California (Los Angeles). 1965; M.A., University of Chicago. 1973; Ph.D., 1975.
- Hickey, Michael E.** Adjunct Professor, Education Policy, Planning, and Administration. B.A., University of Washington (Seattle). 1964; M.A., 1968; Ph.D., 1969.
- Hiebert, Ray E.** Professor, College of Journalism. B.A., Stanford University. 1954; M.S., Columbia University. 1957; M.A., University of Maryland. 1961; Ph.D., 1962.
- Higgins, William J.** Associate Professor, Zoology. B.S., Boston College. 1969; Ph.D., Florida State University. 1973.
- Higgins-Hallwig, Elizabeth A.** Instructor, Botany. B.S., University of Maryland. 1950; M.S., 1969.
- Highton, Richard** Professor, Zoology. B.A., New York University. 1950; M.S., University of Florida. 1953; Ph.D., 1956.
- Hill, Clara E.** Professor, Psychology. B.A., Southern Illinois University. 1970; M.A., 1972; Ph.D., 1974.
- Hill, John W.** Professor, School of Architecture. B.A., Rice University. 1951; B. Arch., 1952; M. Arch., University of Pennsylvania. 1959.
- Hill, Robert L.** Assistant Professor, Agronomy. B.S., North Carolina State University. 1974. M.S., 1981; Ph.D., Iowa State University. 1984.
- Hill, Walter W., Jr.** Lecturer, part-time, Afro-American Studies. B.S., Massachusetts Institute of Technology. 1973; M.S., 1977; Ph.D., 1984.
- Hill, Wendell T., III** Assistant Professor, Institute for Physical Science and Technology. B.A., University of California (Irvine). 1974. M.S., Stanford University. 1976. Ph.D., 1980.
- Hines, Anson H.** Adjunct Associate Professor, Zoology. B.A., Pomona College. 1969. Ph.D., University of California (Berkeley). 1976.
- Hirzel, Robert K.** Associate Professor, Sociology. B.A., Pennsylvania State University. 1946; M.A., 1949; Ph.D., Louisiana State University. 1954.
- Hitchcock, Donald R.** Associate Professor, Germanic and Slavic Languages and Literatures. B.A., University of Maryland. 1952; M.A., Harvard University. 1954; Ph.D., 1965.
- Ho, Ping-Tong** Associate Professor, Electrical Engineering. S.B., Massachusetts Institute of Technology. 1973; S.M., 1975; Sc.D., 1978.
- Hochheimer, John N.** Faculty Extension Assistant, Agricultural Engineering. B.S., West Virginia University. 1979; M.S., University of Maryland. 1982.
- Hochuli, Urs E.** Professor, Electrical Engineering. B.S., Technikum Biel, Switzerland. 1950; M.S., University of Maryland. 1955; Ph.D., Catholic University of America. 1962.
- Hodos, William** Professor, Psychology. B.S., City University of New York (Brooklyn College). 1955; M.A., University of Pennsylvania. 1957; Ph.D., 1960.
- Hoff, Karla** Assistant Professor, Economics. B.A., Wellesley College. 1974. M.A.L.D., Tuft University. 1979; Ph.D., Princeton University. 1989.
- Hoffman, Mary Ann** Associate Professor, Counseling and Personnel Services. B.A., Macalester College. 1971; Ph.D., University of Minnesota. 1975.
- Hoffman, Miles** Lecturer, Part-time, Music. B.A., Yale University. 1973; M.M., Juilliard School of Music. 1977.
- Hoffman, Ronald** Associate Professor, History. B.A., George Peabody College. 1964; M.A., University of Wisconsin. 1965; Ph.D., 1969.
- Hogan, David J.** Adjunct Associate Professor, Education Policy, Planning, and Administration. B. of Economics, University of Sydney (Australia). 1968; B.A., 1971; M.Ed., University of Illinois. 1975. Ph.D., University of Illinois. 1978.
- Holliday, William** Professor, Curriculum and Instruction. B.S., Purdue University. 1963. M.S., 1968. Ph.D., University of Texas (Austin). 1970.
- Hollies, Norman R. S.** Professor, Textiles and Consumer Economics. B.S., University of Alberta (Canada). Ph.D., McGill University (Montreal). 1947.
- Holloway, David C.** Professor, Mechanical Engineering. B.S., University of Illinois (Urbana). 1966. M.S., 1969. Ph.D., 1971.
- Holloway, Susan D.** Assistant Professor, Human Development. B.A., University of California (Santa Cruz). 1976; Education Specialist, Stanford University. 1982; Ph.D., 1983.
- Holman, Benjamin F.** Professor, College of Journalism, Affiliate Professor, Afro-American Studies Program. B.S., University of Kansas. 1952.
- Holmgren, Harry D.** Professor, Physics and Astronomy. B.S., University of Minnesota. 1949. M.A., 1950; Ph.D., 1954.
- Holmlund, Chester E.** Professor, Chemistry and Biochemistry. B.S., Worcester Polytechnic Institute. 1943; M.S., 1951; Ph.D., University of Wisconsin. 1954.
- Holton, W. Milne** Professor, English. B.A., Dartmouth College. 1954; LL.B., Harvard University. 1957; M.A., Yale University. 1959; Ph.D., 1965.
- Holum, Kenneth** Associate Professor, History. B.A., Augustana College. 1961; M.A., University of Chicago. 1969; Ph.D., 1973.
- Hoover, Bryan D.** Assistant Professor, Housing and Design. B.A., Iowa State University. 1973; M.G.A., University of Maryland/University College. 1983.
- Hopkins, Richard L.** Associate Professor, Education Policy, Planning, and Administration. B.S., Stanford University. 1962; M.S., 1963; Ph.D., University of California (Los Angeles). 1969.
- Hornbake, R. Lee** Professor Emeritus, Industrial, Technological and Occupational Education. Vice President for Academic Affairs Emeritus. B.S., California State College (Pennsylvania). 1934; M.A., Ohio State University. 1936; Ph.D., 1942; LL.D., Eastern Michigan University. 1963.
- Hornstein, Norbert** Associate Professor, Linguistics Department. B.A., McGill University. 1975; Ph.D., Harvard University. 1979.
- Hornyak, William F.** Professor, Physics and Astronomy. B.E.E., City University of New York (City College). 1944. M.S., California Institute of Technology. 1946; Ph.D., 1949.
- Horowitz, John K.** Assistant Professor, Agricultural and Resource Economics. B.S., Washington State University. 1982; M.A., 1985; Ph.D., University of California, San Diego. 1988.
- Horton, David L.** Professor, Psychology. B.A., University of Minnesota. 1955. M.A., 1957. Ph.D., 1959.
- Horty, John** Assistant Professor, Philosophy; Assistant Professor, Institute for Advanced Computer Studies. B.A., Oberlin College. 1977. Ph.D., University of Pittsburgh. 1986.
- Horvath, John M.** Professor, Mathematics. Ph.D., University of Budapest. 1947.
- Howard, John D.** Professor, English, Director, Graduate Studies. B.A., Washington College (Maryland). 1956; M.A., University of Maryland. 1962; Ph.D., 1967.
- Howland, Marie** Associate Professor, Urban Studies. B.A., University of California (Berkeley). 1972; M.C.P., 1974; Ph.D., MIT, 1981.
- Hovert, John H.** Professor Emeritus, Agronomy. B.S., University of Maryland. 1943; M.S., 1949; Ph.D., 1951.
- Hrutka, Mary Ellen** Director, Experiential Learning Programs, Affiliate Assistant Professor, Counseling and Personnel Services. B.A., Southern Connecticut State University. 1968; M.A., University of Maryland. 1970; Ph.D., University of Miami. 1983.
- Hsu, Hei-Ti** Adjunct Professor, Entomology. B.S., Taiwan Chung-Hsing University. 1962; M.S., University of the Philippines. 1967; Ph.D., University of Illinois. 1971.
- Hsu, Yih-Yun** Professor, Chemical and Nuclear Engineering. B.S., Taiwan University, China. 1952; M.S., University of Illinois. 1957; Ph.D., 1958.
- Hsueh, Chun-Tu** Professor, Government and Politics. L.L.B., Chaoyang University (China). 1946; M.A., Columbia University. 1953; Ph.D., 1958.
- Hu, Bei-Lok** Professor, Physics and Astronomy. A.B., University of California (Berkeley). 1967; M.A., Princeton University. 1969; Ph.D., 1972.
- Hubbard, Bert E.** Research Professor, Mathematics and Institute for Physical Science and Technology. B.S., Western Illinois University. 1949; M.S., State University of Iowa. 1952; Ph.D., University of Maryland. 1960.
- Hubbe, Rolf O.** Associate Professor, Classics. B.A., Hamilton College. 1947. M.A., Princeton University. 1950; Ph.D., 1950.
- Hudak, Bonita L.** Instructor, Part-time, Special Education. B.S., Towson State University. 1971; M.A., Loyola College. 1975.
- Huden, Daniel P.** Associate Professor, Education Policy, Planning, and Administration. B.S., University of Vermont. 1954; M.A., Columbia Teachers College. 1958; Ed.D., 1967.
- Hudson, William L.** Professor, Music. B.Mus., Philadelphia Music Academy. 1954; A.B., University of Pennsylvania. 1957; M.Mus., Yale University. 1961.

- Huebner, Robert W.** Associate Professor, Human Development B.S., Concordia Teachers College, 1957; M.A., 1960; Ph.D., University of Maryland, 1969.
- Hueth, Darrell L.** Professor and Chairman, Agricultural and Resource Economics B.S., Montana State University, 1959; M.S., 1969; Ph.D., University of California (Berkeley), 1973
- Huhey, James E.** Professor, Chemistry and Biochemistry, B.S., University of Cincinnati, 1957; M.S., University of Illinois, 1959; Ph.D., 1961.
- Hula, Richard C.** Associate Professor, Institute for Urban Studies B.A., Michigan State University, 1969; M.A., Northwestern University, 1970; Ph.D., 1975.
- Hult, Joan S.** Associate Professor, Physical Education, B.S., Indiana University, 1954; M.Ed., University of North Carolina (Greensboro), 1958; Ph.D., University of Southern California, 1967.
- Hulten, Charles R.** Professor, Economics A.B., University of California (Berkeley), 1965; Ph.D., 1973
- Hultgren, Francine H.** Associate Professor, Industrial, Technological and Occupational Education, B.S., University of Minnesota, 1968; M.S., North Dakota State University, 1977; Ph.D., Pennsylvania State University, 1982.
- Hummel, James A.** Professor, Mathematics, B.S., California Institute of Technology, 1949; M.A., Rice University, 1953; Ph.D., 1955.
- Humphrey, Fred N.** Professor and Chairman, Recreation, B.A., Tarkio College, 1946; M.A., University of Iowa, 1953; Ph.D., Pennsylvania State University, 1973.
- Humphrey, James H.** Professor Emeritus, Physical Education, A.B., Denison University, 1933; M.A., Western Reserve University, 1946; Ed.D., Boston University, 1951.
- Humphrey, Jay D.** Assistant Professor, Mechanical Engineering, B.S., Virginia Polytechnic Institute, 1961; M.S., Georgia Institute of Technology, 1982; Ph.D., 1985.
- Humphrey, Margo.** Art BFA, California College of Arts and Crafts, 1973; MFA, Stanford University, 1974.
- Hunt, E. Joan** Assistant Professor, Human Development, A.B., University of Redlands, 1954; M.A., Claremont Graduate School, 1964; Ph.D., University of Maryland, 1967.
- Hunt, Janet G.** Associate Professor, Sociology, B.A., University of Redlands, 1962; M.A., Indiana University, 1966; Ph.D., 1973.
- Hunt, Larry L.** Associate Professor, Sociology, B.S., Ball State University, 1961; M.A., Indiana University, 1964; Ph.D., 1968.
- Hurley, Bernard F., Jr.** Associate Professor, Physical Education, B.A., University of South Florida, 1972; M.A., 1975; Ph.D., Florida State University, 1981.
- Husman, Burris F.** Professor Emeritus, Physical Education, B.S., University of Illinois (Urbana), 1941; M.S., 1948; Ed.D., University of Maryland, 1954
- Hutcheson, Steven W.** Assistant Professor, Botany, B.A., University of California (Santa Cruz), 1975; Ph.D., University of California (Berkeley), 1982.
- Hyatt, James A.** Assistant Vice President, Administrative Affairs, B.A., University of Washington, 1972; M.B.A., 1976.
- Hyde, David H.** Instructor, Health Education; Director, Undergraduate Studies, B.S., State University College (Brookport, NY), 1968; M.S., 1973.
- Igel, Regina** Associate Professor, Spanish and Portuguese, M.A., State University of Iowa, 1969; Ph.D., University of New Mexico, 1973.
- Iliadis, Agiallaos** Assistant Professor, Electrical Engineering, B.S., Aristotelian University of Thessaloniki, 1975; M.S., University of Manchester, 1976; Ph.D., 1980.
- Imberski, Richard B.** Associate Professor, Zoology B.S., University of Rochester, 1959; Ph.D., 1966.
- Ingle, Marcus D.** Affiliate Assistant Professor, Agricultural and Extension Education, B.A., University of California, 1965; Master of Public Admin., University of Washington, 1967; Master of Philocopy, Syracuse University, 1975; Ph.D., 1977
- Inglis, Allen L.** Assistant Professor, College of Veterinary Medicine, B.S.E.E., University of Maryland, 1963; V.M.D., University of Pennsylvania, 1969.
- Ingraham, Barton L.** Associate Professor, Institute of Criminal Justice and Criminology, A.B., Harvard University, 1952; J.D., 1957; M.Crim., University of California (Berkeley), 1968; Ph.D., 1971
- Inkelas, Sharon** Assistant Professor, Linguistics Department, B.A., Pomona College, 1984; Ph.D., Stanford University, 1989.
- Inouye, David W.** Associate Professor, Zoology B.A., Swarthmore College, 1971; Ph.D., University of North Carolina, 1976.
- Ipavich, Fred M.** Associate Research Scientist, Institute for Physical Science and Technology; Associate Research Scientist, Physics and Astronomy B.S., Manhattan College, 1967; Ph.D., University of Maryland, 1972.
- Irwin, George R.** Professor, Part-time, Mechanical Engineering, A.B., Knox College, 1930; M.S., University of Illinois (Urbana), 1933; Ph.D., 1937; Hon. Doctor of Engineering, Lehigh University, 1977.
- Isaacs, Neil D.** Professor, English, A.B., Dartmouth College, 1953; A.M., University of California (Berkeley), 1956; Ph.D., Brown University, 1959.
- Iseman, Sheila C.** Instructor, part-time, Human Development, B.A., Brooklyn College, 1967; M.A., Oklahoma State University, 1970; Ph.D., University of Maryland, 1982.
- Iso-Ahola, Seppo E.** Professor, Recreation, B.S., University of Jyväskylä, Finland, 1971; M.S., University of Illinois, 1972; M.S., University of Jyväskylä, Finland, 1973; Ph.D., University of Illinois, 1976.
- Jackson, Diana Ryder** Assistant Dean, College of Behavioral and Social Sciences, B.A., Michigan State University, 1975; M.L.I.R., 1977; M.A., University of Maryland, 1981; Ph.D., 1987.
- Jackson, John W.** Professor Emeritus, Mechanical Engineering, B.S., University of Cincinnati, 1934; M.Eng., 1937; M.S., California Institute of Technology, 1940.
- Jackson, Paul D.** Lecturer, Dance, B.F.A., University of Utah, 1976; M.A., The Ohio State University, 1980.
- Jackson, Reginald B.** Lecturer Part-time, Music, B.M., North Texas State University, 1968; M.M.Ed., 1973.
- Jackson, Stanley B.** Professor Emeritus, Mathematics, B.A., Bates College, 1933; M.A., Harvard University, 1934; Ph.D., 1937.
- Jacobs, Wendy** Lecturer, Housing and Design, B.F.A., Edinboro State College, 1980; M.F.A., Cranbrook Academy of Art, 1984.
- Jacobson, Theodore A.** Assistant Professor, Physics, B.A., Reed College, 1977; Ph.D., University of Texas at Austin, 1983.
- Jacoby, Barbara** Affiliate Lecturer, French and Italian, B.A., University of Maryland, 1971; M.A., 1972; Ph.D., 1978.
- Ja'Ja', Joseph** Professor, Electrical Engineering; Associate Director of Research, Systems Research Center; Professor, Institute for Advanced Computer Studies, B.S., American University (Beirut), 1974; M.S., Harvard University, 1976; Ph.D., 1977.
- Jaklitsch, Richard L.** Lecturer, Part-time, Textiles and Consumer Economics, B.A., University of Maryland, 1980; J.D., 1983.
- Jalote, Pankaj** Assistant Professor, Computer Science, Assistant Professor, Institute for Advanced Computer Studies B.S., Indian Institute of Technology, 1980; M.S., Pennsylvania State University, 1982; Ph.D., University of Illinois (Urbana), 1985
- James, Bruce R.** Assistant Professor, Agronomy, B.S., Williams College, 1973; M.S., University of Vermont, 1979; Ph.D., 1981.
- James Edward** Associate Professor, English, B.A., University of Maryland, College Park, 1954; M.A., 1955; Ph.D., Catholic University of America, 1969
- James, Robert W.** Professor Emeritus, Sociology and Institute for Urban Studies, A.B., University of Chicago, 1938; M.A., 1939; Ph.D., University of Illinois, 1942.
- Jang, Hwee-Yong Jonathon** Assistant Professor, College of Business and Management, B.A., Seoul National University, 1976; M.A., University of Minnesota, 1983; Ph.D., Purdue University, 1987.
- Jantz, Richard K.** Professor, Curriculum and Instruction, B.S., Indiana University, 1968; M.S., 1970; Ed.D., Ball State University, 1972.
- Jaquith, Richard H.** Professor Emeritus, Chemistry and Biochemistry, Assistant Vice President, Academic Affairs, B.S., University of Massachusetts, 1940; M.S., 1942; Ph.D., Michigan State University, 1955.
- Jarvis, Bruce B.** Professor and Acting Chair, Chemistry and Biochemistry B.S., Ohio Wesleyan University, 1963; Ph.D., University of Colorado, 1966.
- Jarvis, Peter** Adjunct Professor, Agricultural and Extension Education, B.D., University of London, 1963; B.Sc., University of Sheffield, 1969; M.Sc., University of Birmingham, 1972; Ph.D., University of Aston, 1977.
- Jashemski, Wilhelmina F.** Professor Emerita, History, B.A., York College, 1931; M.A., University of Nebraska, 1933; Ph.D., University of Chicago, 1942.
- Jawahery, Abolhassin** Assistant Professor, Physics and Astronomy, B.S., Tehran University, 1976; M.S., Tufts University, 1977; Ph.D., 1981.
- Jellema, Roderick H.** Professor, English, B.A., Calvin College, 1951; Ph.D., University of Edinburgh, 1962.
- Jeng, Ling Hwey** Assistant Professor, College of Library and Information Services, B.A., National Taiwan University, 1978; M.L.S., The University of Texas (Austin), 1983; Ph.D., 1987.
- Johnson, Arthur T.** Professor, Agricultural Engineering, B.S.A.E., Cornell University, 1964; M.S., 1967; Ph.D., 1969.
- Johnson, Charles E.** Associate Professor, Measurement, Statistics, and Evaluation, B.A., University of Minnesota, 1957; Ph.D., 1964.
- Johnson, Conrad D.** Associate Professor, Philosophy, A.B., Stanford University, 1965; M.A., University of Michigan, 1966; Ph.D., 1969.
- Johnson, Gary R.** Instructor, Institute of Applied Agriculture, B.S., Western Illinois University, 1970; M.S., 1977.
- Johnson, Gregory** Assistant Professor, Computer Science, B.A., Pomona College, 1976; M.S., University of Wisconsin, 1981; Ph.D., 1983.
- Johnson, Isiah** Associate Staff, Accompanist, Dance, University of Maryland, 1976.
- Johnson, Janet W.** Assistant Professor, Psychology, A.B., George Washington University, 1951; A.M., 1956; Ph.D., 1962.
- Johnson, Martin L.** Professor, Curriculum and Instruction, B.S., Morris College, 1961; M.Ed., University of Georgia, 1968; Ed.D., 1971.
- Johnson, Raymond L.** Professor, Mathematics, B.A., University of Texas, 1963; Ph.D., Rice University, 1969.
- Johnson, Roy** Professor, Music, B.Mus., University of Rochester, 1949; M.Mus., 1951; D.M.A., 1960.

- Jolson, Marvin A.** Professor, College of Business and Management B.E.E., George Washington University, 1949; M.B.A., University of Chicago, 1965; D.B.A., University of Maryland, 1969.
- Jones, Christopher K.R.T.** Associate Professor, Mathematics B.A., University of Bristol, 1974; M.A., University of New Mexico, 1976; Ph.D., University of Wisconsin (Madison), 1979
- Jones, Everett** Associate Professor, Aerospace Engineering B.A.E., Rensselaer Polytechnic Institute, 1956; M.A.E., 1960; Ph.D., Stanford University, 1968
- Jones, George F.** Professor Emeritus, Germanic and Slavic Languages and Literatures B.A., Emory University, 1938; M.A., Oxford University, 1943; Ph.D., Columbia University, 1951.
- Jones, Jack C.** Professor Emeritus, Entomology B.S., Auburn University, 1942; M.S., 1947; Ph.D., Iowa State University, 1950.
- Joseph, John E.** Associate Professor, French and Italian B.A., University of Michigan, 1977; M.A., 1978; Ph.D., 1981
- Joseph, Sam W.** Professor and Chairman, Microbiology B.S., University of Florida, 1956; M.S., St. John's University, New York, 1964; Ph.D., 1970.
- Julin, Douglas A.** Assistant Professor, Chemistry and Biochemistry B.A., Haverford College, 1978; Ph.D., University of California (Berkeley), 1984
- Jump, Lance B.** Lecturer, Part-time, Electrical Engineering B.S., University of Maryland, 1979; M.S., 1984.
- Just, Richard** Professor, Agricultural and Resource Economics B.S., Oklahoma State University, 1969; M.A., University of California (Berkeley), 1971; Ph.D., 1972.
- Kacser, Claude** Associate Professor, Physics and Astronomy B.A., Oxford University, 1955; M.A., 1959; Ph.D., 1959.
- Kadec, Sarah B.** Lecturer, Part-time, College of Library and Information Services B.A., Madison College, 1952; M.L.S., Carnegie Library School, 1961.
- Kagan, Abram** Professor, Mathematics M.A., University of Tashkent, 1958; Ph.D., University of Leningrad, 1963; D.Sc., 1967.
- Kahn, Joan R.** Assistant Professor, Sociology B.A., Stanford University, 1978; M.A., University of Michigan, 1982; Ph.D., 1985.
- Kaku, Bharat K.** Assistant Professor, College of Business and Management, B.E., Bhopal University, 1972; M.B.A., University of Delhi, 1975; M.S., Carnegie Mellon University, 1982; Ph.D., 1985.
- Kameras, Beth A.** Instructor, Maryland English Institute, B.S., Coe College, 1975; M.A.T., Georgetown University, 1981.
- Kaminski, Bartłomiej K.** Assistant Professor, Government and Politics, M.S., University of Warsaw, 1967; Ph.D., 1972.
- Kammeyer, Kenneth C. W.** Professor, Sociology B.A., University of Northern Iowa, 1953; M.A., State University of Iowa, 1958; Ph.D., 1960.
- Kanal, Laveen** Professor, Computer Science, Professor, Institute for Advanced Computer Studies, B.S., University of Washington, 1951; M.S., 1953; Ph.D., University of Pennsylvania, 1960.
- Kandelin, Nils A.** Lecturer, full-time, College of Business and Management, B.S., University of California, 1979; M.B.A., University of Southern California, 1984.
- Kantor, Mark A.** Assistant Professor, Food Science, B.S., Rutgers University, 1972; M.S., Cornell University, 1975; Ph.D., Rutgers University, 1981
- Kantzes, James G.** Professor, Botany B.S., University of Maryland, 1951; M.S., 1954; Ph.D., 1957
- Kartam, Nabil A.** Assistant Professor, Civil Engineering B.S., Kuwait University, 1983; M.S., University of Michigan, 1985; M.S., Stanford University, 1988; M.S., 1989
- Kasler, Franz** Associate Professor, Chemistry and Biochemistry Doctorandum, University of Vienna, 1956; Ph.D., 1959.
- Kauffman, Linda S.** Associate Professor, English B.A., University of California, Santa Barbara, 1971; Ph.D., 1978.
- Kauffman, Robert B.** Lecturer, Recreation B.S. Pennsylvania State University, 1970; M.S., 1974; Ph.D. University of Maryland, 1984
- Kaufman, Stuart B.** Associate Professor, History B.A., University of Florida, 1962; M.A., 1964; Ph.D., Emory University, 1970.
- Kay, Lois E.** Instructor, College of Journalism, B.S. Boston University, 1950.
- Kazazis, John N.** Visiting Professor, Classics B.A. University of Thessaloniki, Greece, 1972; M.A. University of Illinois at Urbana-Champaign, 1974; Ph.D., 1978
- Keeney, Michael S.** Associate Professor, Geography B.S., University of Illinois, 1973; M.A., Western Illinois University, 1976; Ph.D., University of Western Ontario, 1981.
- Kedem, Benjamin** Associate Professor, Mathematics B.S., Roosevelt University, 1968; M.S., Carnegie Mellon University, 1970; Ph.D., 1972.
- Keenan, Kevin L.** Lecturer, College of Journalism B.A., University of Illinois, 1977; M.S., 1979.
- Keeney, Mark** Professor Emeritus, Chemistry and Biochemistry B.S., Pennsylvania State University, 1942; M.S., Ohio State University, 1948; Ph.D., Pennsylvania State University, 1950
- Kehee, Patrice** Assistant Professor, Art, B.F.A., University of North Carolina, 1973; M.F.A., Washington University (St. Louis), 1977.
- Kelejian, Harry H.** Professor, Economics B.A., Hofstra College, 1962; M.A., University of Wisconsin, 1964; Ph.D., 1968.
- Kelleher, Catherine M.** Professor, School of Public Affairs, Affiliate Professor, Government and Politics A.B., Mount Holyoke College, 1960; Ph.D., MIT, 1967; D. Litt., Mount Holyoke College, 1980.
- Keiley, David L.** Professor, Physical Education A.B., San Diego State College, 1957; M.S., University of Southern California, 1958; Ph.D., 1962.
- Kellogg, R. Bruce** Research Professor, Mathematics and Institute for Physical Science and Technology B.S., Massachusetts Institute of Technology, 1952; Ph.D., University of Chicago, 1959.
- Kelly, Brian P.** Assistant Professor, School of Architecture, B. Arch, University of Notre Dame, 1981; M. Arch., Cornell University, 1987.
- Kelly, James J.** Associate Professor, Physics and Astronomy B.S., California Institute of Technology, 1977; Ph.D., Massachusetts Institute of Technology, 1981.
- Kelly, R. Gordon** Associate Professor and Chairman, American Studies B.A., Depauw University, 1961; M.A., Claremont Graduate School, 1962; Ph.D., University of Iowa, 1970.
- Kelly, Thomas J.** Adjunct Associate Professor, Zoology B.S., University of Illinois (Urbana), 1969; Ph.D., 1975
- Kennedy, Robert A.** Professor, Horticulture, Director, Agricultural Experiment Station; Associate Dean, Colleges of Agriculture and Life Sciences B.S. University of Minnesota, 1968; Ph.D., University of California (Berkeley), 1974.
- Keni, Bretton W.** Instructor, Zoology B.S., Oregon State University, 1976; M.S., 1976; Ph.D., University of Maryland, 1981
- Kent, George O.** Professor, History B.S. Columbia University, 1948; M.A., 1949; Ph.D., Oxford University, 1958
- Kenworthy, William J.** Associate Professor, Agronomy B.S., Purdue University, 1970; M.S., North Carolina State University, 1972; Ph.D., 1976
- Kerkham, H. Eleanor** Associate Professor, Hebrew and East Asian B.A., Pomona College, 1961; M.A., Stanford University, 1963; Ph.D., Indiana University, 1974
- Kerr, Frank J.** Professor Emeritus, Physics and Astronomy Astronomy Program B.Sc., University of Melbourne, 1938; M.Sc. 1939; M.A., Harvard University, 1951; D.Sc., University of Melbourne, 1962.
- Kessides, Ioannis N.** Assistant Professor, Economics B.S., California Institute of Technology, 1974; M.A., Princeton University, 1980; Ph.D., 1984
- Khan, Hasna J.** Assistant Professor, Mechanical Engineering B.S., Bangladesh University of Engineering, 1980; M.S., University of Washington, 1982; Ph.D., 1986
- Khanra, Raj K.** Professor, Chemistry and Biochemistry M.Sc., University of Delhi, 1957; Ph.D., Indian Institute of Science (Bangalore), 1962
- Kidd, Jerry S.** Professor, College of Library and Information Services B.S., Illinois Wesleyan University, 1950; M.A., Northwestern University, 1954; Ph.D., 1956
- Kim, Young Suh** Associate Professor, Physics and Astronomy B.S., Carnegie Institute of Technology, 1958; Ph.D., Princeton University, 1961
- King, Donna L.** Research Associate, Curriculum and Instruction B.A., Kearney State College, 1964; M.Ed., Utah State University, 1981; Ed.D., 1984
- King, Henry C.** Professor, Mathematics A.B., Brown University, 1969; M.A., University of California (Berkeley), 1973; Ph.D., 1974
- King, Katherine R.** Assistant Professor, Women's Studies Program B.A., University of California (Santa Cruz), 1975; M.A., University of Chicago (Illinois), 1978; Ph.D., University of California (Santa Cruz), 1987.
- King, Raymond L.** Professor Emeritus, Animal Sciences A.B., University of California (Davis), 1955; Ph.D., 1958.
- Kirk, James A.** Professor, Mechanical Engineering B.S., Ohio State University 1967; M.S., Massachusetts Institute of Technology, 1969; Ph.D., 1972
- Kirkley, Donald H., Jr.** Associate Professor, Communication Arts and Theatre B.A., University of Maryland, 1960; M.A., 1962; Ph.D., Ohio State University, 1967.
- Kirkpatrick, Theodore R.** Associate Professor, Institute for Physical Science and Technology; Assistant Professor, Physics and Astronomy B.S., University of California (Los Angeles), 1977; Ph.D., Rocketteller University, 1981.
- Kirschner, Joseph M.** Lecturer, Part-time, Physics and Astronomy B.S., University of Delaware, 1947; M.S., University of Maryland, 1952.
- Kirwan, William E.** President, Professor, Mathematics A.B., University of Kentucky, 1960; M.S., Rutgers The State University, 1962; Ph.D., 1964.
- Klank, Richard** Associate Professor, Art B. Arch., Catholic University of America, 1962; M.F.A., 1964.
- Klievon, Albert J.** Assistant Dean, Colleges of Agriculture and Life Sciences B.S., University of Maryland, 1968; M.S., 1973; Ph.D., 1975
- Kleiman, Devra Gall** Adjunct Professor, Zoology B.S., University of Chicago, 1964; Ph.D., University of London, 1969.
- Klein, Elisa L.** Associate Professor, Curriculum and Instruction B.A., Kalamazoo College, 1975; M.S., Pennsylvania State University 1977; Ph.D., 1980.
- Klein, Katherine J.** Assistant Professor, Psychology B.A., Yale University, 1978; Ph.D., University of Texas (Austin), 1984.

- Kleine, Don W.** Associate Professor, English. B.A. University of Chicago, 1950; M.A., 1953; Ph.D., University of Michigan, 1961
- Kleppner, Adem** Professor, Mathematics. B.S., Yale University, 1953; M.A., University of Michigan, 1954; Ph.D., Harvard University, 1960.
- Klos, Donald M.** Assistant Professor, Health Education. B.S., The University of Michigan, 1973; MPH, 1978; Ph.D., 1986.
- Klumpp, James F.** Associate Professor, Communication Arts and Theatre. B.A., University of Kansas, 1968; M.A., University of Minnesota, 1971, 1971; Ph.D., University of Minnesota, 1973
- Kniffen, Donald A.** Lecturer, Part-time, Physics and Astronomy. B.S., Louisiana State University, 1959; M.A., Washington University, 1960; Ph.D., Catholic University, 1967.
- Knight, Robert E.L.** Associate Professor, Economics. A.B., Harvard University, 1948; Ph.D., University of California (Berkeley), 1958.
- Koh, Severino L.** Associate Dean, College of Engineering, Professor, Mechanical Engineering. B.S., New York University, 1950; B.S., National University (Manila, Philippines), 1952; M.S., The Pennsylvania State University, 1957; Ph.D., Purdue University, 1962.
- Kohl, Frances L.** Associate Professor, Special Education. B.S., University of Wisconsin, 1973; M.Ed., Temple University, 1975; Ph.D., University of Illinois, 1979.
- Koines, Penelope M.** Instructor, Botany. B.A., George Washington University, 1963; M.S., University of Maryland, 1980.
- Kolker, Robert P.** Professor, Communication Arts and Theatre. B.A., City University of New York (Queens College), 1962; M.A., Syracuse University, 1965; Ph.D., Columbia University, 1969
- Kolodny, Richard** Professor, College of Business and Management. B.S.B.A., Northwestern University, 1965; M.B.A., New York University, 1967; Ph.D., 1972.
- Komives, Susan R.** Assistant Professor, Counseling and Personnel Services. B.S., Florida State University, 1968; M.S., 1969; Ph.D., University of Tennessee, 1973.
- Koonce, Susan L.** Assistant Dean, Undergraduate Studies; Lecturer, part-time, Human Development. B.S., University of Colorado, 1964; M.S., West Virginia University, 1971; Ph.D., University of Maryland, 1984.
- Korenman, Victor** Professor, Physics and Astronomy. B.A., Princeton University, 1958; A.M., Harvard University, 1959; Ph.D., 1965.
- Korkegi, Robert H.** Lecturer, Part-time, Aerospace Engineering. B.S., Lehigh University, 1949; M.S., California Institute of Technology, 1950; Ph.D., 1954.
- Kornblatt, Joyce R.** Professor, English. B.A., Carnegie-Mellon University, 1966; M.A., Case-Western Reserve University, 1968.
- Koscielny, Anne** Professor, Music. B.Mus., Eastman School of Music, 1958; M.Mus., Manhattan School of Music, 1964.
- Kotula, Anthony W.** Adjunct Professor, Poultry Science. B.S., University of Massachusetts, 1951; M.S., 1954; Ph.D., University of Maryland, 1964.
- Kotz, Samuel** Professor, College of Business and Management. M.S., Hebrew University, Jerusalem, 1956; Ph.D., Cornell University, 1960.
- Kovach, Kenneth A.** Lecturer, part-time, College of Business and Management. B.B.A., University of Ohio, 1968; M.B.A., 1971.
- Kozarich, John W.** Professor, Chemistry and Biochemistry. B.S., Boston College, 1971; Ph.D., Massachusetts Institute of Technology, 1975.
- Krajcik, Joseph S.** Assistant Professor, Curriculum and Instruction. B.A., University of Wisconsin (Milwaukee), 1973; M.S., 1983; Ph.D., University of Iowa, 1986
- Krapfel, Robert E.** Associate Professor, College of Business and Management. B.A., University of Connecticut, 1970; M.B.A., 1975; Ph.D., Michigan State University, 1979
- Krayterman, Boris L.** Associate Professor, Part-time, Mechanical Engineering. M.S., Polytechnical Institute (Saratov, USSR), 1958; Ph.D., 1964
- Kreiser, Jeannette S.** Affiliate Assistant Professor, Counseling and Personnel Services, Assistant Dean, College of Education. B.A., University of Chicago, 1965; M.A.T., 1969; Ed.D., University of Rochester, 1980
- Kretchmer, Paul J.** Adjunct Associate Professor, Horticulture. B.S., California Polytechnic State University, 1973; M.S., Cornell University, 1976; Ph.D., 1979.
- Krewatch, Albert V.** Extension Professor, Eminent. Agricultural Engineering. B.S., University of Delaware, 1925; M.S., 1929; E.E., 1933.
- Kriebs, David K.** Assistant Professor, Communication Arts and Theatre. B.S., University of Tennessee, 1972; M.A., 1973; M.F.A., Yale School of Drama, 1982
- Kriemelmeyer, Harry** Assistant Vice President, Facilities Management, Administrative Affairs. B.M.E., George Washington University, 1953; M.A., University of Maryland, 1989
- Krisher, Lawrence C.** Professor, Part-time, Institute for Physical Science and Technology. A.B., Syracuse University, 1955; A.M., Harvard University, 1957; Ph.D., 1959.
- Krishnaprasad, P.S.** Professor, Electrical Engineering; Professor, Systems Research Center. B.Tech., Indian Institute of Technology, 1972; M.S., Syracuse University, 1973; Ph.D., Harvard University, 1977.
- Krishnaswami, Uma** Faculty Research Assistant, Special Education. B.A., University of Delhi, India, 1975; M.A., 1977; M.A., University of Maryland, 1981.
- Kruglanski, Arie W.** Professor, Psychology. B.A., University of Toronto (Canada), 1966; M.A., University of California, 1967; Ph.D., 1968
- Krusberg, Lorin R.** Professor, Botany. B.S., University of Delaware, 1954; M.S., North Carolina State University, 1956; Ph.D., 1959.
- Krushenick, Nicholas** Associate Professor, Art. B.A., Art Students' League, 1950; M.A., Hans Hofmann School, 1951.
- Kruskal, Clyde** Associate Professor, Computer Science. B.A., Brandeis University, 1976; M.S., Courant Institute of Mathematical Sciences, 1978; Ph.D., 1981.
- Kudla, Stephen S.** Professor, Mathematics. B.A., Harvard University, 1971; Ph.D., State University of New York (Stony Brook), 1975.
- Kueker, David W.** Professor, Mathematics. A.B., University of California (Los Angeles), 1964; M.A., 1966; Ph.D., 1967.
- Kuenzel, Wayne J.** Professor, Poultry Science. B.S., Bucknell University, 1964; M.S., 1966; Ph.D., University of Georgia, 1969.
- Kundu, Mukul R.** Professor, Physics and Astronomy, Astronomy Program. B.Sc., Calcutta University, 1949; M.Sc., 1951; D.Sc., University of Paris, 1957.
- Kung, Shain-dow** Professor, Botany. B.S., University of Chung-Hsing (China), 1958; M.S., University of Guelph (Canada), 1965; Ph.D., University of Toronto, 1968.
- Kuss, Fred R.** Associate Professor, Recreation. B.S., University of New Hampshire, 1948; M.S., 1950; Ph.D., Cornell University, 1970.
- Lai, Poh-Chin** Assistant Professor, Geography. B.E.S., University of Waterloo, 1978; M.A., 1980; Ph.D., 1983.
- Laidlaw, Charles D.** Lecturer, Part-time, Urban Studies. B.A., Colgate University, 1952; M.A., Yale University, 1953; Ph.D., University of Pennsylvania, 1968
- Laiman, David** Assistant Professor, Government and Politics. B.A., University of Kansas, 1974; M.A., 1978; Ph.D., University of Rochester, 1985
- Lamone, Rudolph P.** Professor and Dean, College of Business and Management. B.S., University of North Carolina, 1960; Ph.D., 1966
- Lamp, William** Assistant Professor, Entomology. B.S., University of Nebraska, 1972; M.S., Ohio State University, 1976; Ph.D., University of Nebraska, 1980
- Lampe, John R.** Professor, History. B.A., Harvard University, 1957; M.A., University of Minnesota, 1964; Ph.D., University of Wisconsin, 1971
- Lancaster, Dalton** Lecturer, Communication Arts and Theatre. B.A., University of Missouri, 1956; M.A., University of Washington (Seattle), 1960
- Landry, L. Bartholomew** Associate Professor, Sociology. B.A., Saint Mary's Seminary, 1961; B.A., Xavier University, 1966; Ph.D., Columbia University, 1971
- Lanier, Lois Kleinhenn** Instructor, Maryland English Institute. B.A., Anderson College, 1971; M.A., Columbia University, 1977.
- Lanning, Eldon W.** Assistant Professor, Government and Politics. B.S., Northwestern University, 1960; Ph.D., University of Virginia, 1965.
- Lanser, Susan** Associate Professor. B.A., Marquette University, 1965; M.A., University of Wisconsin, Madison, 1973; Ph.D., 1979
- Lapinski, Tadeusz** Professor, Art. M.F.A., Academy of Fine Arts, Warsaw, Poland, 1955.
- Larkin, Willard D.** Associate Professor, Psychology. B.S., University of Michigan, 1959; M.A., University of Pennsylvania, 1963; Ph.D., University of Illinois (Urbana), 1967.
- Larsen, Ronald** Affiliate Associate Professor, Computer Science; Acting Associate Director, Libraries for Information Technology. B.S., Purdue University, 1968; M.S., Catholic University, 1971; Ph.D., University of Maryland, 1981.
- Lashley, Marilyn** Assistant Professor, Afro-American Studies. B.A., Millikin University, 1969; M.A., University of Chicago, 1971; M.A., 1986; Ph.D., 1986.
- Laskowski, Michael Chris** Assistant Professor, Mathematics. B.A., University of Wisconsin, Madison, 1978; Ph.D., University of California, Berkeley, 1987.
- Lavine, Roberta Z.** Assistant Professor, Spanish and Portuguese. B.A., Queens College (CUNY), 1974; M.A., Catholic University of America, 1976; Ph.D., 1983.
- Lawrence, Jane Fiori** Assistant Director, University Honors Program. B.A., California Polytechnic State University, 1972; M.A., San Diego State University, 1978.
- Lawrence, Richard E.** Associate Professor, Counseling and Personnel Services. B.S., Michigan State University, 1955; M.A., 1957; Ph.D., 1965.
- Lawrence, Samuel A.** Assistant Vice President, Administrative Affairs. B.A., Harvard College, 1950; M.P.A., American University, 1958; Ph.D., 1965.
- Lawson, Lewis A.** Professor, English. B.S., East Tennessee State University, 1957; M.A., 1959; Ph.D., University of Wisconsin, 1964.
- Lawson, O. Jim** Lecturer, Institute of Applied Agriculture. B.S., University of Nebraska, 1981; M.S., Southern Illinois University, 1983; Ph.D., University of Maryland, 1988.
- Lawson, Wesley G.** Assistant Professor, Electrical Engineering, BSEE and MATH, University of Maryland, 1980; M.S., 1981; Ph.D., 1985.

- Lay, David C.** Professor, Mathematics. B.A., Aurora College, 1962; M.A., University of California (Los Angeles), 1965; Ph.D., 1966.
- Layman, John W.** Professor, Curriculum and Instruction and Physics and Astronomy. A.B., Park College, 1955; M.S. Ed., Temple University, 1961; Ed.D., Oklahoma State University, 1970.
- Leak, Lawrence E.** Assistant Professor and Assistant Chair, Education Policy, Planning, Administration, Director, Leadership in Educational Administration Development (LEAD), B.A., St. Mary's College, 1976; M.Ed., University of Maryland, 1981; Ph.D., 1988.
- Leatherman, Stephen P.** Associate Professor, Geography. B.S., North Carolina State University, 1970; Ph.D., University of Virginia, 1975.
- Leathers, Howard D.** Assistant Professor, Agricultural and Resource Economics. A.B., Princeton University, 1974; M.S., University of Minnesota, 1978; Ph.D., University of Wisconsin, 1986.
- LeBeaux, David** Assistant Professor, Linguistics Department. B.A., Oberlin College, 1974; M.A., Harvard, 1981; Ph.D., University of Massachusetts, 1988.
- LeCar, Harold** Lecturer, Part-time, Physics and Astronomy. A.B., Columbia College, 1957; Ph.D., Columbia University, 1963.
- LeClair, Marc J.** Assistant Professor, College of Business and Management. B.A., University of Massachusetts, 1979; M.S., Pennsylvania State University, 1985; Ph.D., 1989.
- Lee, Cheng S.** Assistant Professor, Chemical and Nuclear Engineering. B.S., National Cheng Kung University (Taiwan), 1981; M.S., Rensselaer Polytechnic Institute, 1987; Ph.D., 1988.
- Lee, Chi H.** Professor, Electrical Engineering. B.S., National Taiwan University (Taipei), 1959; M.S., Harvard University, 1962; Ph.D., 1967.
- Lee, Edward H.** Adjunct Associate Professor, Agronomy. B.S., National Taiwan University, 1959; M.A., University of Kansas, 1966; Ph.D., University of Oklahoma, 1969.
- Lee, Richard** Instructor, part-time, Chemical and Nuclear Engineering. B.S., University of Maryland, 1977; M.S., 1980; Ph.D., 1982.
- Lee, Sung W.** Associate Professor, Aerospace Engineering. B.S., Seoul National University, 1966; M.S., Massachusetts Institute of Technology, 1974; Ph.D., 1978.
- Lee, Tzong-Yow** Assistant Professor, Mathematics. B.S., National Taiwan Institute, 1980; M.S., Courant Institute, New York University, 1984; Ph.D., 1986.
- Lee, Yee-Chun** Professor, Physics and Astronomy, Institute for Advanced Computer Studies. B.S., National Taiwan University, 1966; Ph.D., Dartmouth College, 1970.
- Leete, Burt A.** Professor and Associate Dean, College of Business and Management. B.S., Juniata College, 1962; M.B.A., University of Maryland, 1964; J.D., American University, 1969.
- Leffel, Emory C.** Professor Emeritus, Animal Sciences. B.S., University of Maryland, 1943; M.S., 1947; Ph.D., 1953.
- Lehner, Guido R.** Professor, Mathematics. B.S., Loyola University, 1951; M.S., University of Wisconsin, 1953; Ph.D., 1958.
- Leibowitz, Zandra B.** Adjunct Associate Professor, Part-time, Counseling and Student Personnel. B.A., University of Maryland, 1968; M.A., 1972; Ph.D., 1974.
- Leinwand, Theodore B.** Associate Professor, English. B.A., Hamilton College, 1973; M.A., Johns Hopkins University, 1978; Ph.D., 1980.
- Leishman, John G.** Assistant Professor, Aerospace Engineering. B.S., University of Glasgow, 1980; Ph.D., 1984.
- Lejins, Peter P.** Professor Emeritus, Institute of Criminal Justice and Criminology, Professor Emeritus, Sociology. M.Phil., University of Latvia, 1930; Mag. Jur., 1933; Ph.D., University of Chicago, 1938.
- Lekic, Mari6 D.** Assistant Professor, Germanic and Slavic Languages and Literatures. Diplom., Moscow State Pedagogical Institute VII, 1971; Ph.D., University of Pennsylvania, 1983.
- Lekoudis, Spiro** Lecturer, Part-time, Aerospace Engineering. B.S., National Technical University (Athens), 1972; M.S., Virginia Poly. Institute & State University, 1973; Ph.D., 1977.
- Lengermann, Joseph J.** Associate Professor, Sociology. B.A., University of Notre Dame, 1958; S.T.B., Gregonian University, 1960; S.T.L., 1962; M.A., University of Notre Dame, 1964; Ph.D., Cornell University, 1969.
- LeNord, Mary M.** Associate Professor, Counseling and Personnel Services. B.S., Boston College, 1968; M.A., University of Minnesota, 1971; Ph.D., 1974.
- Leonardi, Susan** Assistant Professor, English. B.A., Immaculata College, 1968; M.A., University of California (Davis), 1982; Ph.D., 1986.
- Leone, Mark P.** Associate Professor, Anthropology. B.A., Tufts University, 1963; M.A., University of Arizona, 1965; Ph.D., 1968.
- Leone, Peter E.** Associate Professor, Special Education. B.A., University of Iowa, 1972; M.A., 1974; Ph.D., University of Washington, 1981.
- Leshner, James H.** Professor, Philosophy. B.A., University of Virginia, 1962; Ph.D., University of Rochester, 1966.
- Leslie, Leigh A.** Assistant Professor, Family and Community Development. B.S., Texas Tech University, 1975; M.S., 1977; Ph.D., Pennsylvania State University, 1982.
- Lessey, Billy V.** Professor, Agricultural and Resource Economics. B.S., University of Arkansas, 1957; M.S., 1960; Ph.D., University of Missouri, 1965.
- Levin, Melvin R.** Professor, Urban Studies, Director, Community Planning. A.M., University of Chicago, 1949; Ph.D., 1956.
- Levin, Phillis** Assistant Professor, English. B.A., Sarah Lawrence College, 1976; M.A., Johns Hopkins University, 1977.
- LeVine, David** Lecturer, Part-time, Electrical Engineering. B.S.E., University of Michigan, 1963; M.S.E., 1966; Ph.D., 1968.
- Levine, Marvin J.** Professor, College of Business and Management. B.A., University of Wisconsin, 1952; J.D., 1954; M.A., 1959; Ph.D., 1964.
- Levine, Molly M.** Visiting Assistant Professor, Classics. B.A., Radcliffe College, 1964; M.A., Yale University, 1971; Ph.D., Bar-Ilan University, Ramat-Gan Israel, 1980.
- Levine, Robert** Associate Professor, English. B.A., Columbia University, 1975; M.A., Stanford University, 1977; Ph.D., 1981.
- Levine, William S.** Professor, Electrical Engineering, Professor, Systems Research Center. B.S., Massachusetts Institute of Technology, 1962; M.S., 1965; Ph.D., 1969.
- Levinson, Jerrold** Associate Professor, Philosophy. B.S., Massachusetts Institute of Technology, 1969; Ph.D., University of Michigan, 1974.
- Levinson, John Z.** Professor, Emeritus, Psychology. B.A., University of Toronto, 1939; M.A., 1940; Ph.D., 1948.
- Levitan, Herbert** Professor, Zoology. B.E.E., Cornell University, 1962; Ph.D., 1965.
- Levitan, Daniel** Professor, Health Education. B.S., George Washington University, 1953; M.A., Springfield College, 1956; Ph.D., University of Maryland, 1967.
- Levy, Daniel A.** Lecturer, Industrial, Technological and Occupational Education. B.S., S.U.N.Y. at Stony Brook, 1973; M.S., Montclair State College, 1976; Ph.D., University of Maryland, 1979.
- Levy, Frank S.** Professor, School of Public Affairs. B.S., MIT, 1963; M.A., Yale University, 1965; Ph.D., 1969.
- Levy, Mark R.** Professor and Associate Dean, College of Journalism. B.A., Johns Hopkins University, 1964; M.A., Rutgers University, 1965; M.Phil., Columbia University, 1975; Ph.D., 1977.
- Levy, Nili** Instructor, Hebrew and East Asian. B.A., Hebrew University of Jerusalem, 1966; M.A., Baltimore Hebrew College, 1985.
- Lewis, Mark Joel** Assistant Professor, Aerospace Engineering. B.S., Massachusetts Institute of Technology, 1984; M.S., 1985; Ph.D., 1988.
- Lewis, Roger K.** Professor, School of Architecture. B. Arch., Massachusetts Institute of Technology, 1964; M. Arch., 1967.
- Li, Jian-Shu** Assistant Professor, Mathematics. B.A., Zhejiang University, 1981; M.A., Cornell University, 1983; Ph.D., Yale University, 1987.
- Liakos, Nina Turitz** Instructor, Maryland English Institute. B.A., University of Rochester, 1971; M.S., Georgetown University, 1978.
- Liberman, Esther** Instructor, Hebrew and East Asian. M.A., University of Chicago, 1949.
- Lichtenberg, Erik** Assistant Professor, Agricultural and Resource Economics. B.A., University of Chicago, 1973; Ph.D., University of California (Berkeley), 1985.
- Lichtenberg, Judith** Research Scholar, Institute for Philosophy and Public Policy. B.A., University of Wisconsin, 1968; M.A., 1971; Ph.D., City University of New York, 1978.
- Lieber, Joan A.** Assistant Professor, Special Education. B.A., Douglass College (Rutgers Univ.), 1969; M.S., University of Pennsylvania, 1970; Ph.D., University of California (Santa Barbara), 1986.
- Liesner, James W.** Professor, College of Library and Information Services. B.A., Wartburg College, 1955; M.A., University of Northern Iowa, 1960; A.M.L.S., University of Michigan, 1962; Ph.D., 1967.
- Lifton, Mitchell** Professor, Comparative Literature. B.A., San Francisco State University, 1958; A.B.D., Stanford University, 1964.
- Lightfoot, David W.** Professor, Chair, Linguistics Department, Affiliate Professor, Hearing and Speech Science, Psychology. B.A., King's College (London), 1966; M.A., University of Michigan, 1969; Ph.D., 1971.
- Ligomenides, Panos A.** Professor, Electrical Engineering. B.S., University of Athens, 1951; M.S., 1952; M.S.E.E., Stanford University, 1956; Ph.D., 1958.
- Lin, Hung Chang** Professor, Electrical Engineering. B.S., Chiao-Tung University, 1941; M.S.E., University of Michigan, 1948; Ph.D., Polytechnic Institute of Brooklyn, 1956.
- Linder, Harris J.** Associate Professor, Zoology. B.S., Long Island University, 1951; M.S., Cornell University, 1955; Ph.D., 1958.
- Lindsay, Rao H.** Associate Professor, Education Policy, Planning, and Administration. B.A., Bingham Young University, 1954; M.A., 1958; M.A., University of Michigan, 1963; Ph.D., 1964.
- Linduska, James J.** Associate Professor, Entomology. B.S., University of Maryland, 1965; M.S., 1968; Ph.D., 1973.
- Link, Conrad B.** Professor Emeritus, Horticulture. B.S., Ohio State University, 1933; M.S., 1934; Ph.D., 1940.
- Linkow, Irving** Associate Professor Emeritus, Communication Arts and Theatre. B.A., University of Denver, 1937; M.A., 1938.

- Lipowitz, Harriet R.** Instructor, Maryland English Institute. B.A., Fairleigh Dickinson University, 1969. M.A.T., School for International Training, 1976.
- Lipsman, Ronald L.** Professor, Mathematics. B.S., City University of New York (City College), 1964. Ph.D., Massachusetts Institute of Technology, 1967.
- Lissitz, Robert W.** Professor and Chairman, Measurement, Statistics, and Evaluation; Affiliate Professor, Psychology. B.S., Northwestern University, 1963. Ph.D., Syracuse University, 1969.
- Little, Karen** Instructor Undergraduate Advisor, Spanish and Portuguese. B.A., University of Maryland, 1973; M.A., 1975.
- Liu, Chuan Sheng** Professor and Chair, Physics and Astronomy. B.S., Tainghai University (Taiwan), 1960; M.A., University of California (Berkeley), 1964. Ph.D., 1968.
- Liu, Tai-Ping** Professor, Mathematics. B.S., National Taiwan University, 1968; M.S., Oregon State University, 1970; Ph.D., University of Michigan, 1973.
- Lloyd, Isabel K.** Assistant Professor, Chemical and Nuclear Engineering. B.S., Pennsylvania State University, 1975. Ph.D., Massachusetts Institute of Technology, 1980.
- Lockard, J. David** Professor, Botany; Professor, Curriculum and Instruction. B.S., Pennsylvania State University, 1951; M.Ed., 1955; Ph.D., 1962.
- Locke, Edwin A.** Professor, Psychology; Professor, College of Business and Management. B.A., Harvard University, 1960; M.A., Cornell University, 1962; Ph.D., 1964.
- Loeb, Martin P.** Associate Professor, College of Business and Management. B.S., SUNY (Stony Brook), 1970; M.S., Northwestern University, 1972; Ph.D., 1975.
- Loeb, Stephen E.** Professor, College of Business and Management. B.S., University of Pennsylvania, 1961; M.B.A., University of Wisconsin, 1963. Ph.D., 1970.
- Loerke, William** Visiting Professor, Part-time, School of Architecture. A.B., Oberlin College, 1942; M.F.A., Princeton University, 1948. Ph.D., 1957.
- Loflin, Colin** Professor, Institute of Criminal Justice and Criminology. B.A., University of North Carolina at Chapel Hill, 1964; M.A., 1966; Ph.D., 1971.
- Logan, Shirley** Instructor, English. B.A., Johnson S. Smith University, 1964; M.A., University of North Carolina, Chapel Hill, 1966; Ph.D., University of Maryland, College Park, 1988.
- Loizeaux, Elizabeth B.** Associate Professor, English. B.A., Mount Holyoke College, 1972; M.A., University of Michigan, 1974; Ph.D., 1980.
- Loncaric, Josip** Assistant Research Scientist, Systems Research Center. B.S. Mathematics, Massachusetts Institute of Technology, 1981; B.S. Physics, 1982; M.S., Harvard University, 1983; Ph.D., 1985.
- Longest, James W.** Professor, Agricultural and Extension Education; Affiliate Professor, Sociology. B.S., University of Illinois (Urbana), 1951; M.S., 1953; Ph.D., Cornell University, 1957.
- Lopez, Ramon S.** Associate Professor, Agricultural and Resource Economics. B.S., University of Chile, 1969; M.S., University of British Columbia, 1977; Ph.D., 1980.
- Lopez-Escobar, Edgar G.** Professor, Mathematics. B.A., Cambridge University, 1958; M.A., University of California (Berkeley), 1961; Ph.D., 1965.
- Lorion, Raymond P.** Professor, Psychology. B.S., Tufts University, 1968; Ph.D., University of Rochester, 1972.
- Loss, John C.** Professor, School of Architecture. B. Arch., University of Michigan, 1954; M. Arch., 1960.
- Lounsbery, Myron O.** Associate Professor, American Studies. B.A., Duke University, 1961; M.A., University of Pennsylvania, 1962; Ph.D., 1966.
- Love, Nancy K.** Assistant Dean, Undergraduate Studies. B.A., Vanderbilt University, 1967; M.S., University of Alabama (Birmingham), 1970; Ph.D., Baylor College of Medicine, 1975.
- Lozner, Ruth J.** Associate Professor, Housing and Design. B.F.A., Carnegie-Mellon University, 1972. M.F.A., American University, 1979.
- Lu, Paul C.K.** Professor, School of Architecture. B.S., Chung-Kung University (Taiwan), 1954; B. Arch., Kansas State University, 1958; M. Arch., 1962. M.L.A., Harvard Graduate School of Design, 1967.
- Luban, David J.** Research Scholar, Institute for Philosophy and Public Policy. B.A., University of Chicago, 1970; M.A., Yale University, 1973; M.Phil., 1973; Ph.D., 1974.
- Lucas, Beverly J.** Advisor/Consultant, Computer, Mathematical and Physical Sciences. B.A., University of Pennsylvania, 1983.
- Lucas, Margaretha S.** Affiliate Assistant Professor, Counseling and Personnel Services. B.S., Ohio State University, 1979; M.S., Iowa State University, 1983. Ph.D., 1985.
- Lueckemeyer, Joseph F.** Professor, Industrial, Technological and Occupational Education. B.S., Stout State College, 1953; M.S., 1954; Ed.D., University of Illinois (Urbana), 1961.
- Lyman, Frank T.** Lecturer, Curriculum and Instruction; Coordinator, Southern Howard County Teacher Education Center. B.A., Haverford College, 1959; Ed.M., Harvard, 1970; Ph.D., University of Maryland, 1978.
- Lynn, Jeffrey W.** Professor, Physics and Astronomy. B.S., Georgia Institute of Technology, 1969; M.S., 1970; Ph.D., 1974.
- Lyon, Andrew B.** Assistant Professor, Economics. A.B., Stanford University, 1980; Ph.D., Princeton University, 1986.
- Ma, Michael C.** Associate Professor, Entomology. B.S., University of Wisconsin (Madison), 1973; M.S., 1975; Ph.D., 1978.
- Mabbs, Linda** Associate Professor, Music. B. Mus., Northwestern University, 1968; M. Mus., 1970.
- MacArthur, Charles A.** Research Associate, Special Education. B.A., Cornell University, 1969; M.Ed., American University, 1974; Ph.D., 1980.
- MacBain, William** Professor, French and Italian. M.A., Honors, Saint Andrews University (Scotland), 1952; Ph.D., 1955.
- MacDonald, William M.** Professor, Physics and Astronomy. B.A., University of Pittsburgh, 1950; Ph.D., Princeton University, 1955.
- Mack, Maynard, Jr.** Associate Professor, English. B.A., Yale University, 1964; Ph.D., 1969.
- MacLeod, Anne S.** Professor, College of Library and Information Services. B.A., University of Chicago, 1949; M.L.S., University of Maryland, 1966; Ph.D., 1973.
- MacQuillan, Anthony M.** Associate Professor, Microbiology. B.S.A., University of British Columbia, 1956; M.Sc., 1958; Ph.D., University of Wisconsin, 1962.
- Macraedy, George B.** Professor, Measurement, Statistics, and Evaluation. B.A., Willamette University, 1965; M.A., University of Oregon, 1967; Ph.D., University of Minnesota, 1972.
- Madan, Dilp B.** Assistant Professor, College of Business and Management. B.Comm., University of Bombay, 1967; Ph.D., University of Maryland, 1971; Ph.D., 1975.
- Madden, Dorothy G.** Professor Emerita, Dance. A.B., Middlebury College, 1934; M.A., Syracuse University, 1937; Ph.D., New York University, 1962.
- Maddocks, John H.** Associate Professor, Mathematics. B.Sc., University of Glasgow, 1978; D.Phil, Balliol College, 1982.
- Magette, William L.** Assistant Professor, Agricultural Engineering. B.S., Virginia Polytechnic Institute & State University, 1974; M.E., 1975; Ph.D., 1982.
- Magoon, Thomas M.** Professor Emeritus, Counseling and Personnel Services and Psychology; Director Emeritus, Counseling Center. B.A., Dartmouth College, 1947; M.A., University of Minnesota, 1951; Ph.D., 1954.
- Magrab, Edward B.** Professor, Mechanical Engineering. B.M.E., City College of New York, 1960; M.A.E., New York University, 1961; Ph.D., The Catholic University of Maryland, 1966.
- Maida, Peter R.** Associate Professor, Institute of Criminal Justice and Criminology. B.A., St. Vincent College, 1960; M.A., Fordham University, 1962; Ph.D., Pennsylvania State University, 1969.
- Main, Daphne** Lecturer, full-time, College of Business and Administration. B.S., University of Vermont, 1976; M.S., Western Michigan University, 1982.
- Majeska, George P.** Associate Professor, History. B.A., City University of New York (Brooklyn College), 1961; M.A., Indiana University, 1961. Ph.D., 1968.
- Majeskie, J. Lee** Associate Professor, Animal Sciences. B.S., University of Wisconsin, 1964; M.S., 1966; Ph.D., Kansas State University, 1970.
- Major, Leon** Associate Professor and Acting Chair, Music. B.A., University of Toronto, 1955.
- Makowski, Armand M.** Associate Professor, Electrical Engineering; Associate Professor, Systems Research Center. B.S., Univ. Libre de Bruxelles, Belgium, 1975; M.S., University of California (Los Angeles), 1976; Ph.D., University of Kentucky, 1981.
- Male, George A.** Professor, Education Policy, Planning, and Administration; Director, Comparative Education Center. B.A., University of Michigan, 1948; M.A., 1949; Ph.D., 1952.
- Maley, Donald** Professor Emeritus, Industrial, Technological and Occupational Education. B.S., California State College (Pennsylvania), 1944; M.A., University of Maryland, 1947; Ph.D., 1950.
- Malik, Arunpal S.** Research Associate, Bureau of Business and Economic Research. B.A., Bowdoin College, 1978; Ph.D., John Hopkins University, 1984.
- Mallinson, Edward T.** Associate Professor, College of Veterinary Medicine. V.M.D., University of Pennsylvania, 1956.
- Malouf, David B.** Research Associate, Special Education. B.A., University of Utah, 1968; M.Ed., 1970; Ph.D., University of Oregon, 1976.
- Manchester, Jay A.** Lecturer, Part-time, College of Business and Management. B.A., University of Maryland, 1967; M.B.A., Loyola College, 1980.
- Manekin, Charles H.** Assistant Professor, Hebrew and East Asian. B.A., Yale University, 1975; M.A., Columbia University, 1979; Ph.D., 1984.
- Manion, David** Instructor, Mechanical Engineering. B.S.E.E., University of Arizona, 1967.
- Mann, Patricia H.** Lecturer, Health Education. B.A., University of Maryland, 1977; M.A., 1979; Ph.D., 1981.
- Manning, Raymond** Adjunct Professor, Zoology. B.S., University of Miami, Coral Gables, 1956; M.S., 1959; Ph.D., 1963.
- Marando, Vincent L.** Professor, Government and Politics. B.S., State University at Buffalo, 1960; M.A., Michigan State University, 1964; Ph.D., 1967.
- Marasli, Baram** Assistant Professor, Mechanical Engineering. B.S., Bogazici University, Turkey, 1980; M.S., University of Arizona, 1983; Ph.D., 1989.
- Marchetti, Gina** Assistant Professor, Communication Arts and Theatre. B.A., Florida State University, 1976; M.A., Northwestern University, 1978; Ph.D., 1982.

- Marchionini, Gary J.** Assistant Professor, College of Library and Information Services. B.A., Western Michigan University, 1971. M.Ed., Wayne State University, 1974. Ph.D., 1981
- Mercinkowski, Marion J.** Professor, Mechanical Engineering. B.S., University of Maryland, 1953; M.S., University of Pennsylvania, 1955. Ph.D., 1959
- Marcus, Robert F.** Associate Professor, Human Development. B.A., Montclair State College, 1965; M.A., New York University, 1967; Ph.D., Pennsylvania State University, 1973
- Marcus, W. Andrew** Assistant Professor, Geography. B.Sc., Stanford University, 1978. M.A., Arizona State University, 1983. Ph.D., University of Colorado, 1987
- Marcuse, Michael J.** Associate Professor, English. B.A., University of Pittsburgh, 1966; M.A., University of Michigan, 1967; Ph.D., 1971
- Mariano, Patrick** Professor, Chemistry and Biochemistry. B.S., Fairleigh Dickinson University, 1964. Ph.D., University of Wisconsin, 1969
- Marino, Anne M.** Lecturer, Curriculum and Instruction; Coordinator, Northern Howard County Teacher Education Center. B.A., Queen's College, 1959; M.S., 1965; Ph.D., University of Maryland, 1986
- Mark, Leo C.** Assistant Professor, Computer Science, Assistant Professor, Systems Research Center. B.S., Aarhus University, Denmark, 1977; M.S., 1980; Ph.D., 1985
- Markham, Paul L.** Assistant Professor, Curriculum and Instruction. B.A., Utah State University, 1976; M.A., University of Washington, 1977. Ph.D., The Ohio State University, 1984
- Markley, Nelson G.** Professor and Chairman, Mathematics. A.B., Lafayette College, 1962; M.A., Yale University, 1964. Ph.D., 1966
- Marks, Colin H.** Professor, Mechanical Engineering. B.S., Carnegie Institute of Technology, 1956; M.S., 1957; Ph.D., University of Maryland, 1965
- Marquardt, Warren W.** Professor, College of Veterinary Medicine. B.S., University of Minnesota, 1959; M.S., 1961; Ph.D., 1970
- Marquez, Jaime** Lecturer, Part-time, School of Public Affairs. B.A., Universidad Catolica Andres Bello (Venezuela), 1978; A.M., University of Pennsylvania, 1981; Ph.D., 1983
- Marshall, James T.** Assistant Professor, Animal Sciences. B.S., Texas Tech University, 1967; M.S., 1969; Ph.D., Michigan State University, 1974
- Martin, James G.** Professor, Psychology. B.S., University of North Dakota, 1951; M.A., University of Minnesota, 1958; Ph.D., 1960
- Martin, L. John** Professor Emeritus, College of Journalism. A.B., American University (Caro), 1947; M.A., University of Minnesota, 1951; Ph.D., 1955
- Martin, Monroe H.** Professor Emeritus, Institute for Physical Science and Technology. B.S., Lebanon Valley College, 1928; Ph.D., Johns Hopkins University, 1932
- Martin, Raymond F.** Professor, Philosophy. B.A., Ohio State University, 1962; M.A., 1964; Ph.D., University of Rochester, 1968
- Marx, George L.** Professor, Counseling and Personnel Services; Director of Articulation, System Administration. B.A., Yankton College, 1953; M.A., State University of Iowa, 1958; Ph.D., 1959
- Masi, Dale** Affiliate Professor, College of Business and Management. B.S., College of Mt. St. Vincent, ; M.S., University of Illinois, ; Ph.D., Catholic University of America, .
- Mason, Glenn M.** Associate Professor, Physics and Astronomy; Associate Chairman. B.A., Harvard University, 1965; M.S., University of Chicago, 1967; Ph.D., 1971
- Mason, Ronald A.** Instructor, Industrial, Technological and Occupational Education. B.S., California State College (Pennsylvania), 1982
- Massie, Cecil M., Sr.** Lecturer, Institute of Applied Agriculture. B.S., Virginia Polytechnic Institute, 1950; M.S., 1957; Ph.D., University of Maryland, 1979
- Masters, Elizabeth C.** Assistant Professor, School of Architecture. B.S., Ohio State University, 1977; M.A.R.Ch., University of Virginia, 1980
- Mather, Ian H.** Professor, Animal Sciences. B.Sc., University of Wales, 1966, Ph.D., 1971
- Mathias, J. Kevin** Lecturer, Institute of Applied Agriculture. B.S., University of Maryland, 1973; M.S., 1976; Ph.D., 1988
- Matossian, Mary K.** Associate Professor, History. B.A., Stanford University, 1951; M.A., American University (Beirut), 1952; Ph.D., Stanford University, 1955
- Matteson, Richard L.** Associate Professor (Retired), Human Development. B.A., Knox College, 1952; M.A., University of Maryland, 1955; Ed.D., 1962
- Matthews, David L.** Research Associate Professor, Institute for Physical Science and Technology. B.S., Queens University (Canada), 1949; Ph.D., Princeton University, 1959
- Matthews, Thomas A.** Associate Professor, Physics and Astronomy, Astronomy Program. B.A., University of Toronto, 1950; M.S., Case Institute of Technology, 1951; Ph.D., Harvard University, 1956
- Mattick, Joseph F.** Professor Emeritus, Animal Sciences. B.S., Pennsylvania State University, 1942; Ph.D., 1950
- Mattingly, Joseph G., Jr.** Director, Undergraduate Studies, College of Business and Management; Affiliate Assistant Professor, College of Business and Management. B.S., University of Maryland, 1958; M.B.A., 1966
- Mauriello, Thomas P.** Lecturer Part-time, Institute of Criminal Justice and Criminology. B.A., Suffolk University, 1973; M.F.S., George Washington University, 1976
- Mavrouniotis, Michael L.** Assistant Professor, Chemical and Nuclear Engineering; Assistant Professor, Systems Research Center, Diploma of Engineering, National Technical University, 1984. Ph.D., Massachusetts Institute of Technology, 1988
- Mayer, Randall R.** Instructor, Botany. B.S., Iowa State University, 1986; M.S., Purdue University, 1989
- Mayergoyz, Isaak** Professor, Electrical Engineering; Professor, Institute for Advanced Computer Studies. E.E. Dipl., Polytechnical Institute, Novocherkassk USSR, 1963. Kandidat Nauk., 1968; Doctor Nauk E.E., Cybernetics Inst. of the Ukrainian Acad. of Sci., 1975
- Mayer, Alvin** Instructor, Dance. B.A., University of Michigan, 1969
- Mayo, Marlene J.** Associate Professor, History. B.A., Wayne State University, 1954; M.A., Columbia University, 1957; Ph.D., 1961
- Mazzocchi, Paul H.** Professor, Chemistry and Biochemistry; Acting Dean, Colleges of Agriculture and Life Sciences. B.Sc., Queens College, 1961; Ph.D., Fordham University, 1965
- McAdams, Katherine M.** Assistant Professor, College of Journalism. B.A., University of North Carolina, 1972; M.A., 1981; Ph.D., University of North Carolina, 1988
- McAvoy, Thomas J.** Professor, Chemical and Nuclear Engineering; Director, Chemical Engineering Program; Professor, Systems Research Center. B.S., Brooklyn Polytechnic Institute, 1961; M.A., Princeton University, 1963; Ph.D., 1964
- McCabe, Margaret M.** Instructor, Hearing and Speech Sciences. B.S., University of Wisconsin, 1974. M.S., 1976
- McCaffrey, Bernard J.** Associate Professor, Mechanical Engineering. B.S., Manhattan College, 1964. M.S., University of Connecticut, 1966. Ph.D., State University of New York (Stony Brook), 1973
- McCaleb, Joseph L.** Associate Professor, Curriculum and Instruction, Associate Professor, Communication Arts and Theatre. B.A., Abilene Christian College, 1969; M.Ed., University of Texas (Austin), 1973. Ph.D., 1976
- McCall, Gerald N.** Professor and Acting Chairman, Hearing and Speech Sciences. B.S., Florida State University, 1959; M.A., Northwestern University, 1962; Ph.D., 1964
- McCarrick, Earleem N.** Assistant Professor, Government and Politics. B.A., Louisiana State University, 1953; M.A., 1955. Ph.D., Vanderbilt University, 1964
- McCarthy, Coleman** Lecturer, Part-time, University Honors Program. B.S., Springhill College, 1960; Honorary Doc. Arts & Letters, Wheeling College, 1976
- McClure, L. Morris** Professor Eminentus, Education Policy, Planning, and Administration. B.A., Western Michigan University, 1940. M.A., University of Michigan, 1946; Ed.D., Michigan State University, 1953
- McClurg, Charles A.** Associate Professor, Horticulture. B.S., Iowa State University 1966; M.S., Pennsylvania State University 1968. Ph.D., 1970
- McConnell, Kenneth E.** Professor, Agricultural and Resource Economics. B.A., University of Florida, 1964; Ph.D., University of Maryland, 1973
- McCoy, Robert** Associate Professor, Music. B.A., University of Iowa, 1974. M.A., 1975; D.M.A., University of Southern California, 1982
- McCuen, Richard H.** Professor, Civil Engineering. B.S., Carnegie-Mellon University 1967; M.S., Georgia Institute of Technology, 1969; Ph.D., 1970
- McCusker, John J.** Professor, History. B.A., Saint Bernards College, 1961. M.A., University of Rochester, 1963; Ph.D., University of Pittsburgh, 1970
- McDaniel, Chad K.** Director, Academic Software Development Group, Computer Science Center; Lecturer, Anthropology Department. A.B., Harvard College (Cambridge), 1972; Ph.D., University of California (Berkeley), 1983
- McDonald, James** Professor, Music. B.M., Morningside College, 1962; M.A., University of Iowa, 1964; D.M.A., 1974
- McEwen, Marylu K.** Assistant Professor, Counseling and Personnel Services. B.S., Purdue University, 1968; M.S., Indiana University, 1970; Ph.D., Purdue University, 1973
- McFadden, Lucy-Ann** Assistant Research Scientist, Physics and Astronomy, Astronomy Program. B.A., Hampshire College, 1974. M.S., Massachusetts Institute of Technology, 1977; Ph.D., University of Hawaii, 1983
- McGuire, Martin C.** Professor, Economics. B.S., United States Military Academy, 1955; M.A., Oxford University, 1958. Ph.D., Harvard University, 1964
- McIlrath, Thomas J.** Professor, Institute for Physical Science and Technology. B.S., Michigan State University, 1960; Ph.D., Princeton University, 1966
- McIntire, Roger W.** Associate Dean, Undergraduate Studies; Professor, Psychology. B.A., Northwestern University, 1958. M.A., Louisiana State University, 1960; Ph.D., 1962
- McIntosh, Maria S.** Associate Professor, Agronomy. B.S., University of Illinois, 1974; M.S., 1976; Ph.D., 1978
- McIntosh, Wayne V.** Associate Professor, Government and Politics. B.A., University of South Carolina, 1973; M.A., Wichita State University, 1974; Ph.D., Washington University, 1981
- McInturff, Mark C.** Lecturer, Part-time, School of Architecture. B.Arch., University of Maryland, 1972
- McIntyre, Jennie J.** Associate Professor, Sociology. A.B., Howard College, 1960; M.S., Florida State University, 1962; Ph.D., 1966



- McKay, A. Bruce** Adjunct Assistant Professor, Education Policy, Planning, and Administration B.S., Pennsylvania State University, 1960; MSST - American University, 1966, Ed.D., University of Massachusetts, 1971
- McKee, Claude G.** Professor, Agronomy B.S. University of Maryland, 1951. M.S. 1955, Ph.D., 1959
- McKenna, Mary Catherine** Affiliate Assistant Professor, Part-time, Human Nutrition and Food Systems B.A., University of Maryland, 1968, Ph.D. 1978
- McLaughlin, Charles H., Jr.** Instructor, Industrial, Technological and Occupational Education B.S. Rhode Island College, 1978. M.Ed., 1984
- McLaughlin, Francis E.** Lecturer, Part-time, College of Business and Management B.S. University of New Mexico, 1960; J.D., American University, 1965
- McLaughlin, Margaret M.** Research Associate, Special Education, B.A., University of Denver, 1968. M.A., University of Northern Colorado, 1971; Ph.D., University of Virginia, 1977.
- McLellan, Eileen L.** Assistant Professor, Geology B.A., University of Cambridge, 1979. Ph.D., 1983
- McLoone, Eugene P.** Professor, Education Policy, Planning, and Administration B.A., LaSalle College, 1951. M.S., University of Denver, 1952; Ph.D., University of Illinois (Urbana), 1961.
- McNelly, Theodore H.** Professor, Government and Politics, B.A. University of Wisconsin, 1941. M.A. 1942; Ph.D., Columbia University, 1952.
- McNesby, James R.** Professor Emeritus, Chemistry and Biochemistry, B.S., Ohio University, 1943. M.S., New York University, 1946; Ph.D., 1951.
- McWhinnie, Harold J.** Associate Professor, Housing and Design; Associate Professor, Curriculum and Instruction, B.A.E., Art Institute of Chicago, 1953. M.F.A., 1957; Ed.D., Stanford University, 1965
- Medvene, Arnold** Associate Professor, Counseling and Personnel Services; Counselor, University Counseling Center, B.S., Temple University, 1959; M.Ed., 1963; Ed.D., University of Kansas, 1968.
- Meeker, Barbara F.** Associate Professor, Sociology, B.A., University of Kansas, 1961; M.A., Stanford University, 1964; Ph.D., 1966.
- Meeraman, Roger L.** Professor, Communication Arts and Theatre, B.A., Saint Ambrose College, 1952. M.A., University of Illinois (Urbana), 1959, Ph.D., 1962.
- Meljer, Marianne S.** Associate Professor, French and Italian, Romance Language, University of Leiden (Holland), 1948; M.A., Catholic University, 1960; Ph.D., 1972.
- Meiners, Mark R.** Associate Director, Center on Aging, B.A., University of Wisconsin, 1969, M.A., Georgetown University, 1971; Ph.D., 1978.
- Melsinger, John J.** Adjunct Assistant Professor, Agronomy, B.S., Iowa State University, 1967; Ph.D., Cornell University, 1976.
- Melnik, Walter L.** Professor, Aerospace Engineering, B.S., University of Minnesota, 1951; M.S., 1953; Ph.D., 1964.
- Menard, John P.** Director of Facilities, College of Computer, Mathematical and Physical Sciences, A.B., Saint Michaels College, 1954.
- Mench, Joy A.** Assistant Professor, Poultry Science, B.A., California State University, 1976. Ph.D., University of Sussex, 1983.
- Menezes, Bernard L.** Assistant Professor, Electrical Engineering; Assistant Professor, Institute for Advanced Computer Studies, B.S., The Indian Institute of Technology (Bombay), 1980; M.S., The University of Notre Dame, 1982; Ph.D., The University of Texas (Austin), 1987.
- Merrick, Charles P.** Associate Professor Emeritus, Agricultural Engineering, B.S.C.E., University of Maryland, 1933.
- Merrill, Horace S.** Professor Emeritus, History B.E., Wisconsin State University (River Falls), 1932. Ph.M., University of Wisconsin, 1933. Ph.D., 1942
- Messersmith, Donald H.** Professor, Entomology B.E., University of Toledo, 1951. M.S., University of Michigan, 1953. Ph.D., Virginia Polytechnic Institute, 1962
- Meyer, Paul A.** Associate Professor, Economics, B.A., Johns Hopkins University, 1961. Ph.D., Stanford University, 1966.
- Michaels, Otho E., IV** Adjunct Assistant Professor, Part-time, Human Nutrition and Food Systems, B.S., Gannon College, 1964. M.S., West Virginia University, 1970; Ph.D., University of Maryland, 1973.
- Mickevich, Mary** Associate Research Scientist, Entomology B.S., Boston University, 1966. M.A., 1970. Ph.D., State University of New York (Stony Brook), 1978.
- Mietus, Walter S.** Associate Professor, Industrial, Technological and Occupational Education, B.S., Chicago Teachers College, 1957. M.Ed., Chicago State University, 1959. Ed.D., Loyola University, 1966.
- Mignerey, Alice C.** Associate Professor, Chemistry and Biochemistry, B.S., University of Rochester, 1971. M.S., 1973; Ph.D., 1975.
- Mikulski, Piotr W.** Professor, Mathematics, B.A., Lyceum (Warsaw), 1942; M.S., School of Planning and Statistics, 1952; Ph.D., University of California (Berkeley), 1961.
- Milchberg, Howard M.** Assistant Professor, Electrical Engineering, Assistant Professor, Institute for Physical Science and Technology, B.S., McMaster University, 1979. Ph.D., Princeton University, 1985.
- Miles, Carolyn W.** Adjunct Assistant Professor, Part-time, Human Nutrition and Food Systems, B.S., Virginia Polytechnic Institute & State University, 1969; M.S., 1971; Ph.D., 1977.
- Mike, James A.** Lecturer, Fire Protection Engineering, B.S., University of Maryland, 1976; M.S., 1981.
- Miller, Arthur G.** Professor, Art History B.A., Colby College, 1964; M.A., Ecole du Louvraty, 1965; Ph.D., Harvard University, 1969.
- Miller, Catherine M.** Associate Professor, Health Education, B.S., Illinois State University, 1956; M.A., Colorado State College, 1959; Ph.D., Ohio State University, 1967.
- Miller, Douglass R.** Adjunct Professor, Entomology, B.S., University of California (Davis), 1964; M.S., 1965; Ph.D., 1969
- Miller, Gerald R.** Professor, Chemistry and Biochemistry, B.S., University of Wisconsin, 1958. M.S., University of Illinois, 1960; Ph.D., 1962.
- Miller, James R.** Professor Emeritus, Agronomy, B.S., University of Maryland, 1951; M.S., 1953; Ph.D., 1956.
- Miller, Joseph W.** Lecturer, English, B.A., Saint John Fisher College, 1958; M.A., University of Rochester, 1960.
- Miller, Mary R.** Professor, English, B.A., University of Iowa, 1941; M.A., University of Denver, 1959; Ph.D., Georgetown University, 1969.
- Miller, Merl E.** Acting Chair and Associate Professor, Agricultural and Extension Education, B.S., Oklahoma State University, 1958; M.S., 1971; Ed. E., 1981.
- Miller, Raymond J.** Professor, Agronomy; Vice Chancellor, Agriculture and Natural Resources, B.S., University of Alberta, 1957; M.S., Washington State University, 1960; Ph.D., Purdue University, 1962.
- Miller, Richard P.** Lecturer, Part-time, College of Business and Management, B.S., DePaul University, 1949; M.B.A., Northwestern University, 1950.
- Mills, Judson R.** Professor, Psychology, B.S., University of Wisconsin, 1953; Ph.D., Stanford University, 1958.
- Millson, John J.** Professor, Mathematics, B.S., Massachusetts Institute of Technology, 1968; Ph.D., University of California, Berkeley, 1973.
- Millstein, Flora** Lecturer, Part-time, Family and Community Development B.S., University of Maryland, 1974. M.S., 1977.
- Milton, Annie** Assistant Professor, Communication Arts and Theatre, B.A., University of Oregon Eugene, 1980; M.F.A., University of Wisconsin-Madison, 1983
- Minis, Ioannis** Assistant Professor, Mechanical Engineering Diploma, National Technical University of Athens, 1982. M.S., Clarkson University, 1983, Ph.D., University of Maryland, 1988
- Minker, Jack** Professor, Computer Science, Professor, Institute for Advanced Computer Studies, B.A., City University of New York (Brooklyn College), 1949. M.S., University of Wisconsin, 1950. Ph.D., University of Pennsylvania, 1959
- Mintz, Alan L.** Professor, Hebrew and East Asian, B.A., Columbia University, 1969. M.A., 1970; Ph.D., 1975.
- Mintz, Lawrence E.** Associate Professor, American Studies B.A., University of South Carolina, 1966. M.A., Michigan State University, 1967. Ph.D., 1969
- Mintz, Samuel** Visiting Assistant Professor, Institute for Urban Studies and Planning, Director of Undergraduate Studies, Institute for Urban Studies; Visiting Assistant Professor, Affiliate, Afro American Studies, M.A., University of District of Columbia, 1971; M.C.P., Massachusetts Institute of Technology, 1979, Ph.D., 1985.
- Misner, Charles W.** Professor, Physics and Astronomy B.S., University of Notre Dame, 1952. M.A., Princeton University, 1954; Ph.D., 1957.
- Mitchell, Robert D.** Associate Professor, Geography M.A., University of Glasgow, 1962; Ph.D., University of Wisconsin, 1968.
- Mitter, Charles** Associate Professor, Entomology B.S., Stanford University, 1970; Ph.D., State University of New York (Stony Brook), 1977.
- Mityga, Henry G.** Lecturer, Institute of Applied Agriculture; Lecturer, Horticulture, B.S., Cornell University, 1966; M.S., Purdue University, 1969; Ph.D., University of Maryland, 1976.
- Miura, Eiko** Instructor, Hebrew and East Asian, B.A., Kyoto University (Japan), 1962.
- Modarres, Mohammad** Associate Professor, Chemical and Nuclear Engineering, B.S., Tehran Polytechnic Institute, 1974; M.S., Massachusetts Institute of Technology, 1976; Ph.D., 1979.
- Moghadam, Linda Z.** Lecturer, Sociology, B.A., University of Maryland, 1976; M.A., 1981; Ph.D., 1989.
- Mohanty, Sashi B.** Professor and Associate Dean, College of Veterinary Medicine, B.V.Sc., Bihar University, 1956; M.S., University of Maryland, 1961; Ph.D., 1963.
- Mohapatra, Rabindra Nath** Professor, Physics and Astronomy, B.Sc., Uktal University (India), 1964; M.Sc., Delhi University (India), 1966; Ph.D., University of Rochester, 1969.
- Mohrman, Kathryn J.** Dean, Undergraduate Studies; Affiliate Associate Professor, School of Public Affairs, B.S., Grinnell, 1967; M.A., University of Wisconsin, 1969; Ph.D., George Washington University, 1982.
- Mokhtari, Manouchehr** Assistant Professor, Textiles and Consumer Economics, B.S., University of Tehran, 1977; M.A., University of Houston, 1984; Ph.D., 1986.
- Molla, Bekele** Affiliate Assistant Professor, Counseling and Personnel Services., University Counseling Center, B.S., Springfield College, 1967; M.A., Howard University, 1972; Ph.D., University of Maryland, 1978.
- Momeni, Mahvash** Lecturer, Part-time, College of Library and Information Services, B.A., San Jose State University, 1972; M.L.S., 1973; Ph.D., University of Maryland, 1982.
- Monagan, Charles F.** Adjunct Assistant Professor, Part-time, Human Nutrition and Food Systems, B.S., Tuskegee Institute, 1964; M.S., Pennsylvania State University, 1973; Ph.D., Ohio State University, 1981.

**Montgomery, Edward** Associate Professor, Economics. B.S., Pennsylvania State University, 1976; M.A., Harvard University, 1980; Ph.D., 1982.

**Montgomery, William** Professor, Music. B.Mus., Cornell College, 1953; M.Mus., Catholic University of America, 1957; Ph.D., 1975.

**Moore, John** Professor, Agricultural and Resource Economics. B.S., Ohio State University, 1951; M.S., Cornell University, 1955; Ph.D., University of Wisconsin, 1959.

**Moore, John H.** Professor, Chemistry and Biochemistry. B.S., Carnegie Institute of Technology, 1963; M.A., Johns Hopkins University, 1965; Ph.D., 1967.

**Moore, Thomas** Academic Advisor, College of Arts and Humanities; Instructor, English. B.A., Towson State University, 1973; M.A., Pennsylvania State University, 1977; Ph.D., University of Maryland, 1983.

**Moquin, George A.** Assistant to the Dean, Summer Programs. B.A., University of Maryland, 1971.

**Morgan, H. Gerthon** Professor Emeritus, Human Development. B.A., Furman University, 1940; M.A., University of Chicago, 1943; Ph.D., 1946.

**Morris, Frank** Affiliate, Afro-American Studies. B.A., Colgate University, 1961; M.P.A., Syracuse University, 1962; M.A., Georgetown University, 1968; Ph.D., Massachusetts Institute of Technology, 1970.

**Morris, Louis A.** Lecturer, part-time, Textiles and Consumer Economics. B.A., Boston University, 1968; M.A., New School of Social Research, 1971; Ph.D., Tulane University, 1974.

**Morrison, Keith** Professor, Art. B.F.A., Art Institute of Chicago, 1963; M.F.A., 1965.

**Morton, Eugene S.** Adjunct Professor, Zoology. B.S., Denison University, 1962; M.S., Yale University, 1968; Ph.D., 1969.

**Moser, Thomas** Assistant Professor, English. B.A., Harvard University, 1973; M.A., Yale University, 1979; Ph.D., Stanford University, 1987.

**Moser-Vellon, Phyllis B.** Professor, Human Nutrition and Food Systems. B.S., University of Maryland, 1969; M.S., 1973; Ph.D., 1976.

**Moses, Claire G.** Associate Professor, Women's Studies Program. A.B., Smith College, 1963; M. Phil., George Washington University, 1972; Ph.D., 1978.

**Moss, Alfred A.** Associate Professor, History. B.A., Lake Forest College, 1965; M.Div., Episcopal Divinity School, 1968; M.A., University of Chicago, 1972; Ph.D., 1977.

**Moss, Lawrence** Professor, Music. B.A., University of California (Los Angeles), 1949; M.A., University of Rochester, 1950; Ph.D., University of Southern California, 1957.

**Mossman, Carol A.** Associate Professor, French and Italian. B.A., University of New Mexico, 1975; M.A., Rice University, 1979; Ph.D., 1982.

**Motta, Jerome J.** Associate Professor, Botany. A.B., San Francisco State College, 1959; M.A., 1964; Ph.D., University of California (Berkeley), 1968.

**Mount, David** Assistant Professor, Computer Science. B.S., Purdue University, 1977; Ph.D., 1983.

**Mowrer, Frederick W.** Assistant Professor, Fire Protection Engineering. B.S., Illinois Institute of Technology, 1976; M.S., University of California (Berkeley), 1981; Ph.D., 1987.

**Mueller, Dennis C.** Professor, Economics. B.S., Colorado College, 1962; Ph.D., Princeton University, 1966.

**Mulchi, Charles L.** Professor, Agronomy. B.S., North Carolina State University, 1964; M.S., 1969; Ph.D., 1970.

**Mundy, Lee G.** Assistant Professor, Physics and Astronomy, Astronomy Program. B.S., California Institute of Technology, 1977; Ph.D., The University of Texas at Austin, 1984.

**Munn, Robert J.** Professor, Chemistry and Biochemistry. Acting Assistant Vice President, Academic Affairs. B.Sc., University of Bristol, 1957; Ph.D., 1961.

**Munno, Frank J.** Professor, Chemical and Nuclear Engineering, Director, Nuclear Engineering Program. B.S., Waynesburg College, 1957; M.S., University of Florida, 1962; Ph.D., 1964.

**Murphy, Dennis W.** Associate Professor, Poultry Science. B.S., Michigan State University, 1961; M.S., University of Michigan, 1963; Ph.D., Michigan State University, 1974.

**Murphy, Thomas J.** Associate Professor, Chemistry and Biochemistry. B.S., Fordham University, 1963; Ph.D., Rockefeller University, 1968.

**Murrell, Peter** Professor, Economics. B.Sc., London School of Economics, 1971; M.Sc., 1972; Ph.D., University of Pennsylvania, 1977.

**Muse, Stephen A.** Lecturer, Part-time, School of Architecture. B. Arch., University of Maryland, 1973; M.Arch. in Urban Design, Cornell University, 1976.

**Myers, Ralph D.** Professor Emeritus, Physics and Astronomy. B.A., Cornell University, 1934; M.A., 1935; Ph.D., 1937.

**Myers, Samuel L., Jr.** Director, Afro-American Studies; Professor, Economics. B.A., Morgan State University, 1971; Ph.D., Massachusetts Institute of Technology, 1976.

**Myricks, Noel** Associate Professor, Family and Community Development. B.A., San Francisco University, 1965; M.S., 1967; J.D., Howard University, 1970; Ed.D., American University, 1974.

**Nacht, Michael** Dean, School of Public Affairs, Professor, School of Public Affairs; Affiliate Professor, Government and Politics. B.S., New York University, 1963; M.S., Case Western Reserve University, 1966; M.S., New York University, 1969; M.A., New School of Social Research, 1970; Ph.D., Columbia University, 1973.

**Naharro-Calderon, Jose Marie** Assistant Professor, Spanish and Portuguese. B.A., Allegheny College, 1974; M.A., University of Pennsylvania, 1977; Ph.D., 1985.

**Nakajima, Kazuo** Associate Professor, Electrical Engineering; Associate Professor, Institute for Advanced Computer Studies. B.S., Osaka University, 1973; M.S., 1975; Ph.D., Northwestern University, 1979.

**Narayan, Prakash** Associate Professor, Electrical Engineering; Associate Professor, Systems Research Center. B.Tech., Indian Institute of Technology, 1976; M.S., Washington University (St. Louis), 1978; Ph.D., 1981.

**Nau, Dana S.** Associate Professor, Computer Science; Director, Computer Science Graduate Studies; Associate Professor, Institute for Advanced Computer Studies. B.S., University of Missouri, 1974; A.M., Duke University, 1976; Ph.D., 1979.

**Nelson, Judd O.** Associate Professor, Entomology. B.S., University of Wisconsin, 1969; M.S., 1972; Ph.D., 1974.

**Nemes, Graciela P.** Professor Emeritus, Spanish and Portuguese. B.S., Trinity College (Vermont), 1942; M.A., University of Maryland, 1946; Ph.D., 1952.

**Neri, Umberto** Professor, Mathematics. B.S., University of Chicago, 1961; M.S., 1962; Ph.D., 1966.

**Neubart, Debra A.** Assistant Professor, Special Education. B.S., University of Wisconsin, 1976; M.Ed., University of Maryland, 1981; Ph.D., 1985.

**Neuman, M. Delia** Assistant Professor, College of Library and Information Services. A.B., Chestnut Hill College, 1966; M.A., University of Michigan (Ann Arbor), 1972; Ph.D., Ohio State University (Columbus), 1986.

**Neustadt, Allen** Assistant Professor, Sociology. B.A., Bates College, 1979; M.A., University of Massachusetts, 1982; Ph.D., 1987.

**Newby, Hayes A.** Professor Emeritus, Hearing and Speech Sciences. A.B., Ohio Wesleyan University, 1935; M.A., University of Iowa, 1939; Ph.D., 1947.

**Newcomb, Robert W.** Professor, Electrical Engineering. B.S., Purdue University, 1955; M.S., Stanford University, 1957; Ph.D., University of California (Berkeley), 1960.

**Newell, Clarence A.** Professor Emeritus, Education Policy, Planning, and Administration. B.A., Hastings College, 1935; M.A., Columbia University, 1939; Ph.D., 1943.

**Newton, James N.** Assistant to the Dean, College of Engineering. B.S., Towson State University, 1968; M.A., Bowdoin College, 1974.

**Ng, Timothy J.** Associate Professor, Horticulture. B.S., University of California (Berkeley), 1969; M.S., Purdue University, 1972; Ph.D., 1976.

**Nicholson, Tom** Instructor, Part-time, Geology. B.S., Penn State University, 1972; M.S., Stanford University, 1976.

**Nickels, William G.** Associate Professor, College of Business and Management. B.S.B.A., Ohio State University, 1962; M.B.A., Western Reserve University, 1966; Ph.D., Ohio State University, 1969.

**Nicklasson, Fred H.** Assistant Professor, History. B.S., Gustavus Adolphus College, 1953; M.A., University of Pennsylvania, 1955; Ph.D., Yale University, 1967.

**Niese, Henry** Associate Professor, Art. Cert., The Cooper Union, 1949; Cert., Academie Grande Chaumiere (Paris), 1949; B.F.A., Columbia, 1955.

**Niles, Lyndrey A.** Lecturer, Part-time, Communication Arts and Theatre. B.A., Columbia Union College, 1963; M.A., University of Maryland, 1965; Ph.D., Temple University, 1973.

**Noble, Janet M.** Assistant Professor, Human Nutrition and Food Systems. B.S., Kent State University, 1968; M.A., 1976; Ph.D., Virginia Polytechnic Institute & State University, 1980.

**Nochetto, Ricardo H.** Assistant Professor, Institute for Physical Science and Technology, Assistant Professor, Mathematics. Licenciado en Matematica, University of Rosario (Argentina), 1976; Ingeniero Electricista, 1979; Ph.D., University of Buenos Aires, 1983.

**Noil, James Wm.** Associate Professor, Education Policy, Planning, and Administration. B.A., University of Wisconsin (Milwaukee), 1954; M.S., 1961; Ph.D., University of Chicago, 1978.

**Norman, Howard** Associate Professor, English. B.A., Western Michigan University, 1972; M.A., Indiana University, 1976.

**Norman, Kent L.** Associate Professor, Psychology. B.A., Southern Methodist University, 1969; M.A., University of Iowa, 1971; Ph.D., 1973.

**Norton, Virginia P.** Lecturer, Human Nutrition and Food Systems. B.S., University of Colorado, 1958; Dietetic Internship Cert., Brooke General Hospital, 1960; M.Ed., University of North Carolina, 1971; Ph.D., University of Maryland, 1974.

**Nossal, Ralph J.** Lecturer, part-time, Chemical Physics Program, Lecturer, part-time, Physics and Astronomy. B.A., Cornell University, 1959; M.S., University of Michigan, 1961; Ph.D., 1961.

**Oates, Wallace E.** Professor, Economics. M.A., Stanford University, 1959; Ph.D., 1965.

**O'Brien, Stephen J.** Adjunct Professor, Zoology. B.S., St. Francis College, 1966; Ph.D., Cornell University, 1971.

**Obrimski, Francis, Joseph** Lecturer, Part-time, Aerospace Engineering. B.S., University of Maryland, 1959; M.E.A., George Washington University, 1969; Diploma, Naval War College, 1979.

- O'Brochta, David A.** Assistant Professor, Entomology B.S., University of Kansas, 1977; Ph.D., University of California, 1984
- O'Connell, Donald W.** Professor Emeritus, Economics. B.A., Columbia University, 1937; M.A., 1938. Ph.D., 1953.
- Odeli, Stanley J.** Associate Professor, Philosophy B.A., University of Kansas, 1960; M.A., University of Illinois (Urbana), 1962; Ph.D., 1967.
- Odle, Curt J.** Lecturer, Part-time, College of Business and Management, B.F.A., Ohio University, 1973; M.A., 1977.
- O'Flahavan, John F.** Assistant Professor, Curriculum and Instruction, B.A., University of Colorado (Boulder), 1981; M.A., 1982; Ph.D., University of Illinois, 1988.
- O'Grady, Kevin E.** Associate Professor, Psychology B.A., Washington and Lee University, 1972; M.S., Old Dominion University, 1976; Ph.D., University of Connecticut, 1980.
- Ohadl, Michael M.** Assistant Professor, Mechanical Engineering, B.S., Tehran University (Iran), 1977; M.S., Southern Illinois University (Carbondale), 1980; M.Ed., Northeastern University, 1982; Ph.D., University of Minnesota, 1986.
- O'Hara, George J.** Research Associate, Mechanical Engineering, B.S., University of Massachusetts, 1953; M.S., 1955
- O'Haver, Thomas C.** Professor, Chemistry and Biochemistry, B.S., Spring Hill College, 1963; Ph.D., University of Florida, 1968.
- O'Leary, Dianne P.** Professor, Computer Science; Undergraduate Studies Director, Computer Science; Professor, Institute for Advanced Computer Studies, B.S., Purdue University, 1972; Ph.D., Stanford University, 1976.
- O'Leary, Ronald T.** Associate Professor, Communication Arts and Theatre, B.S., Bowling Green State University, 1960; M.A., 1961; M.F.A., University of Wisconsin, 1964; Ph.D., 1966.
- Olek, Anthony T.** Assistant Professor, Zoology, B.A., Oakland University, 1973; Ph.D., State University of New York, 1979.
- Ollan, Judith D.** Associate Professor, College of Business and Management, B.A., Hebrew University, Jerusalem, 1974; M.S., University of Wisconsin (Madison), 1977; Ph.D., University of Wisconsin (Madison), 1980.
- Oliver, Craig S.** Professor, Horticulture; Director, Cooperative Extension Service; Associate Vice Chancellor for Agriculture & Natural Resources B.S., The Pennsylvania State University, 1957; M.Ed., 1960; Ph.D., Ohio State University, 1968.
- Olson, Allison G.** Professor, History, B.A., University of California (Berkeley), 1952; M.A., 1953; Ph.D., Oxford University (England), 1956.
- Olson, Christine A.** Lecturer, Part-time, College of Library and Information Services, B.A., Temple University, 1973; M.L.S., University of Maryland, 1976; M.A.S., Johns Hopkins University, 1984.
- Olson, Keith W.** Professor, History, B.A., State University of New York (Albany), 1957; M.A., 1959; Ph.D., University of Wisconsin, 1964.
- Olson, Mancur L. Jr.** Professor, Economics; Affiliate Professor, Government and Politics, B.S., North Dakota State University, 1954; B.A., Oxford University, 1956; M.A., 1960; Ph.D., Harvard University, 1963.
- Olson, Orrin O.** Associate Professor, Music, A.B., Sacramento State College, 1960; M.Mus., Indiana University, 1961.
- Olver, Frank W.** Research Professor, Mathematics and Institute for Physical Science and Technology, B.Sc., University of London, 1945; M.Sc., 1948; D.Sc., 1961.
- O'Meara, Kathleen M.** Lecturer, School of Architecture, B.ARCH., University of Notre Dame, 1981.
- Onđov, John M.** Associate Professor, Chemistry and Biochemistry, B.S., Muhlenberg College, 1970; Ph.D., University of Maryland, 1974
- Oneda, Sadao** Professor, Physics and Astronomy, B.S., Tohoku Imperial University, 1946; M.S., 1948, Ph.D., Nagoya University, 1953.
- Oppenheimer, Joe A.** Professor, Government and Politics, A.B., Cornell University, 1963; M.A., University of Michigan, 1964. Ph.D., Princeton University, 1970.
- Orem, Bill** Lecturer, Part-time, Geology, B.S., Lehigh University, 1974, M.S., University of Delaware, 1977; Ph.D., University of New Hampshire, 1982.
- Oruc, Yavuz A.** Associate Professor, Electrical Engineering; Associate Professor, Advanced Computer Studies, B.S., Middle East Technology University (Ankara, Turkey), 1976; M.S., University of Wales (Cardiff), 1978; Ph.D., Syracuse University, 1983
- Osborn, John E.** Professor, Mathematics; Acting Dean, College of Computer, Mathematical and Physical Sciences, B.S., University of Minnesota, 1958; M.S., 1963; Ph.D., 1965.
- Ostas, Daniel T.** Lecturer, full-time, College of Business and Management, B.S., Purdue University, 1977; J.D., Indiana University, 1980; M.B.A., 1986.
- Oster, Rose-Marie** Professor, Germanic and Slavic Languages and Literatures, M.A., Stockholm University, 1956; Dr. Phil., Kiel University (Germany), 1958.
- Ott, Edward** Professor, Electrical Engineering and Physics and Astronomy, B.S., The Cooper Union, 1963, M.S., Polytechnic Institute of Brooklyn, 1965; Ph.D., 1967.
- Ottinger, Mary Ann** Professor, Poultry Science, B.S., University of Maryland, 1972; M.S., 1974; Ph.D., 1977.
- Owen, Claudia** Lecturer, Part-time, Geology, B.S., Stanford University, 1979; M.S., University of Washington, 1981; Ph.D., The Johns Hopkins University, 1986.
- Owen, Lorraine S.** Assistant to Dean for Financial Affairs, School of Public Affairs, B.S., Pennsylvania State University, 1979; M.F.A., University of Maryland, 1984.
- Owens, Lynn M.** Instructor, Physical Education, B.S., University of Maryland, 1978; M.A., 1984.
- Owings, James C.** Professor, Mathematics, B.S., Dartmouth College, 1962; Ph.D., Cornell University, 1966.
- Pacheco, Jose E.** Professor, Spanish and Portuguese, Doctor Honoris Causa, Universidad Autonoma de Sinaloa (Mexico), 1979.
- Pai, Shih I.** Professor Emeritus, Institute for Physical Science and Technology, B.S., National Central University (China), 1935; M.S., Massachusetts Institute of Technology, 1938; Ph.D., California Institute of Technology, 1940.
- Paik, Ho Jung** Professor, Physics and Astronomy, B.S., Seoul National University, 1966; M.S., Stanford University, 1970; Ph.D., 1974.
- Panagariya, Arvind** Professor, Economics, B.A., University Rajasthan, 1971; M.A., 1973; M.A., Princeton University, 1977; Ph.D., 1978.
- Pandelidis, Ioannis O.** Assistant Research Scientist, Mechanical Engineering, B.S., University of Wisconsin (Madison), 1976; M.S., 1978; Ph.D., 1983.
- Panichas, George A.** Professor, English, B.A., American International College, 1951; M.A., Trinity College (Connecticut), 1952; Ph.D., Nottingham University, 1961.
- Pantalone, Vincent R.** Lecturer, Part-time, College of Business and Management, B.A., Yale University, 1954; J.D., University of Connecticut School of Law, 1959.
- Pao, Eleonor M.** Adjunct Professor, Human Nutrition and Food Systems, B.S., Cornell University, 1945; M.S., Ohio State University, 1968; Ph.D., 1977.
- Paoletti, Jo B.** Associate Professor, Textiles and Consumer Economics; Acting Assistant Dean for Student Affairs, College of Human Ecology, B.S., Syracuse University, 1971; M.S., University of Rhode Island, 1976; Ph.D., University of Maryland, 1980
- Papadopoulos, Konstantinos** Professor, Physics and Astronomy, Astronomy Program, B.Sc., University of Athens, 1960, M.Sc., Massachusetts Institute of Technology, 1965; Ph.D., University of Maryland, 1968
- Papamarcou, Adrianos** Assistant Professor, Electrical Engineering, Assistant Professor, Systems Research Center, B.A., Cambridge University (England), 1981; M.S., Cornell University, 1983. Ph.D., 1987.
- Papenfuss, Edward C.** Adjunct Associate Professor, History, B.A., American University, 1965; M.A., University of Colorado, 1967; Ph.D., Johns Hopkins University, 1973
- Park, Robert L.** Professor, Physics and Astronomy, B.S., University of Texas (Austin), 1958, M.A., 1960; Ph.D., Brown University, 1964.
- Parker, Rosemary** Director, Center for Minorities in Science and Engineering, B.A., Lafayette College, 1977; M.S., State University of New York (Oswego), 1979.
- Parke, Sheri L.** Assistant Professor, Communication Arts and Theatre, B.A., University of North Carolina (Chapel Hill), 1978; M.A., University of Massachusetts, 1983; Ph.D., 1985.
- Pasch, Alan** Professor, Philosophy, B.A., University of Michigan, 1949; M.A., New School for Social Research, 1952; Ph.D., Princeton University, 1955
- Pasmanick, Kenneth** Assistant Professor, Part-time, Music, B.A., American University, 1962.
- Paternoster, Raymond** Associate Professor, Institute of Criminal Justice and Criminology, B.A., University of Delaware, 1973; M.S., Southern Illinois University, 1975; Ph.D., Florida State University, 1978.
- Paterson, Judith** Assistant Professor, College of Journalism, B.A., Hollins College, 1960; M.A., Auburn University, 1972; Ph.D., 1975.
- Pati, Jogesh C.** Professor, Physics and Astronomy, B.S., Ravenshaw College, 1955; M.Sc., Delhi University, 1957; Ph.D., University of Maryland, 1961.
- Patrick, W. Lawrence** Lecturer, Part-time, Communication Arts and Theatre, B.A., University of Kentucky, 1972; M.S., University of Tennessee, 1973; Ph.D., Ohio University, 1975; J.D., Georgetown University Law Center, 1979.
- Patterson, Glenn W.** Professor, Botany, B.S., North Carolina State University, 1960; M.S., University of Maryland, 1963; Ph.D., 1964.
- Patterson, Richard E.** Adjunct Assistant Professor, Human Nutrition and Food Systems, B.S., Drexel University, 1970; M.S., University of Maryland, 1972; Ed.D., George Washington University, 1987.
- Patterson, William V.** Assistant Professor, Communication Arts and Theatre, B.F.A., University of Oklahoma, 1970; M.F.A., University of Utah, 1972.
- Pavela, Gary M.** Lecturer, Part-time, University Honors Program, B.A., Lawrence College, 1968; M.A., Wesleyan University, 1970; J.D., University of Illinois, 1973.
- Payerle, Laszlo** Assistant Professor, Music, B.Mus., University of Maryland, 1960; M.Mus., University of Texas, 1962.
- Payne, Gregory F.** Assistant Professor, Chemical and Nuclear Engineering, B.S., Cornell University, 1979; M.S., 1981; Ph.D., University of Michigan, 1984.
- Payne, Richard** Assistant Professor, Zoology, B.A., Trinity College (Cambridge, England), 1977; Ph.D., The Australian National University, 1982.
- Pearce, Alan** Lecturer Part-time, College of Business and Management, B.Sc., London School of Economics, 1963; M.Sc., 1968; Ph.D., Indiana University, 1972.

- Pearl, Martin H.** Professor Emeritus, Mathematics. B.A., City University of New York (Brooklyn College), 1950; M.A., University of Michigan, 1951; Ph.D., University of Wisconsin, 1955.
- Pearson, Barry L.** Associate Professor, English. B.A., University of Michigan, 1968; M.A., Indiana University, 1970; Ph.D., 1977.
- Pease, John** Associate Professor, Sociology. B.S., Western Michigan University, 1960; M.A., Michigan State University, 1963; Ph.D., 1968.
- Peaslee, David C.** Visiting Professor, Physics and Astronomy. A.B., Princeton University, 1943; Ph.D., MIT, 1948.
- Pecht, Michael G.** Associate Professor, Mechanical Engineering, Associate Professor, Systems Research Center. B.S., University of Wisconsin (Madison), 1976; M.S., 1979; Ph.D., 1982.
- Peckerar, Martin C.** Professor, part-time, Electrical Engineering. B.S., SUNY at Stony Brook, 1968; M.S., University of Maryland, 1971; Ph.D., 1976.
- Pecora, Norma** Lecturer, RFV. B.A., Governors State University, 1978; M.A., 1980; Ph.D., University of Illinois, 1988.
- Pelczar, Michael J., Jr.** Professor Emeritus, Microbiology. B.S., University of Maryland, 1936; M.S., 1938; Ph.D., University of Iowa, 1941.
- Penner, Merrilynn J.** Professor, Psychology. B.A., Harvard University, 1966; Ph.D., University of California (San Diego), 1970.
- Penny, Barbara E.** Instructor, College of Veterinary Medicine. B.S., Tufts University, 1957; V.M.D., University of Pennsylvania, 1968.
- Perinbam, B. Marie** Associate Professor, History, Affiliate Associate Professor, Afro-American Studies. B.A., London University (England), 1955; M.A., University of Toronto, 1959; Ph.D., Georgetown University, 1969.
- Perkins, Moreland** Professor Emeritus, Philosophy. A.B., Harvard College, 1948; A.M., Harvard University, 1949; Ph.D., 1953.
- Perlis, Donald R.** Associate Professor, Computer Science; Associate Professor, Institute for Advanced Computer Studies. B.S., Purdue University, 1966; Ph.D., New York University, 1972; Ph.D., University of Rochester, 1981.
- Perloff, Lynn B.** Instructor, Part-time, Hearing and Speech Sciences. B.S., Indiana University, 1963; M.A., Stanford University, 1964.
- Pertmer, Gary A.** Associate Professor, Chemical and Nuclear Engineering. B.S., Iowa State University, 1971; M.S., University of Missouri (Columbia), 1973; Ph.D., 1978.
- Peters, Robert Morgan** Associate Professor, Industrial, Technological and Occupational Education. B.S., Mankato State College, 1955; M.S., 1958; Ph.D., University of Minnesota, 1965.
- Peters, Robert R.** Associate Professor, Animal Sciences. B.S., University of Minnesota, 1973; M.S., 1975; Ph.D., Michigan State University, 1980.
- Peters-Campbell, John** Assistant Professor, Art History. B.A., University of Massachusetts (Boston), 1977; M.A., Cornell University, 1982; Ph.D., 1989.
- Peterson, Carla L.** Associate Professor, Comparative Literature; Associate Professor, English. B.A., Radcliffe College, 1965; Ph.D., Yale University, 1976.
- Peterson, William S.** Professor, English. B.A., Walla Walla College, 1961; M.A., University of Wisconsin, 1962; Ph.D., Northwestern University, 1968.
- Petrina, Stephen** Instructor, Industrial, Technological and Occupational Education. B.S., California University of Pennsylvania, 1984.
- Pflaster, Guenter G.** Professor and Acting Chair, Germanic and Slavic Languages and Literatures. B.S., Bowling Green State University, 1963; M.A., Michigan State University, 1965; Ph.D., University of Kansas, 1970.
- Phelps, Thomas C.** Lecturer, Part-time, College of Library and Information Services. BFA/MFA, Utah State University, 1968; M.L.S., University of Oregon, 1972.
- Phillips, Sally J.** Associate Professor, Physical Education. B.S., Slippery Rock State College, 1964; M.Ed., Colorado State University, 1969; Ph.D., University of Wisconsin, 1978.
- Phillips, Warren R.** Professor, Government and Politics. B.A., Northwestern University, 1963; M.S., California State University (San Francisco), 1966; Ph.D., University of Hawaii, 1969.
- Pierce, Sidney K., Jr.** Professor, Zoology. B.Ed., University of Miami, 1966; Ph.D., Florida State University, 1970.
- Piercy, Sandra Kay** Instructor, Physical Education. B.S., West Virginia Institute of Technology, 1966; M.S., West Virginia University, 1971.
- Pilato, Virginia H.** Research Associate, Special Education. B.A., University of Maryland, 1968; M.Ed., 1980; Ph.D., 1984.
- Pilcher, Roy A.J.** Clark Chair Professor, Civil Engineering. Dipl. Ing., Loughborough College of Technology, 1946; M.S., 1966.
- Pinker, Rachel** Associate Professor, Meteorology, M.Sc., Hebrew University (Israel), 1966; Ph.D., University of Maryland, 1976.
- Piomelli, Ugo** Assistant Professor, Mechanical Engineering. B.S., Università degli Studi di Napoli, 1979; M.S., University of Notre Dame, 1984; Ph.D., Stanford University, 1988.
- Piper, Don C.** Professor, Government and Politics. B.A., University of Maryland, 1954; M.A., 1958; Ph.D., Duke University, 1961.
- Piper, Rowena W.** Instructor, Zoology. B.S., Midwestern University, 1954; M.A., Duke University, 1962.
- Pirages, Dennis A.** Associate Professor, Government and Politics. B.A., State University of Iowa, 1964; Ph.D., Stanford University, 1968.
- Platt, Christopher J.** Adjunct Associate Professor, Zoology. B.S., University of Chicago, 1966; Ph.D., University of California (San Diego), 1972.
- Pilschke, Elmer** Professor Emeritus, Government and Politics. Ph.B., Marquette University, 1937; M.A., American University, 1933; Ph.D., Clark University, 1943.
- Plude, Dana** Assistant Professor, Psychology. B.A., State University of New York, 1976; M.A., Syracuse University, 1979; Ph.D., 1980.
- Plumb, James W.** Instructor, Part-time, College of Journalism. B.S., University of Washington, 1956.
- Plumly, Stanley** Professor, English; Director, Creative Writing Program. B.A., Wilmington College, 1962; M.A., Ohio University, 1968; Ph.D., 1970.
- Poetscher, Benedikt** Associate Professor, Economics. Ph.D., University of Vienna, 1979.
- Pogue, Stephanie E.** Associate Professor, Art. B.F.A., Howard University, 1966; M.F.A., Cranbrook Academy of Art, 1968; M.A., Vanderbilt University, 1980.
- Poirier, M. Lynn** Instructor, Maryland English Institute. B.A., Trinity College, 1977; M.A., University of Delaware, 1981.
- Poist, Helene S.** Lecturer, Part-time, College of Business and Management. B.S., University of Maryland, 1972; M.B.A., 1980.
- Poisi, Richard F.** Associate Professor, College of Business and Management. B.S., Pennsylvania State University, 1965; M.B.A., University of Maryland, 1967; Ph.D., Pennsylvania State University, 1972.
- Poli, Rinaldo** Assistant Professor, Chemistry and Biochemistry. B.S., University of Pisa (Italy), 1981; Ph.D., Scuola Normale Superiore (Pisa, Italy), 1985.
- Pollock, Stephanie K.** Counselor/Advisor, Part-time, Center on Aging. B.A., American University, 1962; M.A., University of Maryland, 1981; A.G.S., 1985.
- Ponnamperuma, Cyril** Professor, Chemistry and Biochemistry. B.A., University of Madras, 1948; B.Sc., University of London, 1959; Ph.D., University of California (Berkeley), 1962.
- Popper, Arthur N.** Professor and Chair, Zoology. B.A., New York University (Bronx), 1964; Ph.D., City University of New York, 1969.
- Porges, Stephen W.** Professor, Human Development. B.A., Drew University, 1966; M.S., Michigan State, 1968; Ph.D., 1970.
- Portz, John** Director Emeritus of the Honors Program. B.S., Duke University, 1937; M.A., Harvard University, 1941; Ph.D., 1958.
- Potter, Michael** Adjunct Professor, Zoology. A.B., Princeton University, 1945; M.D., University of Virginia, 1949.
- Pourbabbal, Behnam** Associate Professor, Mechanical Engineering. B.S., University of Michigan (Ann Arbor), 1978; M.S., 1979; Ph.D., University of Massachusetts (Amherst), 1984.
- Pourdeyhimi, Benham** Associate Professor, Textiles and Consumer Economics. L.T.I., Huddersfield Polytechnic (U.K.), 1976; A.T.I., 1978; Ph.D., Leeds University (U.K.), 1982.
- Power, Paul W.** Professor, Counseling and Personnel Services. B.A., St. Paul's College, 1953; M.S., San Diego State University, 1971; Sc.D., Boston University, 1974.
- Powers, William L.** Associate Dean, School of Public Affairs. B.A., University of Michigan, 1976; M.P.P., 1978; Masters in Economics, 1982; J.D., 1982.
- Pozonsky, Charles J.** Instructor, Industrial, Technological and Occupational Education. B.S., California University of Pennsylvania, 1987.
- Prange, Richard E.** Professor, Physics and Astronomy. M.S., University of Chicago, 1955; Ph.D., 1958.
- Prather, Elizabeth S.** Professor, Human Nutrition and Food Systems. B.S., Auburn University, 1951; M.S., 1955; Ph.D., Iowa State University, 1963.
- Pratt, Minnie Bruce** Lecturer, Part-time, Women's Studies Program. B.A., University of Alabama (Tuscaloosa), 1969; Ph.D., University of North Carolina (Chapel Hill), 1979.
- Presser, Harriet** Professor, Sociology. B.A., George Washington University, 1959; M.A., University of North Carolina, 1962; Ph.D., University of California (Berkeley), 1969.
- Presser, Stanley** Professor, Sociology. B.A., Brown University, 1971; Ph.D., University of Michigan, 1977.
- Pressley, George Michael** Professor, Human Development. B.A., Northwestern University, 1973; Ph.D., University of Minnesota, 1977.
- Pressly, William L.** Associate Professor, Art History. B.A., Princeton University, 1966; M.A., 1969; Ph.D., New York University, 1974.
- Preston, Lee E.** Professor, College of Business and Management. B.A., Vanderbilt University, 1951; M.A., Harvard University, 1953; Ph.D., 1958.
- Price, Richard** Chairman and Professor, History. B.A., University of Sussex, 1965; Ph.D., 1968.
- Prince, Stephen D.** Associate Professor, Geography. B.Sc., University of Bristol, 1966; Ph.D., University of Lancaster, 1971.
- Prucha, Ingmar R.** Associate Professor, Economics. M.A., University of Vienna, 1973; Ph.D., 1977.

- Pruitt, Yolanda J.** Assistant to the Dean, Computer, Mathematical and Physical Sciences. B.S., University of Maryland, 1978.
- Pugh, William W.** Assistant Professor, Computer Science; Assistant Professor, Institute for Advanced Computer Studies. B.S., Syracuse University, 1980; Ph.D., Cornell University, 1988.
- Pugliese, Rudolph E.** Professor, Emeritus, Communication Arts and Theatre. B.A., Miami University (Ohio), 1947; M.A., Catholic University of America, 1949; Ph.D., Ohio State University, 1961.
- Pugsley, James H.** Associate Professor and Associate Chairman, Electrical Engineering. A.B., Oberlin College, 1958; M.S., University of Illinois (Urbana), 1958; Ph.D., 1963.
- Pumroy, Donald K.** Professor, Counseling and Personnel Services. B.A., University of Iowa, 1949; M.S., University of Wisconsin, 1951; Ph.D., University of Washington, 1954.
- Purtilo, James M.** Assistant Professor, Computer Science; Assistant Professor, Institute for Advanced Computer Studies. B.A., Hiram University, 1978; M.A., Kent State University, 1980; Ph.D., University of Illinois, 1986.
- Quebedeaux, Bruno, Jr.** Professor and Chairman, Horticulture. B.S., Louisiana State University, 1962; M.S., 1963; Ph.D., Cornell University, 1968.
- Quester, George H.** Professor, Government and Politics. A.B., Columbia College, 1958; M.A., Harvard University, 1964; Ph.D., 1965.
- Quintiere, James G.** Lecturer, Part-time, Fire Protection Engineering. B.S., New Jersey Institute of Technology, 1962; M.S., New York University, 1966; Ph.D., 1970.
- Rabasa, Jose** Assistant Professor, Spanish and Portuguese. B.A., University of the Americas, 1971; M.A., Universidad Nacional Autonoma de Mexico, 1978; Ph.D., University of California (Santa Cruz), 1985.
- Rabenhorst, Martin C.** Associate Professor, Agronomy. B.S., University of Maryland, 1975; M.S., 1978; Ph.D., Texas A & M University, 1983.
- Rabin, Herbert** Director, Engineering Research Center; Associate Dean, College of Engineering; Professor, Electrical Engineering. B.S., University of Wisconsin, 1950; M.S., University of Illinois, 1951; Ph.D., University of Maryland, 1959.
- Racusen, Richard H.** Associate Professor, Botany. B.S., University of Vermont, 1970; M.S., 1972; Ph.D., 1975.
- Radermacher, Reinhard** Associate Professor, Mechanical Engineering. B.S., Technical University Munich, 1974; M.S., 1977; Ph.D., 1981.
- Rado, George T.** Adjunct Professor, Physics and Astronomy. S.B., Massachusetts Institute of Technology, 1939; S.M., 1941; Ph.D., 1943.
- Ragan, Robert M.** Professor, Civil Engineering. B.S., Virginia Military Institute, 1955; M.S., Massachusetts Institute of Technology, 1959; Ph.D., Cornell University, 1965.
- Raina, Ashok** Adjunct Professor, Entomology. B.Sc., Jammu & Kashmir University (India), 1961; M.Sc., Aligarh Muslim University (India), 1967; Ph.D., North Dakota State University, 1974.
- Ralten, Daniel J.** Adjunct Assistant Professor, Part-time, Human Nutrition and Food Systems. B.A., State University of New York (Oswego), 1973; B.S., Kansas State University, 1978; M.S., Penn State University, 1980; Ph.D., 1984.
- Ramaty, Reuven** Adjunct Professor, Physics and Astronomy. B.Sc., Tel-Aviv University, 1961; Ph.D., University of California (Los Angeles), 1966.
- Ramsey, S. Robert** Professor, Hebrew and East Asian. B.C.E., Georgia Institute of Technology, 1966; M.A., Yale University, 1972; M. Phil., 1972; Ph.D., 1975.
- Ranaid, Ralph A.** Associate Professor, Government and Politics. A.B., University of California (Los Angeles), 1952; M.A., 1954; A.M., Princeton University, 1958; Ph.D., 1961.
- Rao, Govind** Assistant Professor, Chemical and Nuclear Engineering. B.S., Indian Institute of Technology (Madras), 1984; Ph.D., Drexel University, 1987.
- Rao, Peddada R.** Assistant Professor, Mechanical Engineering. B.S., Indian Institute of Technology, 1982; M.S., Washington University (St. Louis), 1985; D.Sc., Washington University (1989), 1989.
- Rappoport, Michael S.** Visiting Lecturer, Part-time, Physics and Astronomy. B.S., Carnegie-Mellon University, 1967; M.S., University of Maryland, 1972; Ph.D., 1976.
- Raschid, Loulqa** Assistant Professor, College of Business and Management; Assistant Professor, Information Systems; Assistant Professor, Institute for Advanced Computer Studies. B.T., Indian Institute of Technology, 1980; M.E., University of Florida, 1982; Ph.D., 1987.
- Rassal, Rassa** Lecturer, part-time, Electrical Engineering. B.S., University of Maryland, 1973; M.S., 1975; Ph.D., University of Maryland, 1985.
- Ratner, Nan Bernstein** Associate Professor, Hearing and Speech Sciences. B.A., Jackson College, Tufts University, 1974; M.A., Temple University, 1976; Ed.D., Boston University, 1982.
- Ratner, Barnett A.** Adjunct Associate Professor, Poultry Science. B.S., University of Maryland, 1972; M.S., 1974; Ph.D., 1977.
- Raupp, Michael** Associate Professor, Entomology. B.S., Cook College, Rutgers University, 1975; M.S., Rutgers University, 1977; Ph.D., University of Maryland, 1981.
- Read, Merrill S.** Professor and Chairman, Human Nutrition and Food Systems. B.S., Northwestern University, 1949; M.S., Ohio State University, 1951; Ph.D., 1956.
- Reaka, Marjorie L.** Associate Professor, Zoology. B.A., University of Kansas, 1965; M.S., 1969; Ph.D., University of California (Berkeley), 1975.
- Rearick, William R.** Professor, Art History. B.A., New York University, 1953; M.A., 1955; Ph.D., Harvard University, 1968.
- Redish, Edward F.** Professor, Physics and Astronomy. A.B., Princeton University, 1963; Ph.D., Massachusetts Institute of Technology, 1968.
- Reeves, Mavis M.** Associate Professor, Government and Politics. B.A., West Virginia University, 1942; M.A., 1943; Ph.D., University of North Carolina, 1947.
- Regan, Frank** Lecturer, Part-time, Aerospace Engineering. B.S., Massachusetts Institute of Technology, 1957; M.S., 1958.
- Regan, Thomas M.** Professor, Chemical and Nuclear Engineering. B.S., Tulane University, 1963; Ph.D., 1967.
- Reggia, James A.** Associate Professor, Computer Science; Associate Professor, Institute for Advanced Computer Studies. B.S., University of Maryland, 1971; M.D., 1975; Ph.D., 1981.
- Regier, Jerome C.** Associate Professor, Entomology. B.A., Harvard University, 1969; Ph.D., 1975.
- Reichelderfer, Charles F.** Associate Professor, Entomology. B.S., Saint Cloud State College, 1961; M.S., University of Washington, 1963; Ph.D., University of California (Riverside), 1968.
- Reinhold, F. Donald** Assistant to the Dean, Summer Programs. B. Mus., Bucknell University, 1974; M.A., University of North Carolina, 1980.
- Reiser, Martin P.** Professor, Electrical Engineering. M.S., Johannes Gutenberg Universitat, Mainz, W. Germany, 1957; Ph.D., Johannes Gutenberg Universitat, 1960.
- Reiser, Sheldon** Adjunct Professor, Part-time, Human Nutrition and Food Systems. B.S., City College of New York, 1953; M.S., University of Wisconsin, 1957; Ph.D., 1959.
- Rembacki, Carol** Faculty Research Assistant, Special Education. B.A., Marygrove College, 1974; M.Ed., 1978.
- Restorff, Kathleen A.** Visiting Lecturer, Part-time, Physics and Astronomy. B.A., Central Connecticut State College, 1971; M.S., University of Maryland, 1975.
- Retalack, Joan R.** Lecturer, Part-time, University Honors Program. B.A., University of Illinois (Urbana), 1963; M.A., Georgetown University, 1976.
- Reutt-Robey, Janice** Assistant Professor, Chemistry and Biochemistry. B.A., Haverford College, 1980; Ph.D., University of California, Berkeley, 1986.
- Reveal, James L.** Professor, Botany. B.S., Utah State University, 1963; M.S., 1965; Ph.D., Brigham Young University, 1969.
- Rey, Georges** Associate Professor, Philosophy. B.A., University of California (Berkeley), 1970; M.A., Harvard University, 1975; Ph.D., 1978.
- Reynolds, Robert** Adjunct Professor, Part-time, Human Nutrition and Food Systems. B.S., Ohio State University, 1965; Ph.D., University of Wisconsin, 1971.
- Rhee, Moon-Jhong** Professor, Electrical Engineering. B.S., Seoul University, 1958; M.S., 1960; Ph.D., Catholic University of America, 1970.
- Rhoads, David J.** Associate Professor, Counseling and Personnel Services. B.A., Temple University, 1954; M.A., 1958; Ed.D., University of Maryland, 1963.
- Rhodes, Charles C.** Instructor, College of Journalism. B.S., University of Maryland, 1984.
- Rhynne, Elisabeth** Lecturer, part-time, School of Public Affairs. B.A., Stanfort University, 1976; MPP, Kennedy School of Government, Harvard University, 1980; Ph.D., Harvard University, Graduate School Arts & Science, 1985.
- Rib, Harold** Senior Research Associate, Civil Engineering. B.C.E., City College of New York, 1953; M.S., Cornell University, 1957; Ph.D., Purdue University, 1967.
- Ricart, Glenn** Affiliate Assistant Professor, Computer Science; Director, Computer Science Center. B.S., Case Institute of Technology, 1971; M.S., Case Western Reserve University, 1973; Ph.D., University of Maryland, 1980.
- Richard, Jean-Paul** Professor, Physics and Astronomy. B.A., Universite Laval, 1956; B.S., 1960; Ph.D., University of Paris, 1963.
- Richardson, William C.** Associate Professor, Art. B.F.A., University of North Carolina, 1975; M.F.A., Washington State University (St. Louis), 1977.
- Richter, Karen J.** Lecturer, part-time, Mechanical Engineering. B.S., Knox College, 1971; M.S., University of Wisconsin (Madison), 1979; Ph.D., 1987.
- Ridgway, Whitman H.** Associate Professor, History. A.B., Kenyon College, 1963; M.A., San Francisco State College, 1967; Ph.D., University of Pennsylvania, 1973.
- Ridky, Robert W.** Associate Professor, Geology. B.S., State University of New York (Corland), 1966; M.S., Syracuse University, 1970; Ph.D., 1973.
- Rimer, J. Thomas** Professor and Chair, Hebrew and East Asian. B.A., Princeton University, 1954; M.A., Columbia University, 1969; Ph.D., 1971.
- Rinke, Wolf J.** Adjunct Assistant Professor, Part-time, Human Nutrition and Food Systems. B.S., Drexel University, 1968; M.S., Iowa State University, 1973; Ph.D., University of Wisconsin, 1979.
- Ripin, Barrett H.** Adjunct Professor, Physics and Astronomy. B.S., Rensselaer Polytechnic Institute, 1964; Ph.D., University of Maryland, 1971.

- Ritter, Ronald L.** Associate Professor, Agronomy B.S., University of Delaware, 1975; M.S., North Carolina State University, 1977; Ph.D., 1979.
- Ritzer, George** Professor, Sociology B.A., City College of New York, 1962; M.A., University of Michigan, 1964; Ph.D., Cornell University, 1968
- Rivera, William M.** Associate Professor, Agricultural and Extension Education, B.A., University of North Carolina, 1955; M.A., American University, 1959; Ph.D., Syracuse University, 1974
- Roberson, Bob S.** Professor, Microbiology, B.A., University North Carolina, 1951; Ph.D., 1960.
- Robertson, Carol E.** Associate Professor, Music, B.S., Indiana University, 1970; M.A., 1972; Ph.D., 1975.
- Robertson, Jack** Lecturer, Part-time, College of Library and Information Services, B.A., College of Wooster, 1970; A.M.L.S., University of Michigan, 1973; M.A., 1977.
- Robertson, Janet H.** Assistant to the Dean, College of Computer, Mathematical and Physical Sciences, B.S., University of Maryland, 1974; M.M., 1979
- Robertson-Tchabo, Elizabeth A.** Associate Professor, Human Development, B.A., University of Calgary, 1966; M.Sc., 1967; Ph.D., University of Southern California, 1972.
- Robinson, Eugene S.** Assistant Professor, Communication Arts and Theatre, B.A., University of Maryland, 1973; M.A., 1975; Ph.D., 1984
- Robinson, James A.** Associate Professor, English, B.A., Kenyon College, 1967; M.A., University of Pennsylvania, 1968; Ph.D., Duke University, 1975.
- Robinson, John P.** Professor, Sociology, B.A., University of Toronto (St. Michael's College), 1957; M.S., Virginia Polytechnic Institute, 1959; M.S., University of Michigan, 1963; Ph.D. 1965.
- Robock, Alan** Associate Professor, Meteorology, B.A., University of Wisconsin (Madison), 1970; M.S., Massachusetts Institute of Technology, 1974; Ph.D., 1977.
- Roche, James** Assistant Professor, College of Journalism, B.S., Southern Illinois University, 1979; M.A., Marquette University, 1982; Ph.D., Indiana University, 1988.
- Roderick, Jessie A.** Professor, Curriculum and Instruction, B.S., Wilkes College, 1956; M.A., Columbia University, 1957; Ed.D., Temple University, 1967.
- Rodriguez, Santiago** Associate Professor, Music, B.M., University of Texas, 1973; M.M., Julliard School of Music, 1975.
- Rombach, Dieter** Assistant Professor, Computer Science, Assistant Professor, Institute for Advanced Computer Studies, B.S., University of Karlsruhe, 1975; M.S., 1978; Ph.D., 1984.
- Roos, Phillip G.** Professor, Physics and Astronomy, B.A., Ohio Wesleyan University, 1960; Ph.D., Massachusetts Institute of Technology, 1964
- Rose, William K.** Professor, Physics and Astronomy, Astronomy Program, A.B., Columbia University, 1957; Ph.D., 1963.
- Rosan, Meriam** Professor, Dance, B.A., University of Illinois, 1948; M.A., University of Maryland, 1965.
- Rosenberg, Jonathan M.** Professor, Mathematics, A.B., Harvard College, 1972; Math. Tripos, Pt. III, University of Cambridge (England), 1973; Ph.D., University of California (Berkeley), 1976.
- Rosenberg, Karen J.** Instructor, Hearing and Speech Sciences, B.A., Queens College, 1974; M.A., University of Houston, 1975.
- Rosenberg, Morris** Professor, Sociology, B.A., Brooklyn College, 1946; M.A., Columbia University, 1950; Ph.D., 1953.
- Rosenberg, Theodore J.** Research Professor, Institute for Physical Science and Technology, B.E.E., City University of New York (City College), 1960; Ph.D., University of California (Berkeley), 1965.
- Rosenfeld, Azriel** Director and Professor, Center for Automation Research, B.A., Yeshiva University, 1950; M.A., Columbia University, 1951; Ordination, Yeshiva University, 1952; M.H.L., 1953; M.S., Yeshiva University, 1954; D.H.L., 1955; Ph.D., Columbia University, 1957.
- Rosenfel, Deborah** Professor, Women's Studies, B.A., Goucher College, 1964; M.A., Columbia University, 1965; Ph.D., UCLA, 1972.
- Ross, David S.** Associate Professor, Agricultural Engineering, B.S., Pennsylvania State University, 1969; M.S., 1971; Ph.D., 1973.
- Ross, George** Associate Professor, Music, B.Mus., Virginia State College, 1961; M.M., Eastman School of Music, 1966; D.M.A., 1975.
- Ross, Peggy** Lecturer, Part-time, Agricultural and Extension Education, B.S., Mississippi State University, 1958; M.A., 1968; Ph.D., Ohio State University, 1982.
- Roth, Froma P.** Associate Professor, Hearing and Speech Sciences, B.A., Hunter College, 1970; M.A., Queens College, 1972; Ph.D., 1980.
- Roush, Marvin L.** Professor and Chairman, Chemical and Nuclear Engineering, B.Sc., Ottawa University, 1956; Ph.D., University of Maryland, 1964
- Roussopoulos, Nicholas** Associate Professor, Computer Science, Associate Professor, Institute for Advanced Computer Studies, B.A., University of Athens, 1969; M.S., University of Toronto, 1973; Ph.D., 1977.
- Roveletad, Howard** Professor and Director Emeritus, Library, B.A., University of Illinois (Urbana), 1936; M.A., 1937; B.S.L.S., Columbia University, 1940.
- Rowland, Robert J., Jr.** Professor and Chairman, Classics, B.A., La Salle College, 1959; M.A., University of Pennsylvania, 1961; Ph.D., 1964.
- Rozenblit, Marsha L.** Associate Professor, History, B.A., Barnard College, 1971; M.A., Columbia University, 1974; M. Phil., 1975; Ph.D., 1980.
- Rubin, Roger H.** Associate Professor, Family and Community Development, Director, Family Research Center, B.A., City University of New York (Brooklyn College), 1965; M.S., Pennsylvania State University, 1966; Ph.D., 1970.
- Rudolph, Daniel J.** Professor, Mathematics, B.S., California Institute of Technology, 1972; M.S., Stanford University, 1973; Ph.D., 1975.
- Ruppert, John H.** Assistant Professor, Art, B.A., Miami University (Oxford, Ohio), 1974; M.F.A., Rochester Institute of Technology, 1977.
- Russek-Cohen, Estelle** Associate Professor, Animal Sciences, B.S., State University of New York (Stony Brook), 1972; Ph.D., University of Washington, 1979.
- Russell, Camilla P.** Lecturer, French and Italian, Laurea, Padua University (Italy), 1960.
- Russell, Charles C.** Associate Professor, French and Italian, B.A., Oberlin College, 1956; M.A., Bryn Mawr College, 1964; Ph.D., Harvard University, 1970.
- Russell, Horace L.** Senior Lecturer, Mechanical Engineering, B.S., Bradley University, 1958; M.S., Air Force Institute of Technology, 1965; Ph.D., Purdue University, 1971.
- Russell, James R.** Associate Professor, Agricultural and Resource Economics, B.S., Oklahoma State University, 1973; M.S., 1978; Ph.D., Virginia Tech, 1981.
- Russell, John D.** Professor, English, A.B., Colgate University, 1951; M.A., University of Washington, 1956; Ph.D., Rutgers University, 1959.
- Rutherford, Charles S.** Associate Dean, College of Arts and Humanities; Assistant Professor, English, B.A., Carleton College, 1962; M.A., Indiana University, 1966; Ph.D., 1970.
- Ryan, Leigh** Acting Director, Freshman Writing Program, English, B.S., Western Connecticut State University, 1965; M.A., University of Maryland, 1974; Ph.D., 1986.
- Ryder, Margaret N.** Assistant Professor, Physical Education, B.S., University of North Carolina of Greensboro, 1957; M.A., University of Michigan, 1961; Ph.D., University of Maryland, 1972.
- Sabol, William** Assistant Professor, Afro-American Studies, Assistant Professor, Institute of Criminal Justice & Criminology, B.A., University of Pittsburgh, 1979; Ph.D., 1988.
- Sachs, Stephen F.** Lecturer & Associate Dean, School of Architecture, B. Arch., Ohio University, 1968.
- Saddler-Assem, La Wanda** Assistant Director, Center for Minorities in Science and Engineering, B.A., North Carolina Central University, 1973.
- Sagoff, Mark** Director and Senior Research Scholar, Institute for Philosophy and Public Policy, B.A., Harvard University, 1963; Ph.D., University of Rochester, 1970.
- Sahin, Linda M.** Instructor, Maryland English Institute, B.A., Indiana University, 1969; M.S., 1971.
- Salamanca, Jack H.** Professor, English, Grad., Royal Academy of Dramatic Art (London), 1952; Dipl., University of London, 1953; Licentiate, Graduate School of Drama (Royal Academy of Music), 1954
- Salamanca-Young, Lourdes** Assistant Professor, Chemical and Nuclear Engineering, B.S., Universidad Autonoma Metropolitana, 1978; Ph.D., Massachusetts Institute of Technology, 1985
- Salem, Kenneth M.** Assistant Professor, Computer Science, Assistant Professor, Institute for Advanced Computer Studies, B.S., Carnegie Mellon, 1963; M.S.E., Princeton University, 1984; M.A., 1985; Ph.D., 1988.
- Sallet, Dirse W.** Professor, Mechanical Engineering, B.S., George Washington University, 1961; M.S., University of Kansas, 1963; Ph.D., University of Stuttgart, 1966.
- Salus, Sharon Ridley** Instructor, Maryland English Institute, B.A., University of Georgia, 1960; M.A., American University, 1974; A.M.L.S., University of Michigan, 1980.
- Samal, Siba K.** Assistant Professor, College of Veterinary Medicine, B.V.Sc., Orissa University of Agriculture & Technology, 1976; M.S., Texas A & M University, 1981; Ph.D., Texas A & M Univ. & Baylor College of Medicine, 1986.
- Samet, Hanan** Professor, Computer Science, Professor, Institute for Advanced Computer Studies, B.S., University of California (Los Angeles), 1970; M.S., Stanford University, 1975; Ph.D., 1975
- Sammons, David J.** Associate Professor, Agronomy; Associate Dean, Undergraduate Studies, B.S., Tufts University, 1968; M.A., Harvard University, 1972; Ph.D., University of Illinois, 1978
- Sampugna, Joseph** Associate Professor, Chemistry and Biochemistry, B.A., University of Connecticut, 1959; M.A., 1962; Ph.D., 1968
- Sandler, Mark** Assistant Professor, Art History, B.A., American University, 1967; M.A., University of Washington, 1971; Ph.D., 1977.
- Sanford, Robert J.** Professor, Mechanical Engineering, B.M.E., George Washington University, 1962; M.S., 1965; Ph.D., Catholic University of America, 1971.
- Sanjines, Javier** Assistant Professor, Spanish and Portuguese, B.A., Universidad de San Andres, Bolivia, 1971; Law Degree, Superior District Court, La Paz Bolivia, 1979; Ph.D., University of Minnesota, 1988.
- Santa Maria, D. Laine** Associate Professor, Physical Education, B.A., University of Pennsylvania, 1953; M.Ed., Temple University, 1962; Ed.D., University of Oregon, 1968.

- Saracho, Olivia N.** Associate Professor, Curriculum and Instruction. B.S., Texas Woman's University, 1967; M.Ed., 1972; Ph.D., University of Illinois, 1978.
- Sargant, Stuart H.** Associate Professor, Hebrew and East Asian. B.A., University of Oregon, 1968; M.A., Stanford University, 1974; Ph.D., 1977.
- Sarma, Sankar Das** Professor, Physics and Astronomy. B.S., University of Calcutta, 1973; M.S., Brown University, 1976; Ph.D., 1979.
- Sether, Jerome O.** Associate Professor, Mathematics. B.S., University of Minnesota, 1957; M.S., 1959; Ph.D., 1963.
- Sauber, Heidi Winick** Director, Cooperative Engineering Education. B.A., The University of Michigan, 1977; M.A., 1978.
- Saunders, T. Clark** Assistant Professor, Music. B.F.A., SUNY, 1977; M.F.A., SUNY (Buffalo), 1978; Ph.D., Temple University, 1984.
- Sayre, Clifford L., Jr.** Professor, Part-time, Mechanical Engineering. B.S., Duke University, 1947; M.S., Stevens Institute of Technology, 1950; Ph.D., University of Maryland, 1961.
- Scales, William R.** Associate Professor, Counseling and Personnel Services. B.S.E., Emporia State University, 1959; M.S., 1963; Ed.D., Indiana University, 1970.
- Scannell, Dale P.** Dean, College of Education; Professor, Curriculum and Instruction. B.A., The University of Iowa, 1951; M.A., 1955; Ph.D., 1958.
- Scario, Robert A.** Assistant Professor, Horticulture. B.S., University of Massachusetts (Amherst), 1969; M.L.A., 1976.
- Schafer, James A.** Professor, Mathematics. B.S., University of Rochester, 1961; Ph.D., University of Chicago, 1965.
- Schafer, William D.** Associate Professor, Measurement, Statistics, and Evaluation. B.A., University of Rochester, 1964; M.A., 1965; Ed.D., 1969.
- Schaffer, Michael J.** Adjunct Lecturer, Health Education. B.S., University of Maryland, 1971; M.A., 1983.
- Schaes, Franklin D.** Associate Professor, Horticulture. B.S., Louisiana State University, 1959; M.S., Cornell University, 1962; Ph.D., 1963.
- Schellert, Joseph** Assistant Professor, Germanic and Slavic Languages and Literatures. B.A., University of Southern California, 1973; M.A., Yale University, 1974; M.A., University of California-Berkeley, 1979; Ph.D., 1984.
- Schelling, David R.** Associate Professor, Civil Engineering. B.S., Lehigh University, 1961; M.S., Drexel Institute of Technology, 1964; Ph.D., University of Maryland, 1969.
- Scheraga, Carl** Assistant Professor, College of Business and Management. B.Sc., Brown University, 1973; M.A., 1975; Ph.D., University of Connecticut (Storrs), 1985.
- Schick, Allen G.** Assistant Professor, College of Business and Management. B.B.A., University of Texas, 1960; M.P.A., 1962; M.B.A., 1975; Ph.D., University of Kansas, 1978.
- Schick, Allen S.** Professor, School of Public Affairs; Affiliate Professor, Government and Politics. B.A., Brooklyn College, 1956; M.A., Yale University, 1959; Ph.D., 1966.
- Schindel, Leon H.** Lecturer, Part-time, Aerospace Engineering. B.S., Massachusetts Institute of Technology, 1945; M.S., 1948; S.C.D., 1960.
- Schiraldi, Glenn R.** Lecturer, Health Education. B.S., U.S. Military Academy (West Point), 1969; M.S., Brigham Young University, 1976; Ph.D., University of Maryland, 1983.
- Schlietzki, Walter E.** Professor Emeritus, Philosophy. A.B., Monmouth College, 1941; M.A., University of Illinois (Urbana), 1942; Ph.D., Cornell University, 1948.
- Schlesinger, B. Frank** Professor, School of Architecture. B.S., University of Illinois (Urbana), 1950; M. Arch., Harvard Graduate School of Design, 1954.
- Schlimme, Donald V.** Associate Professor, Horticulture. B.S., University of Maryland, 1956; M.S., 1961; Ph.D., 1964.
- Schlossberg, Nancy K.** Professor, Counseling and Personnel Services. B.A., Barnard College, 1951; Ed.D., Columbia University, 1961.
- Schmehl, Edward J.** Associate Research Scientist, Physics and Astronomy, Astronomy Program. B.S., University of Santa Clara, 1963; M.S., University of Illinois, 1965; Ph.D., University of Colorado, 1970.
- Schmelsner, Joanna** Assistant to the Dean, Graduate Studies and Research; Director, Fellowship Office. B.A., Agnes Scott College, 1960; M.A., Yale University, 1962.
- Schmidt, Janet A.** Affiliate Assistant Professor, Part-time, Counseling and Student Personnel. B.A., Allegheny College, 1975; M.A., Ohio State University, 1977; Ph.D., University of Minnesota, 1983.
- Schmidtlein, Frank A.** Associate Professor, Education Policy, Planning, and Administration; Associate Director of Research, National Center for Postsecondary Governance and Finance. B.S., Kansas State University, 1954; M.A., University of California, Berkeley, 1970; Ph.D., 1979.
- Schmitz, Betty A.** Special Assistant to the President (Acting). B.A., Converse College, 1967; M.A., University of Wisconsin-Madison, 1969; Ph.D., 1977.
- Schneider, Benjamin** Professor, Psychology. B.A., Alfred University, 1960; M.B.A., University of City of New York, 1962; Ph.D., University of Maryland, 1967.
- Schneider, David I.** Associate Professor, Mathematics. A.B., Oberlin College, 1959; Ph.D., Massachusetts Institute of Technology, 1964.
- Schoenbaum, Samuel** Professor, English. B.A., Brooklyn College, 1947; M.A., Columbia University, 1949; Ph.D., 1953.
- Scholnick, Ellin K.** Professor, Psychology. A.B., Vassar College, 1958; Ph.D., University of Rochester, 1963.
- Schonfeld, Paul M.** Associate Professor, Civil Engineering. B.S., Massachusetts Institute of Technology, 1974; M.S., 1974; Ph.D., University of California-Berkeley, 1978.
- Schuma, John** Instructor, Part-time, Industrial, Technological and Occupational Education. B.A., Chicago State University, 1964.
- Schumacher, Thomas** Professor, Music. B.Mus., Manhattan College, 1958; M.S., Juilliard School of Music, 1962.
- Schumacher, Thomas L.** Associate Professor, School of Architecture. B. Arch., Cornell University, 1963; M. Arch., 1966.
- Schwab, Robert** Associate Professor, Economics. B.A., Grinnell College, 1969; M.A., University of North Carolina, 1971; Ph.D., Johns Hopkins University, 1980.
- Schwartz, Charles W.** Associate Professor, Civil Engineering. B.S.C.E., Massachusetts Institute of Technology, 1974; M.S.C.E., 1977; Ph.D., 1979.
- Schwartz, Shirley** Faculty Research Assistant, Special Education. B.S., Temple University, 1966; M.Ed., University of Maryland, 1983.
- Scott, Leland E.** Professor Emeritus, Horticulture. B.S., University of Kentucky, 1927; M.S., Michigan State University, 1929; Ph.D., University of Maryland, 1943.
- Scott, Robert E.** Assistant Professor, College of Business and Management. B.S., Washington University (St. Louis), 1975; Ph.D., University of California at Berkeley, 1989.
- Scott, Thomas W.** Associate Professor, Entomology. B.S., Bowling Green State University, 1973; M.S., 1977; Ph.D., Pennsylvania State University, 1981.
- Seclacek, William** Associate Professor, Counseling and Personnel Services; Assistant Director, Counseling Center. B.S., Iowa State University, 1960; M.S., 1961; Ph.D., Kansas State University, 1966.
- Seefeldt, Carol A.** Professor, Human Development. B.A., University of Wisconsin, 1956; M.A., University of South Florida, 1968; Ph.D., Florida State University, 1971.
- Segal, David R.** Professor, Sociology, Affiliate Professor, Government and Politics. B.A., Harpur College, 1962; M.A., University of Chicago, 1964; Ph.D., 1967.
- Segal, Jerome** Research Scholar, Institute for Philosophy and Public Policy. B.A., The City College of New York, 1964; M.A., University of Michigan, 1966; Ph.D., 1975; M.P.A., University of Minnesota, 1979.
- Segal, Mady W.** Associate Professor, Sociology. B.A., City University of New York (Queens College), 1965; M.A., University of Chicago, 1967; Ph.D., 1973.
- Segovia, Antonio V.** Associate Professor, Geology. B.S., Colorado School of Mines, 1956; Ph.D., Pennsylvania State University, 1963.
- Seibel, Ronald J.** Associate Professor, Agricultural and Extension Education; Director, Institute of Applied Agriculture; Affiliate Associate Professor, Industrial, Technological and Occupational Education; Acting Assistant Dean, College of Agriculture. B.S., University of Illinois (Urbana), 1957; M.S., 1958; Ph.D., University of Maryland, 1972.
- Seigel, Arnold E.** Director, Instructional Television. B.S., University of Maryland, 1944; M.S., Massachusetts Institute of Technology, 1947; Ph.D., University of Amsterdam (The Netherlands), 1952.
- Selden, Steven** Associate Professor, Education Policy, Planning, and Administration. B.S., SUNY (Oswego), 1963; M.S., Brooklyn College, 1967; M.A., Columbia University, 1970; Ed.D., 1971.
- Sellis, Timoleon K.** Assistant Professor, Computer Science; Assistant Professor, Institute for Advanced Computer Studies. B.Sc., National Technical University of Athens, 1982; M.Sc., Harvard University, 1983; Ph.D., University of California, 1986.
- Senbet, Lemma W.** Professor, College of Business and Management. B.B.A., Haile Selassie I University, 1970; M.B.A., University of California (Los Angeles), 1972; Ph.D., University of Buffalo, 1975.
- Sengers, Jan V.** Professor, Institute for Physical Science and Technology. B.Sc., University of Amsterdam, 1952; Ph.D., 1962.
- Serwer, Howard** Professor, Music. A.B., Yale University, 1949; Ph.D., 1969.
- Seshadri, Sudhinda** Assistant Professor, College of Business and Management. Bachelor of Technology, Indian Institute of Technology, 1976; Ph.D., The Pennsylvania State University, 1988.
- Severine, Rugumamu** Lecturer, Afro-American Studies. B.A., University of Dar-es-Salaam, 1976; M.A., 1978; M.A., Trinity College, 1980; Ph.D., University of Maryland, 1985.
- Severinsky, Alexander J.** Associate Professor, Part-time, Electrical Engineering. Ph.D., National Electronics Instrument Labs. (Moscow USSR), 1975.
- Sewell, Winifred** Lecturer Part-time, College of Library and Information Services. B.A., State College of Washington, 1938; B.S. (L.S.), Columbia University, 1940; D.Sc. (Hono.), Philadelphia College of Pharmacy and Science, 1979.
- Sham, Foon** Lecturer, Housing and Design. B.F.A., California College of Arts and Crafts, 1978; M.F.A., Virginia Commonwealth University, 1981.
- Shamma, Shihab** Associate Professor, Electrical Engineering; Assistant Professor, Institute for Advanced Computer Studies. B.S., Imperial College, 1976; M.S., Stanford, 1977; Ph.D., 1980.

- Shanker, A. Udaya** Associate Professor, Computer Science; Associate Professor, Institute for Advanced Computer Studies. B. Tech, Indian Institute for Technology, 1976; M.S., Syracuse University, 1978; Ph.D., University of Texas (Austin), 1983.
- Shanks, James B.** Professor Emeritus, Horticulture, B.S., Ohio State University, 1939; M.S., 1946; Ph.D., 1949.
- Shapiro, Nancy** Instructor, English. B.A., Brandeis University, 1969; M.Ed., University of Delaware, 1972; Ph.D., University of Maryland, College Park, 1984.
- Shapiro, Steven** Assistant Professor, Zoology. B.S., State University of New York (Stony Brook), 1972; M.S., Fairleigh Dickinson University, 1977; Ph.D., Rutgers University, 1980.
- Shayman, Mark Allen** Associate Professor, Electrical Engineering, Associate Professor, Systems Research Center. B.A., Yale University, 1975; S.M., Harvard University, 1977; Ph.D., 1981.
- Sheldon, Anne L.** Lecturer, Part-time, College of Library and Information Services. B.A., Swathmore College, 1967; M.L.S., University of Maryland, 1973.
- Sheler, Jeffery L.** Lecturer, Part-time, College of Journalism. B.A., Michigan State University, 1971.
- Shelton, Harvey W.** Affiliate Assistant Professor, Agricultural and Extension Education. B.S., Virginia State College, 1960; M.Ed., North Carolina State University, 1969; Ed.D., Virginia Polytechnic Institute & State University, 1976.
- Sherman, Alan** Assistant Professor, Computer Science (UMBC); Assistant Professor, Institute for Advanced Computer Studies. Sc.B., Brown University, 1978; S.M., Massachusetts Institute of Technology, 1981; Ph.D., 1987.
- Sherman, Lawrence W.** Professor, Institute of Criminal Justice and Criminology. B.A., Denison University, 1970; M.A., University of Chicago, 1970; M.A., Yale University, 1974; Ph.D., 1976.
- Sherron, Gene T.** B.S.B.A., University of Florida (Gainesville), 1953; M.B.A., The George Washington University, 1968; D.B.A., 1976.
- Shifflet, Anne L.** Lecturer, Part-time, Human Development. B.S., Bridgewater College, 1954; M.A., American University, 1971; M.A., Hood College, 1978; Ph.D., University of Maryland, 1983.
- Shih, Tien-Mo** Associate Professor, Mechanical Engineering. B.S., National Taiwan University, 1970; M.S., University of Southern California, 1973; Ph.D., University of California (Berkeley), 1977.
- Shirmohammadi, Adel** Assistant Professor, Agricultural Engineering. B.S., University of Rezaeiyyeh (Iran), 1974; M.S., University of Nebraska, 1977; Ph.D., North Carolina State University, 1982.
- Shneiderman, Ben** Professor, Computer Science; Professor, Institute for Advanced Computer Studies. B.S., City College of New York, 1968; M.S., State University of New York (Stony Brook), 1972; Ph.D., 1973.
- Shorb, Mary S.** Professor Emerita, Poultry Science. B.S., College of Idaho, 1928; Sc.D., Johns Hopkins University, 1933.
- Shreeve, Charles A.** Professor Emeritus, Part-time, Mechanical Engineering. B.E., Johns Hopkins University, 1935; M.S., University of Maryland, 1943.
- Shukla, Jagdish** Professor, Meteorology. B.Sc., Banaras Hindu University (India), 1962; M.Sc., 1964; Ph.D., 1971; Sc.D., Massachusetts Institute of Technology, 1976.
- Shyles, Leonard C.** Assistant Professor, Communication Arts and Theatre. B.A., Brooklyn College (City of New York), 1971; M.S., 1975; Ph.D., Ohio State University, 1981.
- Sidhu, Deepinder** Professor, Computer Science (UMBC); Professor, Institute for Advanced Computer Studies. B.S., University of Kansas, 1966; M.S., State University of New York, 1973; Ph.D., 1979.
- Siegrist, Henry G., Jr.** Associate Professor, Geology. B.A., Lehigh University, 1956; M.S., Pennsylvania State University, 1959; Ph.D., 1961.
- Sieling, Fred W.** Instructor, Part-time, Agricultural and Extension Education. B.S., University of Maryland, 1936; M.S., 1938.
- Sies, Mary C.** Assistant Professor, American Studies. A.B., Michigan State University, 1974; A.M., University of Michigan, 1977; Ph.D., 1987.
- Sigell, Harold F.** Professor, Psychology. B.S., City University of New York (City College), 1964; Ph.D., University of Texas, 1968.
- Sillo, Charles B., Jr.** Associate Professor, Electrical Engineering. B.S.E.E., University of Notre Dame, 1965; M.S.E.E., 1967; Ph.D., 1970.
- Silverman, Joseph** Professor, Chemical and Nuclear Engineering. B.A., City University of New York (Brooklyn), 1944; M.A., Columbia University, 1948; Ph.D., 1951.
- Simms, Betty H.** Professor, Special Education. B.A., Harns Teachers College, 1947; M.A., University of Michigan, 1955; Ed.D., University of Maryland, 1962.
- Simon, Julian L.** Professor, College of Business and Management. B.A., Harvard University, 1953; M.B.A., University of Chicago, 1959; Ph.D., 1961.
- Simpson, Sally S.** Assistant Professor, Institute of Criminal Justice and Criminology. B.S., Oregon State University, 1976; M.A., Washington State University, 1978; Ph.D., University of Massachusetts (Amherst), 1985.
- Sims, Henry P., Jr.** Professor, College of Business and Management. B.S., Purdue University, 1961; M.B.A., University of Detroit, 1967; Ph.D., Michigan State University, 1971.
- Sims, Laura S. Dean,** College of Human Ecology; Professor, Human Nutrition and Food Systems. B.S., The Pennsylvania State University, 1965; M.P.H., The University of Michigan, 1967; Ph.D., Michigan State University, 1971.
- Sincell, C. John** Associate Staff, Communication Arts and Theatre. B.A., University of Maryland, 1961; M.A., 1984.
- Sirkis, James S.** Assistant Professor, Mechanical Engineering. B.S., University of Florida, 1984; M.S., 1985; Ph.D., 1988.
- Sisler, Hugh D.** Professor, Botany. B.S., University of Maryland, 1949; M.S., 1951; Ph.D., 1953.
- Skiff, Frederick N.** Assistant Professor, Physics. B.S., Cornell University, 1979; Ph.D., Princeton University, 1985.
- Skuja, Andris** Professor, Physics and Astronomy. B.Sc., University of Toronto, 1966; Ph.D., University of California (Berkeley), 1972.
- Slabinski, Victor** Part-time, Aerospace Engineering. B.S., Case Institute of Technology, 1961; M.S., 1965; Ph.D., Case Western Reserve University, 1970.
- Slater, Mary C.** Lecturer (Part time), Dance. B.S., University of Maryland, 1977.
- Slater, Susanne V.** Lecturer, School of Public Affairs. B.A., Smith College, 1975; M.B.A., Cornell Graduate School of Management, 1979.
- Slater, Wayne H.** Associate Professor, Curriculum and Instruction. B.S., University of Minnesota (Duluth), 1967; M.A., 1972; Ph.D., University of Minnesota (Minneapolis), 1982.
- Slaughter, Leon H.** Assistant Professor, Agronomy. B.S., Howard University, 1973; M.S., 1975; Ph.D., University of Maryland, 1988.
- Slawsky, Milton M.** Visiting Lecturer, Part-time, Physics and Astronomy. B.S., Rensselaer Polytechnic Institute, 1933; M.S., California Institute of Technology, 1935; Ph.D., University of Michigan, 1938.
- Slawsky, Zaka I.** Professor, Part-time, Physics and Astronomy. B.S., Rensselaer Polytechnic Institute, 1933; M.S., California Institute of Technology, 1935; Ph.D., University of Michigan, 1938.
- Sloan, Muriel R.** Professor, Physical Education; Assistant Vice President, Academic Affairs. B.A., Hunter College (New York), 1947; M.A., Teachers College (Columbia University), 1948; Ph.D., University of Wisconsin, 1958.
- Slote, Michael** Professor and Chairman, Philosophy. B.A., Harvard College, 1961; Ph.D., Harvard University, 1965.
- Siud, Eric V.** Professor, Mathematics. B.A., Harvard College, 1972; Ph.D., Massachusetts Institute of Technology, 1976.
- Small, Eugene B.** Associate Professor, Zoology. B.A., Wayne State University, 1953; M.S., 1958; Ph.D., University of California (Los Angeles), 1964.
- Smallets-Palmer, Sharon M.** Instructor, Hearing and Speech Sciences. B.A., University of Maryland, 1980; M.A., 1982.
- Smead, Edwin H.** Lecturer, Afro-American Studies. B.A., University of Maryland, 1970; M.A., 1972; Ph.D., 1979.
- Smith, Ann C.** Instructor, Microbiology. B.A., College of Wooster (Ohio), 1977; M.S. & Ph.D., University of Rochester, 1982.
- Smith, Barry D.** Professor, Psychology. B.S., Pennsylvania State University, 1962; M.A., Bucknell University, 1964; Ph.D., University of Massachusetts, 1967.
- Smith, Betty F.** Professor and Chairman, Textiles and Consumer Economics. B.S., University of Arkansas, 1951; M.S., University of Tennessee, 1956; Ph.D., University of Minnesota, 1960; Ph.D., 1965.
- Smith, Carl A.** Associate Professor, Computer Science; Associate Professor, Institute for Advanced Computer Studies. B.S., University of Vermont, 1972; M.S., SUNY (Buffalo), 1975; Ph.D., 1979.
- Smith, Douglas A.** Associate Professor, Institute of Criminal Justice and Criminology. A.B., Florida Atlantic University, 1978; A.M., Indiana University, 1980; Ph.D., 1982.
- Smith, Elbert B.** Professor, History. A.B., Maryville College, 1940; A.M., University of Chicago, 1947; Ph.D., 1949.
- Smith, Gary L.** Instructor, Agricultural Engineering. B.S., Pennsylvania State University, 1973; M.S., 1975.
- Smith, Georgia R. Anstine** Lecturer, Part-time, Music. B.A., Dickinson College, M.M., Peabody Conservatory, 1979.
- Smith, James M.** Instructor, Industrial, Technological and Occupational Education. B.S., California State College, 1982; M.A., University of Maryland, 1987; Ph.D., 1989.
- Smith, Kenneth G.** Associate Professor, College of Business and Management. B.S., University of Rhode Island, 1970; M.B.A., 1972; Ph.D., University of Washington, 1983.
- Smith, Martha** Assistant Professor, English. B.A., Livingston College (Rutgers University), 1977; M.A., Rutgers University, 1982; Ph.D., 1985.
- Smith, Michael V.** Assistant Professor, College of Journalism. A.M., University of Chicago, 1980; Ph.D., University of Michigan, 1986.
- Smith, Mildred F.** Associate Professor, Agricultural and Extension Education. B.S., Mississippi State University, 1964; M.Ed., University of Florida, 1967; Ph.D., University of Maryland, 1978.
- Smith, Nancy** Instructor, English. B.A., Sweet Bnar College, 1954; M.A., Western Maryland College, 1965; Ph.D., University of Maryland, 1981.



- Smith, Paul J.** Associate Professor, Mathematics. B.S., Drexel Institute of Technology, 1965; M.S., Case Western Reserve University, 1967; Ph.D., 1969.
- Smith, Theodore G.** Professor, Chemical and Nuclear Engineering. B.E.S., John Hopkins University, 1956; M.E.S., 1958; D.Sc., Washington University, 1960.
- Smith-Hill Sandra J.** Adjunct Associate Professor, Zoology. B.S., University of Michigan, 1965; M.S., 1966; Ph.D., 1971.
- Smool, Joe** Lecturer, Part-time, Geology. B.S., University of Maryland, 1973; Ph.D., The Johns Hopkins University, 1977.
- Snow, George A.** Professor, Physics and Astronomy. B.S., City University of New York (City College), 1945; M.A., Princeton University, 1947; Ph.D., 1949.
- Snyder, David B.** Associate Professor, College of Veterinary Medicine. B.S., University of West Virginia, 1975; M.S., University of Maryland, 1978; Ph.D., 1983.
- Soares, Joseph H. Jr.** Professor, Poultry Science. B.S., University of Maryland, 1964; M.S., 1966; Ph.D., 1969.
- Soberon-Ferrer, Horacio** Assistant Professor, Textiles and Consumer Economics. Licentiate, University of Mexico, 1975; M.S., Clemson University, 1980; Ph.D., 1986.
- Soergel, Dagobert** Professor, College of Library and Information Services. B.S., University of Freiburg, 1960; M.S., 1964; Ph.D., 1967.
- Solomons, Theophanes** Professor, Horticulture. B.S., Athens College of Agriculture (Greece), 1956; M.S., 1957; Ph.D., Cambridge University (England), 1963.
- Solow, Max** Lecturer, Part-time, Physics and Astronomy. B.E.E.E., George Washington University, 1943; M.S., 1950; Ph.D., Catholic University, 1957.
- Soltan, Karol E.** Associate Professor, Government and Politics. B.A., Harvard University, 1972; M.A., Sociology, University of Chicago, 1978; M.A., Public Policy, 1981; Ph.D., 1982.
- Soobitsky, Joel R.** Adjunct Associate Professor, Agricultural and Extension Education. B.S., University of Connecticut, 1962; M.S., Kansas State University, 1963; Ph.D., Ohio State University, 1971.
- Sorokin, Constantine A.** Research Professor Emeritus, Botany. A.B., Don Institute, 1927; M.A., Academy of Sciences (Moscow), 1936; Ph.D., University of Texas, 1955.
- Sosnowski, Saul** Professor and Chairman, Spanish and Portuguese. B.A., University of Scranton, 1967; M.A., University of Virginia, 1968; Ph.D., 1970.
- Soubra, Badh C.** Assistant Professor, College of Business and Management. B.A., American University (Beirut), 1975; M.B.A., University of Southern California, 1977; Ph.D., New York University, 1985.
- Soyer, David** Professor, Part-time, Music. Member, Guarneri Quartet.
- Spalding, Carol A.** Instructor, Zoology. B.S., Gordon College, 1964; M.S., University of Maryland, 1970.
- Sparks, David S.** Professor, History; Vice Chancellor for Graduate Studies and Research. B.A., Grinnell College, 1944; M.A., University of Chicago, 1945; Ph.D., 1951.
- Sparks, Richmond L.** Assistant Professor, Music. B.M.E., Illinois State University, 1977; M.M., Arizona State University, 1984.
- Speer, Marilyn G.** Instructor, Industrial, Technological and Occupational Education. B.A., University of Northern Colorado (Greeley), 1961.
- Speer, Robert J.** Lecturer, Part-time, College of Business and Management. B.A., University of Notre Dame, 1967; M.S., Georgetown University, 1970.
- Speece, Deborah L.** Assistant Professor, Special Education. B.S., Bowling Green State University, 1974; M.Ed., 1978; Ph.D., University of North Carolina (Chapel Hill), 1984.
- Speicher, Suzanne** Instructor, Part-time, Human Development. A.B., Marywood College, 1972; M.Ed., University of Maryland, 1976; Ph.D., 1984.
- Spiegel, Gabrielle M.** Associate Professor, History. B.A., Bryn Mawr College, 1964; M.A.T., Harvard University, 1965; M.A., Johns Hopkins University, 1969; Ph.D., 1974.
- Spiro, Marie** Associate Professor, Art History. B.A., Wilson College, 1955; M.A., Institute of Fine Arts, 1961; Ph.D., 1975.
- Spivak, Steven M.** Professor, Textiles and Consumer Economics. B.S., Philadelphia College of Textiles and Science, 1963; M.S., Georgia Institute of Technology, 1965; Ph.D., University of Manchester, 1967.
- Spaine, John E.** Associate Professor, Education Policy, Planning, and Administration. B.A., University of New Hampshire, 1963; M.A., 1965; Ed.D., Boston University, 1973.
- Sprague, Marsha W.** Instructor, Maryland English Institute. B.A., Lake Erie College, 1973; M.A., University of Minnesota, 1981.
- Srinath, Laxmipuram** Visiting Professor, Mechanical Engineering. B.E.M.E., Bangalore University, 1950; D.I.I.Sc., Indian Institute of Science, Bangalore, 1952; Ph.D., Illinois Institute of Technology (Chicago), 1958.
- Ssemakula, Emmanuel** Assistant Professor, Mechanical Engineering. B.S., University of Manchester, 1980; M.S., 1981; Ph.D., 1984.
- Stairs, Allen** Associate Professor, Philosophy. B.A., University of New Brunswick, 1973; M.A., University of Western Ontario, 1975; Ph.D., 1978.
- Staley, Gregory A.** Associate Professor, Classics. B.A., Dickinson College, 1970; M.A., Princeton University, 1973; Ph.D., 1975.
- Stangor, Charles G.** Assistant Professor, Psychology. B.A., Beloit College, 1973; M.A., New York University, 1984; Ph.D., 1986.
- Stanzione, Kaydon** Lecturer, Part-time, Aerospace Engineering. B.S., Rutgers University, 1978; M.S., 1979.
- Stark, Francis C. Jr.** Professor Emeritus, Horticulture. B.S., Oklahoma State University, 1940; M.S., University of Maryland, 1941; Ph.D., 1948.
- Stecker, Floyd** Lecturer, Part-time, Physics and Astronomy. B.S., Massachusetts Institute of Technology, 1963; M.S., Harvard, 1965; Ph.D., 1968.
- Steel, Donald H.** Professor, Physical Education. B.A., Trenton State College, 1955; M.A., University of Maryland, 1957; Ph.D., Louisiana State University, 1964.
- Steele, Robert E.** Associate Professor, Psychology. B.A., Morehouse College, 1965; M.Div., Episcopal Theological School, 1968; M.P.H., Yale University, 1971; M.S., 1974; Ph.D., 1975.
- Steffian, John Ames** Professor, School of Architecture. B. Arch., University of Pennsylvania, 1957; M. Arch., Harvard Graduate School of Design, 1967.
- Stehle, Eva** Assistant Professor, Classics. B.A., University of Pennsylvania, 1966; Ph.D., University of Cincinnati, 1971.
- Stein, Daniel C.** Associate Professor, Microbiology. B.S., University of Notre Dame, 1977; M.S., University of Rochester, 1981; Ph.D., 1981.
- Steiner, Paul W.** Associate Professor, Botany. B.A., Gettysburg College, 1964; M.S., Cornell University, 1969; Ph.D., 1976.
- Steinhardt, Arnold** Professor, Part-time, Music. Artist Diploma, Curtis Institute of Music, 1959; Member, Guarneri Quartet.
- Steinhauer, Allen L.** Professor and Chairman, Entomology. B.S.A., University of Manitoba, 1953; M.S., Oregon State University, 1955; Ph.D., 1958.
- Steinman, Robert M.** Professor, Psychology. D.D.S., Saint Louis University, 1948; M.A., New School For Social Research, 1962; Ph.D., 1964.
- Stellmacher, Karl L.** Professor Emeritus, Mathematics. Abiturient, Gymnasium Sundense, 1927; Staats-Examen, University of Göttingen, 1933; Ph.D., 1936.
- Stephan, Wolfgang H.** Assistant Professor, Zoology. Diploma, University of Erlangen, 1977; Ph.D., University of Konstanz, 1981.
- Stephens, Debra L.** Assistant Professor, College of Business and Management. B.A., The University of Texas (Austin), 1975; M.A., The University of Chicago, 1981; Ph.D., 1983.
- Stephens, E. Robert** Professor, Education Policy, Planning, and Administration. B.S., Morningside College, 1952; M.S., Drake University, 1958; Ph.D., University of Iowa, 1966.
- Stephenson, Edward H.** Affiliate Associate Professor, College of Veterinary Medicine. D.V.M., Texas A & M University, 1961; M.S., University of Wisconsin, 1979; Ph.D., Colorado State University, 1973.
- Stepp, Carl S.** Associate Professor, College of Journalism. B.A., University of South Carolina, 1970; M.A., 1972.
- Stern, Joshua** Visiting Lecturer Part-time, Physics and Astronomy. B.S., City College of New York, 1935.
- Sternberg, Yaron M.** Professor, Civil Engineering. B.S., University of Illinois, 1961; M.S., University of California (Davis), 1963; Ph.D., 1965.
- Sternheim, Charles E.** Professor, Psychology. B.A., City University of New York (Brooklyn College), 1961; Ph.D., University of Rochester, 1967.
- Stettner-Eaton, Bobbi** Research Assistant, Special Education. B.S., University of Maryland, 1972; M.A., 1981.
- Stevens, George A.** Professor Emeritus, Agricultural and Resource Economics. B.S., Virginia Polytechnic Institute, 1941; Ph.D., University of Maryland, 1957.
- Stevens, Milton** Lecturer (Part-time), Music. B., Music Oberlin College Conservatory, 1965; M.M., University of Illinois, 1966; D.M.A., Boston University, 1975.
- Stewart, Daryl G.** Assistant to the Dean, Health Professions Advising, Undergraduate Studies. B.S., Cornell University, 1956; Ph.D., 1959.
- Stewart, Gilbert W.** Professor, Computer Science; Professor, Institute for Advanced Computer Studies. A.B., University of Tennessee, 1962; Ph.D., 1968.
- Stewart, Greig M.** Assistant Dean, College of Journalism. B.A., University of Massachusetts (Amherst), 1973; M.A., University of Maryland, 1979; AGS Cert., 1979; Ph.D., American University, 1983.
- Stewart, James M.** Professor, Chemistry and Biochemistry. B.A., Western Washington College, 1953; Ph.D., University of Washington, 1958.
- Stewart, Larry E.** Associate Professor and Chairman, Agricultural Engineering. B.S.A.E., West Virginia University, 1960; M.S., 1961; Ph.D., University of Maryland, 1972.
- Stewart, Sylvia** Assistant to the Vice President, Administrative Affairs; Assistant Vice President, Administrative Affairs. B.A., Berea College, 1968; M.S., Ohio University, 1971; Ed.D., Northern Colorado University, 1977.
- Stifel, Peter B.** Associate Professor, Geology. B.S., Cornell University, 1958; Ph.D., University of Utah, 1964.
- Stockdale, Donald K.** Assistant Professor, College of Business and Management. B.A., Yale College, 1974; B.A., King's College, 1976; J.D., Yale University, 1980.
- Stocker, Patricia D.** Assistant Dean, College of Business and Management. B.A., North Dakota State University, 1965; M.B.A., University of Maryland, 1976; D.B.A., University of Colorado (Boulder), 1984.
- Stone, Clarence N.** Professor, Urban Studies; Professor, Government and Politics. A.B., University of South Carolina, 1957; M.A., Duke University, 1960; Ph.D., 1963.

- Stone, Eric L.** Lecturer, Part-time, Textiles and Consumer Economics. B.A., Franklin and Marshall College, 1974; J.D., American University, 1977.
- Stotts, P. David, Jr.** Assistant Professor, Computer Science; Assistant Professor, Institute for Advanced Computer Studies. B.S., University of Richmond, 1979; M.S., University of Virginia, 1981; Ph.D., 1985.
- Stough, Kenneth F.** Associate Professor, Industrial, Technological and Occupational Education. B.S., Millersville State College, 1954; M.Ed., Pennsylvania State University, 1961; Ed.D., University of Maryland, 1969.
- Stowasser, Karl** Associate Professor, History. Ph.D., University of Muenster, 1966.
- Stowe, Laura** Assistant Professor, Communication Arts and Theatre. B.A., University of California (Davis), 1980; M.F.A., University of California (Irvine), 1983.
- Strand, Ivar E. Jr.** Professor, Agricultural and Resource Economics. B.A., University of Rochester, 1967; M.A., University of Rhode Island, 1971; Ph.D., 1975.
- Straney, David C.** Assistant Professor, Botany. B.A., Amherst College, 1979; Ph.D., University of Chicago, 1988.
- Straszheim, Mehlon R.** Professor and Chair, Economics. B.S., Purdue University, 1961; Ph.D., Harvard University, 1965.
- Strauch, Gabriele L.** Assistant Professor, Germanic and Slavic Languages and Literatures. B.A., Saarbrücken (West Germany), 1969; M.A., Southern Illinois University (Carbondale), 1975; Ph.D., University of Wisconsin (Madison), 1984.
- Straw, Philip K.** Lecturer, Part-time, University Honors Program. B.A., University of Kentucky (Lexington), 1967; M.A., University of Maryland, 1982.
- Straw, Rebecca J.** Lecturer, Part-time, Industrial, Technological and Occupational Education. B.S., Ohio University, 1970; M.Ed., University of Maryland, 1974; Ph.D., 1987.
- Street, Theodore P.** Instructor, Institute of Applied Agriculture. B.S., University of Maryland, 1973; M.S., 1978.
- Stréin, William** Associate Professor, Counseling and Personnel Services. B.S., Pennsylvania State University, 1970; M.S., 1973; D.Ed., 1979.
- Stricklin, W. Ray** Associate Professor, Animal Sciences. B.S., University of Tennessee, 1968; M.S., 1972; Ph.D., Pennsylvania State University, 1975.
- Striffler, Charles D.** Professor, Electrical Engineering. B.S.E., University of Michigan, 1961; M.S.E., 1963; Ph.D., 1972.
- Strobell, Adah P.** Associate Professor, Recreation. B.A., San Francisco State College, 1953; M.S., University of California (Los Angeles), 1958; Ph.D., University of Illinois (Urbana), 1966.
- Strong, Beverly N.** Faculty Research Assistant, Special Education. B.S., St. Cloud State University, 1957; M.S., 1968.
- Strudler, Alan** Research Scholar, Institute for Philosophy and Public Policy. B.A., Johnston College, 1975; M.A., University of California (Riverside), 1977; Ph.D., University of Arizona, 1982; J.D., 1985.
- Strune, Nancy L.** Affiliate Associate Professor, History; Associate Professor, Physical Education. B.S., University of Wisconsin, 1972; M.A., University of Maryland, 1975; Ph.D., 1979.
- Stuart, William T.** Assistant Professor and Associate Chair, Anthropology. B.A., George Washington University, 1961; Ph.D., University of Oregon, 1971.
- Stuck, Garrett** Assistant Professor, Mathematics. B.S., Massachusetts Institute of Technology, 1983; M.S., University of Chicago, 1984; Ph.D., 1988.
- Stunkard, Clayton L.** Professor, Measurement, Statistics, and Evaluation. B.S., University of Minnesota, 1948; M.A., 1951; Ph.D., 1959.
- Stuntz, Calvin F.** Professor Emeritus, Chemistry and Biochemistry. B.S., University of Buffalo, 1939; Ph.D., 1947.
- Sturtz, Charles F.** Vice President, Administrative Affairs. B.A., Wittenberg University, 1958; M.A., Wayne State University, 1961.
- Stutte, Gary Wayne** Assistant Professor, Horticulture. B.S., Oklahoma State University, 1979; M.S., University of Georgia, 1981; Ph.D., University of California (Davis), 1984.
- Subbaraman, Sivagami** Instructor, English. B.A., Stella Mabus College, 1976; M.A., University of Illinois, 1978.
- Sublett, Henry L.** Professor, Retired, Curriculum and Instruction. A.B., Duke University, 1951; M.Ed., University of Virginia, 1953; Ed.D., 1959.
- Subrahmanian, Venkatraman S.** Assistant Professor, Computer Science. M.Sc., Birla Institute of Technology and Science, 1985; M.S., Syracuse University, 1987; Ph.D., 1989.
- Succar, Patricia R.** Assistant Professor, Economics. B.A., University of the Andes, 1976; M.A., 1977; Ph.D., Northwestern University, 1983.
- Sucher, Joseph** Professor, Physics and Astronomy. B.S., Brooklyn College, 1952; Ph.D., Columbia University, 1957.
- Sullivan, Denis F.** Associate Professor, Industrial, Technological and Occupational Education. A.B., Tufts University, 1966; M.S., Catholic University, 1975; Ph.D., University of North Carolina, 1972.
- Sumida, Jon T.** Associate Professor, History. B.A., University of California (Santa Cruz), 1971; M.A., University of Chicago, 1974; Ph.D., 1982.
- Suppe, F. R.** Professor, Philosophy. A.B., University of California (Riverside), 1962; M.A., University of Michigan, 1964; Ph.D., 1967.
- Sutherland, Donald M. G.** Professor, History. B.A., Carleton University, 1965; M.A., University of Sussex, 1966; Ph.D., University of London, 1974.
- Svenonius, Lars** Professor, Philosophy. Filosofie Kandidat, Uppsala University, 1950; Filosofie Magister, 1955; Filosofie Licentiat, 1955; Filosofie Doktor, 1960.
- Svirbeley, William J.** Professor Emeritus, Chemistry and Biochemistry. B.S., Carnegie Institute of Technology, 1931; M.S., 1932; D.Sc., 1935.
- Swank, Lowell J.** Visiting Lecturer, Part-time, Physics and Astronomy. B.A., University of California (Berkeley), 1960; Ph.D., University of Illinois (Urbana), 1967.
- Swertz, Harry J.** Associate Professor, Horticulture. B.S., State University of New York (Buffalo), 1973; Ph.D., Cornell University, 1979.
- Sweet, Daniel** Professor, Mathematics. B.S., Fairleigh Dickinson University, 1965; Ph.D., Brown University, 1969.
- Swistak, Piotr** Assistant Professor, Government and Politics. M.S., University of Warsaw, 1978; M.A., 1979; M.S., University of Chicago, 1985; Ph.D., 1987.
- Swope, Daniel A.** Lecturer, Part-time, College of Business and Management. B.S., Pennsylvania State University, 1942; M.S., Cornell University, 1943; Ph.D., Pennsylvania State University, 1958.
- Syski, Ryszard** Professor, Mathematics. B.S., Chelsea College, 1954; Ph.D., University of London (Chelsea), 1960.
- Sze, Heven** Associate Professor, Botany. B.S., National Taiwan University, 1968; M.S., University of California (Davis), 1970; Ph.D., Purdue University, 1975.
- Szepele, Bela** Adjunct Associate Professor, Part-time, Human Nutrition and Food Systems. B.A., Albion College (Michigan), 1961; M.S., Colorado State University, 1964; Ph.D., University of California, Davis, 1968.
- Taff, Charles A.** Professor, Emeritus, College of Business and Management. B.S.C., State University of Iowa, 1937; M.A., 1941; Ph.D., University of Maryland, 1952.
- Talaat, Mostafa E.** Professor, Mechanical Engineering. B.S., University of Cairo, 1946; M.S., University of Pennsylvania, 1947; Ph.D., 1951.
- Terlaca, Reiph** Professor and Chairman, French and Italian. B.A., Emory University, 1954; M.A., 1958; Ph.D., Harvard University, 1966.
- Tesch, Uri** Assistant Professor, Mechanical Engineering. B.Sc., Technion University, Israel, 1976; M.Sc., Illinois Institute of Technology, 1978. Ph.D., Massachusetts Institute of Technology, 1983.
- Tsai, Peter** Lecturer, Part-time, Housing and Design. B.I.D., Pratt Institute, 1955.
- Tsavares, Frank** Instructor (Part-time), Communication Arts and Theatre. B.A., Wheaton College, 1966; M.A., Northern Illinois University (DeKalb), 1969; Ph.D., University of Texas at Austin, 1976.
- Taylor, Kenneth** Assistant Professor, Philosophy. A.B., University of Notre Dame, 1977; Ph.D., University of Chicago, 1977.
- Taylor, Leonard S.** Professor, Electrical Engineering. A.B., Harvard University, 1951; M.S., New Mexico State University, 1956; Ph.D., 1960.
- Taylor, Martha L.** Assistant Professor, Human Nutrition and Food Systems. B.S., University of Delaware, 1971; M.S., University of Maryland, 1972; Ph.D., 1977.
- Taylor, Mary S.** Associate Professor, College of Business and Management. B.A., University of South Alabama, 1973; M.S., Iowa State University, 1975; Ph.D., Purdue University, 1978.
- Teachman, Jay D.** Professor, Sociology. B.A., Western Washington State College, 1974; M.A., University of Chicago, 1976; Ph.D., 1978.
- Teague, Gerald V.** College of Education, Jr. for Educational Res. & Development. B.A., Barrington College, 1968; M.A., University of Maryland, 1973; Ph.D., 1976.
- Teglasi-Golubcow, Hedwig** Associate Professor, Counseling and Personnel Services. B.A., Douglass College, 1969; M.A., Temple University, 1971; Ph.D., Hofstra University, 1975.
- Teplitz, Vigdor L.** Adjunct Professor, Physics and Astronomy. S.B., MIT, 1958; Ph.D., University of Maryland, 1962.
- Teramura, Alan H.** Professor and Acting Chairman, Botany. B.A., California State University, 1971; M.A., 1973; Ph.D., Duke University, 1978.
- Terchek, Ronald J.** Associate Professor, Government and Politics. B.A., University of Chicago, 1958; M.A., 1960; Ph.D., University of Maryland, 1965.
- Therrien, Madeleine B.** Professor, French and Italian. Licence d'enseignement, University of Paris, Sorbonne (France), 1959; Ph.D., Michigan State University, 1966.
- Thiratrakolchai, Sombal** Assistant Professor, School of Architecture. B.Arch., Sripakorn University (Thailand), 1978; M.Arch., University of Oklahoma, 1979; M.E.P., Environmental Planning, Arizona State University, 1981; D.Arch., University of Michigan, 1986.
- Thirumalai, Devarajan** Assistant Professor, Chemistry and Biochemistry; Assistant Professor, Institute for Physical Science and Technology. M.Sc., Indian Institute of Technology (Kanpur), 1977; Ph.D., University of Minnesota, 1982.
- Thomas, Owen P.** Professor, Poultry Science. B.S., University of Natal, 1954; M.S., 1962; Ph.D., University of Maryland, 1966.
- Thomas, Stephen B.** Assistant Professor, Health Education. B.S., The Ohio State University, 1980; M.S., Illinois State University, 1981; Ph.D., Southern Illinois University, 1985.

- Thomas, William** Affiliate Assistant Professor, Counseling and Personnel Services; Vice President, Student Affairs. B.S., University of Tennessee, 1955; M.S., 1965. Ph.D., Michigan State University, 1970.
- Thompson, Arthur H.** Professor Emeritus, Horticulture. B.S., University of Minnesota, 1941; Ph.D., University of Maryland, 1945.
- Thompson, Christien** Adjunct Professor, Entomology B.S., University of Massachusetts, 1966; Ph.D., 1969.
- Thompson, Derek** Associate Professor, Geography B.A., Manchester University, 1960, M.A., 1962; Ph.D., Indiana University, 1969.
- Thompson, Owen E.** Professor, Meteorology B.S., University of Missouri, 1961, M.S., 1963, Ph.D., 1966.
- Thompson, Roger R.** Assistant Professor, History B.A., Stanford University, 1979, M.A., Yale University, 1981; Ph.D., 1985.
- Thorpe, James G.** Assistant Professor, Housing and Design. B.A., University of Maryland, 1973; M.F.A., 1975.
- Tils, Andre Leon** Associate Professor, Electrical Engineering, Associate Professor, Systems Research Center. E.E., University of Liege, Belgium, 1974; M.S., University of California (Berkeley), 1979; Ph.D., 1980.
- Tobin, Mary F.** Lecturer, Part-time, University Honors Program. B.A., University of Maryland, 1973; M.A., 1978; Ph.D., 1981.
- Toll, John S.** Professor, Physics and Astronomy. B.S., Yale University, 1944; A.M., Princeton University, 1948, Ph.D., 1952.
- Tomasetti, James A.** Instructor, part-time, Industrial, Technological and Occupational Education. B.S., University of Maryland, 1971; M.A., 1973; Ph.D., 1981.
- Torney-Purta, Judith** Professor, Human Development. A.B., Stanford University, 1959; M.A., University of Chicago, 1962; Ph.D., 1965.
- Tossell, John A.** Professor, Chemistry and Biochemistry. B.S., University of Chicago, 1966; M.A., Harvard University, 1967; Ph.D., 1972.
- Townsend, Betty W.** Instructor, English. B.A., University of North Carolina, 1944; M.A., University of Maryland, 1961.
- Townsend, John R.G.** Professor and Chairman, Geography, B.Sc., University College London, 1967; Ph.D., 1971.
- Traver, Paul P.** Professor, Music. B.Mus., Catholic University of America, 1955; M.Mus., 1957; D.M.A., Stanford University, 1967.
- Tree, Michael** Professor, Part-time, Music. Artist Diploma, Curtis Institute of Music, 1955; Member, Guarnieri Quartet.
- Treiter, Steven A.** Associate Professor, Electrical Engineering. B.S., University of Maryland, 1962; M.A., Princeton University, 1964; Ph.D., 1966.
- Trickett, Edison J.** Professor, Psychology. B.A., Trinity College, 1963; M.A., Ohio State University, 1965; Ph.D., 1967.
- Trimble, Virginia L.** Visiting Professor, Physics and Astronomy, Astronomy Program. B.S., University of California (Los Angeles), 1962; M.S., California Institute of Technology, 1965; Ph.D., 1968; M.S., Cambridge University, 1969.
- Tripathi, Satish K.** Professor and Chairman, Computer Science. B.S., Banaras Hindu University, 1968; M.S., 1970; M.S., University of Alberta, 1974; M.S., University of Toronto, 1976; Ph.D., 1979.
- Troth, Eugene W.** Professor, Music. B.Mus., DePaul University, 1947; M.Mus., 1950; Ph.D., University of Michigan, 1958.
- Trousdale, Marion S.** Professor, English. B.A., University of Michigan, 1951; M.A., University of California (Berkeley), 1955; Ph.D., University of London (England), 1975.
- Trout, David L.** Adjunct Professor, Part-time, Human Nutrition and Food Systems. B.A., Swarthmore College, 1951; M.A., Duke University, 1954; Ph.D., 1958.
- Trull, Anne** Professor, Art. B.A., Bryn Mawr College, 1943; Doctor of Fine Arts, St. Mary's College, Doctor of Fine Arts, Kansas City Art Institute, Doctor of Humane Letters, The Corcoran School of Art.
- Tsai, Lung-Wen** Associate Professor, Mechanical Engineering, Associate Professor, Systems Research Center. B.S., National Taiwan University, 1967, M.S., State University of New York (Buffalo), 1970; Ph.D., Stanford University, 1973.
- Tsul, Chung Y.** Assistant Professor, Mechanical Engineering. B.S., University of Hong Kong, 1953; M.S., Purdue University, 1959; Ph.D., 1967.
- Turner, Thomas R.** Associate Professor, Agronomy. B.S., Virginia Polytechnic Institute, 1973; M.S., Pennsylvania State University, 1976; Ph.D., 1979.
- Tuthill, Dean F.** Professor, Agricultural and Resource Economics. B.S., Cornell University, 1949; M.S., University of Illinois (Urbana), 1954; Ph.D., 1958.
- Twigg, Bernard A.** Professor Emeritus, Horticulture. B.S., University of Maryland, 1952; M.S., 1955, Ph.D., 1959.
- Tyler, Bonnie B.** Associate Professor, Human Development. B.A., DePaul University, 1948; M.A., Ohio State University, 1949; Ph.D., 1954.
- Tyler, Forrest B.** Professor, Psychology. B.A., Depauw University, 1948; M.A., Ohio State University, 1950; Ph.D., 1952.
- Tyler, Robert W.** Assistant Professor, Physical Education. A.B., Drury College, 1957; M.S., Pennsylvania State University, 1959; Ph.D., 1969.
- Ufema, Kate** Assistant Professor, Theatre. B.A., Pennsylvania State University, 1971; M.A., 1974; M.F.A., 1974.
- Unal, Haluk** Assistant Professor, College of Business and Administration. B.A., Istanbul University, 1973; Doctor of Economics, 1976; M.A., The Ohio State University, 1981; Ph.D., 1985.
- Urban, Louise McClelland** Associate Professor, Music. B.A., College of Wooster, 1957; M.A., Columbia University, 1959.
- Urigereka, Juan** Assistant Professor, Linguistics Department. B.A., University of Deusto, M.A., University of Connecticut, 1986; Ph.D., 1988.
- Uslaner, Eric M.** Associate Professor, Government and Politics. B.A., Brandeis University, 1968; M.A., Indiana University, 1970; Ph.D., 1973.
- Vaccaro, Paul** Professor, Physical Education. B.S., University of Massachusetts, 1970; M.A., University of Florida, 1973; Ed.D., 1976.
- Vakharia, Vikram N.** Assistant Professor, College of Veterinary Medicine. B.S., Bombay University, 1971; M.S., Wichita State University, 1979; Ph.D., University of Kansas, 1983.
- Valadez, Joseph J.** Assistant Professor, Family and Community Development. B.A., Northwestern University, 1971; Ph.D., University of Lancaster (England), 1978; M.P.H., Harvard School of Public Health, 1984.
- Vamos, John S.** Lecturer, Part-time, Aerospace Engineering. B.M.E., Villanova University, 1964; Ph.D., Ohio State University, 1970.
- Vandersall, John H.** Professor, Animal Sciences. B.S., Ohio State University, 1950; M.S., 1954; Ph.D., 1959.
- VanderVelden, Lee** Assistant Professor, Physical Education. B.S., University of Wisconsin, 1961; Ph.D., 1971.
- Van Egmond, Peter G.** Assistant Professor, English. B.A., Mississippi College, 1959; M.A., University of Mississippi, 1961; Ph.D., University of North Carolina, 1966.
- Vann, R. Lindley** Associate Professor, School of Architecture. B.S. History of Art, University of Texas (Austin), 1968, Ph.D. Arch.Hist., Cornell University, 1976.
- Vanneman, Reeve** Associate Professor, Sociology. A.B., Cornell University, 1967; Ph.D., Harvard University, 1975.
- Vannoy, Donald W.** Associate Professor, Civil Engineering. B.S., West Virginia Institute of Technology, 1970; M.S., University of Virginia, 1971, Ph.D., 1975.
- Van Valkenburg, Shirley D.** Assistant Professor, Botany. B.A., Washington State University, 1948; M.S., University of Washington, 1968; Ph.D., 1970.
- VanWle, David** Lecturer, Part-time, Aerospace Engineering. B.S., University of Maryland, 1980; M.S., 1982; Ph.D., 1986.
- Varner, Mark A.** Associate Professor, Animal Sciences. B.S., University of Minnesota, 1975; M.S., Washington State University, 1977; Ph.D., North Carolina State University, 1981.
- Velich, Fletcher P.** Professor Emeritus, Chemistry and Biochemistry. B.S., University of Maryland, 1931; M.S., 1933; Ph.D., 1935.
- Venit, Marjorie** Associate Professor, Art History. B.F.A., San Francisco Art Institute, 1962; M.A., Institute of Fine Arts, New York University, 1976; Ph.D., 1982.
- Verdaguer, Pierre** Associate Professor, French and Italian. Licence/Maitrise, Sorbonne, Paris III, 1972; Agregation, 1974; Ph.D., University of Virginia, 1980.
- Verhoven, Peter J.** Associate Professor, Recreation. B.A., Morehead State College, 1963; M.S., Indiana University, 1965; Re D., 1969.
- Verma, Satyendra K.** Assistant Professor, Textiles and Consumer Economics. B.S., University of Rajasthan (India), 1966; M.A., 1969; M.A., University of Maryland, 1982; Ph.D., 1986.
- Vernekar, Anandu D.** Professor, Meteorology. B.Sc (Hons), University of Poona, 1956; M.Sc., 1959; M.S., University of Michigan, 1963; Ph.D., University of Michigan, 1966.
- Vietri, Lois T.** Lecturer, Government and Politics. A.B., Rosemont College, 1970; M.A., University of Maryland, 1972; Ph.D., 1981.
- Vijay, Inder K.** Professor, Animal Sciences. B.S., Panjab University (India), 1961; M.S., University of Saskatchewan, 1966; Ph.D., University of California (Davis), 1971.
- Vishkin, Uzi** Professor, Electrical Engineering; Professor, Institute for Advanced Computer Studies. B.Sc., Hebrew University, 1974; M.Sc., 1975; D.Sc., Technion, 1981.
- Vitzthum, Richard C.** Professor, English. B.A., Amherst College, 1957; M.A.T., Harvard University, 1958; Ph.D., Stanford University, 1963.
- Vizzini, Anthony J.** Assistant Professor, Aerospace Engineering. S.B., Massachusetts Institute of Technology, 1981; S.B., 1982; S.M., 1983; Ph.D., 1986.
- Vogelius, Michael S.** Professor, Mathematics. Cand. Scient., University of Aarhus, 1977; Ph.D., University of Maryland, 1980.
- Volk, Kenneth S.** Instructor, Industrial, Technological and Occupational Education. B.A., State University at Oswego, 1975; B.S., 1978; M.S., Colorado State University, 1983.
- Voll, Mary** Associate Professor, Microbiology. B.A., Mount Saint Agnes College, 1955; M.S., Johns Hopkins University, 1961; Ph.D., University of Pennsylvania, 1964.

- von Kerczek, Christian H.** Associate Professor, Mechanical Engineering B.S., University of Notre Dame, 1963; M.S., 1965, Ph.D., Johns Hopkins University, 1973
- Vough, L.R.** Associate Professor, Agronomy B.S., Pennsylvania State University, 1966; M.S., University of Minnesota, 1969, Ph.D., Purdue University, 1972.
- Wabeck, Charles J.** Associate Professor, Poultry Science B.S., University of Massachusetts, 1962; M.S., University of New Hampshire, 1964 Ph.D., Purdue University, 1966
- Wachbroil, Robert S.** Research Scholar, Institute for Philosophy and Public Policy B.S. Massachusetts Institute of Technology, 1970, Ph.D., University of California (Berkeley), 1979
- Wagner, Janet** Associate Professor, Textiles and Consumer Economics, B.S., Cornell University, 1970; M.A., 1973; Ph.D., Kansas State University, 1982.
- Wakelield, John E.** Associate Professor, Music, B.Mus., University of Michigan, 1963, M.Mus., 1964
- Waldrop, Robert S.** Professor Emeritus, Psychology, B.A., University of Oklahoma, 1934, B.D., McCormick Theological Seminary, 1937, Ph.D., University of Michigan, 1948.
- Wall, Alaka** Assistant Professor, Anthropology, B.A., Radcliffe College, 1974; Ph.D., Columbia University, 1984.
- Wall, John R.** Instructor, part-time, Industrial, Technological and Occupational Education, B.S., University of Maryland, 1981, M.A., Central Michigan University, 1982.
- Wallace, James M.** Professor, Mechanical Engineering B.C.E., Georgia Institute of Technology, 1962; M.S., 1964; D. Phil., Oxford University, 1969.
- Wallace, Stephen J.** Professor, Physics and Astronomy, B.S., Case Institute of Technology, 1961, M.S., University of Washington (Seattle), 1969, Ph.D., 1971
- Wallis, John J.** Associate Professor, Economics, B.A., University of Washington, 1975; M.A., 1978; Ph.D., 1981.
- Walsh, Christopher S.** Associate Professor, Horticulture, B.A., Middlebury College, 1969; M.S., Cornell University, 1977; Ph.D., 1980.
- Walston, Claude E.** Dean, College of Library and Information Services, B.S., University of South Carolina, 1946; M.S., University of Wisconsin, 1950; Ph.D., Ohio State University, 1953.
- Walston, William H., Jr.** Associate Professor and Associate Chairman, Mechanical Engineering, B.M.E., University of Delaware, 1959, M.S., 1961, Ph.D., 1964
- Walter, Mary E.** Research Associate, Special Education, B.S., Maryland College, 1971; M.A., 1975; Ph.D., University of Maryland, 1988.
- Walters, Edward H.** Instructor, Music, B.A., Peabody Conservatory of Music, 1968, M.A., Catholic University, 1982.
- Walters, William B.** Professor, Chemistry and Biochemistry, B.S., Kansas State University, 1960; Ph.D., University of Illinois, 1964.
- Walton, A. Ronald** Associate Professor, Hebrew and East Asian, B.A., University of Texas, 1967; M.A., Cornell University, 1970; Ph.D., 1975.
- Walton, William D.** Lecturer Part-time, Fire Protection Engineering, B.S., University of Maryland, 1972; M.S., 1976.
- Waltrop, Paul** Lecturer, Part-time, Aerospace Engineering, B.S., University of Maryland, 1967; M.S., 1968, Ph.D., Virginia Polytechnic Institute, 1971.
- Wang, Ching-Ping Shih** Associate Professor, Physics and Astronomy, B.S., Tung-Hai University, 1969, M.S., Louisiana State University, 1971, Ph.D., 1974
- Wang, Kung-Yeh** Lecturer, Part-time, Mechanical Engineering B.S., Brown University, 1953
- Wang, Nam S.** Assistant Professor, Chemical and Nuclear Engineering B.S., University of California, 1979 M.S., California Institute of Technology, 1982, Ph.D., California Institute of Technology, 1988
- Wang, Orrin** Assistant Professor, English, B.A., Reed College, 1979, M.A., University of Chicago, 1984 Ph.D., 1989
- Wang, Xiaolu** Assistant Professor, Mathematics, M.A., Wayne State University, 1981; Ph.D., University of California (Berkeley), 1985
- Ward, Veda E.** Lecturer, Recreation, B.A., Bucknell University, 1972; M.S., University of Baltimore, 1978, Ph.D., University of Maryland, 1984.
- Warner, Charles R.** Associate Professor, Mathematics B.A., University of Toronto, 1955; B.S., University of Rochester, 1957; Ph.D., 1962
- Warren, Anne** Associate Professor, Dance, B.A., Ohio State University, 1966; M.Ed., Wayne State University, 1969.
- Warren, Donald R.** Professor and Chair, Education Policy, Planning, and Administration, B.A., University of Texas, 1957; Th.M., Harvard University, 1960; Ph.D., University of Chicago, 1968.
- Warren, J. Benedict** Professor, History, B.A., Duns Scotus College, 1953; M.A., University of New Mexico, 1960; Ph.D., 1963.
- Warren, Lawrence.** Professor, Dance, B.A., University of California (Los Angeles), 1953; M.A., 1968.
- Washburn, Wilcomb E.** Adjunct Professor, American Studies, B.A., Dartmouth College, 1948, Ph.D., Harvard University, 1955
- Washington, Lawrence C.** Professor, Mathematics, B.A., Johns Hopkins University, 1971; M.A., 1971; Ph.D., Princeton University, 1974.
- Wasserman, David T.** Research Scholar, Institute for Philosophy and Public Policy, B.A., Yale University, 1975; M.A., University of North Carolina, 1981; J.D., University of Michigan, 1978
- Wasserman, Paul** Professor, College of Library and Information Services, B.B.A., City University of New York (City College), 1948, M.S.L.S., Columbia University, 1949; M.S., 1950; Ph.D., University of Michigan, 1960
- Watson, John C.** Assistant Professor, Botany, B.S., Butler University, 1975; Ph.D., Indiana University, 1982.
- Weaver, V. Phillips** Professor, Curriculum and Instruction, A.B., College of William and Mary, 1951, M.Ed., Pennsylvania State University, 1956; Ed.D., 1962
- Weber, Joseph** Professor Emeritus, Physics and Astronomy, B.S., United States Naval Academy, 1940; Ph.D., Catholic University of America, 1951.
- Wei, Ching-Zong** Professor, Mathematics, B.A., National Tsing-Hua University, 1971; M.A., 1973; Ph.D., Columbia University, 1980.
- Weible, Thomas** Associate Dean, College of Education; Professor, Curriculum and Instruction, B.S., Virginia Commonwealth University, 1967; M.Ed., Salisbury State University, 1974, Ph.D., University of Iowa, 1976.
- Weidner, Jerry R.** Associate Professor, Geology, A.B., Miami University (Ohio), 1960; M.S., 1963, Ph.D., Pennsylvania State University, 1968
- Weigand, William A.** Professor, Chemical and Nuclear Engineering, B.S., Illinois Institute of Technology, 1962, M.S., 1963, Ph.D., 1968
- Weil, Raymond R.** Associate Professor, Agronomy B.S., Michigan State University, 1970, M.S., Purdue University, 1972, Ph.D., Virginia Polytechnic Institute, 1977.
- Weinberg, Amy S.** Assistant Professor, Linguistics Department, Assistant Professor, Institute for Advanced Computer Studies, B.A., McGill University, 1976; Ph.D., Massachusetts Institute of Technology, 1988
- Weiner, John** Professor, Chemistry and Biochemistry, B.S., Pennsylvania State University, 1964, Ph.D., University of Chicago, 1970
- Weiner, Ronald M.** Professor, Microbiology, B.S., CUNY (Brooklyn College), 1964, M.S., Long Island University, 1967, Ph.D., Iowa State University, 1970
- Weinstein, Paul A.** Associate Professor, Economics, B.A., College of William and Mary, 1954, M.A., Northwestern University, 1958, Ph.D., 1961.
- Weinstein-Albert, Jodi** Lecturer, Part-time, General Honors Program, B.A., University of Maryland, 1979; Ph.D., SUNY (Albany), 1986
- Weismiller, Richard A.** Associate Professor, Agronomy, B.S., Purdue University, 1964, M.S., 1966, Ph.D., Michigan State, 1969
- Weiss, Gene A.** Associate Professor, Communication Arts and Theatre, B.A., Brandeis University, 1961; M.A., New York University, 1965, Ph.D., Ohio University, 1970.
- Weiss, Marion G.** Assistant Professor, School of Architecture, B.S. ARCH, University of Virginia, 1979; M.Arch, Yale University, 1984
- Weiss, Shlomo** Assistant Professor, Computer Science (UMBC); Assistant Professor, Institute for Advanced Computer Studies, B.S., Technion Israel Institute of Technology, 1973, Ph.D., University of Wisconsin, 1984.
- Weifford, Charles F.** Professor and Director, Institute of Criminal Justice and Criminology, B.A., University of Maryland, 1961, M.A., 1963, Ph.D., University of Pennsylvania, 1969
- Wellisch, Hans W.** Professor Emeritus, College of Library and Information Services, M.L.S., University of Maryland, 1972, Ph.D., 1975.
- Wells, Veronica A.** Assistant Professor, Part-time, Music., Howard University, 1961; , Wright State University, 1967.
- Wemmer, Christen** Adjunct Associate Professor, Zoology, B.A., San Francisco State College, 1965; M.A., 1967; Ph.D., University of Maryland, 1972
- Wenhold, James R.** Instructor, Physical Education, B.S., University of Maryland, 1985, M.S., 1987.
- Wentzel, Donat G.** Professor, Physics and Astronomy, Astronomy Program, B.A., University of Chicago, 1954; B.S., 1955, M.S., 1956, Ph.D., 1960.
- Werlinch, Carol Ann** Instructor, Family and Community Development, B.S., Pennsylvania State University, 1961; M.S., University of Maryland, 1974, Ph.D., 1983.
- Wersheimer, Loretta C.** Assistant to the Vice President, Academic Affairs, B.A., Mount Holyoke College, 1957, M.A., University of Maryland, 1976, Ph.D., 1980.
- Weske, John R.** Professor Emeritus, Mechanical Engineering, Dipl. Ing., Hannover Institute of Technology, 1924, M.S., Harvard University, 1932, Sc. D., 1934.
- Westbrook, Franklin** Associate Professor, Counseling and Personnel Services, Acting Director, Office of Minority Student Education, B.S., Chicago State University, 1961; M.S., City University of New York, 1969; Ed.D., Indiana University, 1971.
- Westerhout, Gert** Adjunct Professor, Physics and Astronomy, Astronomy Program, B.S., University of Leiden, 1950, M.S., 1954, Ph.D., 1958
- Westhoff, Dennis C.** Professor and Chairman, Animal Sciences, B.S., University of Georgia, 1966, M.S., North Carolina State University, 1968, Ph.D., 1970.
- Wexler, Richard** Associate Professor, Music, B.Mus., University of Michigan, 1963, M.A., New York University, 1969; Ph.D., 1974
- Wheaton, Fredrick W.** Professor, Agricultural Engineering, B.S.A.E., Michigan State University, 1964, M.S., 1965, Ph.D., Iowa State University, 1969
- Wheelock, Arthur K.** Professor, Art History, B.A., Williams College, 1965, Ph.D., Harvard University, 1973

- White, Marilyn D.** Associate Professor, College of Library and Information Services. B.A., Our Lady of the Lake College, 1962; M.S., University of Wisconsin, 1963; Ph.D., University of Illinois, 1971
- Whitehead, Tony L.** Associate Professor, and Chair, Anthropology; Associate Professor, Affiliate, Afro American Studies. B.A., Shaw University, 1965; M.S. Hyg., University of Pittsburgh, 1969; Ph.D., 1976.
- Whitmore, E. Reed** Professor Emeritus, English. B.A., Yale University, 1941.
- Whittington, Leslie Ann** Assistant Professor, Textiles and Consumer Economics. B.S., Regis College, 1984; M.A., University of Colorado, 1987; Ph.D., 1989.
- Widhelm, William B.** Associate Professor, College of Business and Management. B.E.S., Johns Hopkins University, 1959; M.S.E., 1960; M.S.M.S., 1965; Ph.D., 1969.
- Wiedel, Joseph W.** Professor, Geography. B.A., University of Maryland, 1958; M.A., 1963.
- Wiedemann, Gregory** Lecturer, Part-time, School of Architecture. B.A., Tufts University, 1972; B.S.C.E., 1973; M.Arch., Harvard Graduate School of Design, 1977.
- Weigand, William** Professor, Chemical Engineering. B.S., Illinois Institute of Technology, 1962; M.S., 1963; Ph.D., 1968.
- Wigfield, Allan** Assistant Professor, Human Development. B.S., University of Illinois, 1974; M.A., 1977; Ph.D., 1982.
- Wilbur, June C.** Assistant Professor Emerita, Textiles and Consumer Economics. B.S., University of Washington, 1936; M.Ed., 1937; M.S., Syracuse University, 1940.
- Wiley, Robert C.** Professor, Horticulture; Coordinator, Food Science Program. B.S., University of Maryland, 1949; M.S., 1950; Ph.D., Oregon State University, 1953.
- Wilkenfeld, Jonathan** Professor, Government and Politics. B.S., University of Maryland, 1964; M.A., George Washington University, 1966; Ph.D., Indiana University, 1969.
- Wilkinson, Thomas D.** Research Professor, Institute for Physical Science and Technology. B.S., University of Michigan, 1953; Ph.D., 1962.
- Wilkinson, Gerald S.** Assistant Professor, Zoology. B.S., University of California (Davis), 1977; Ph.D., University of California (San Diego), 1984.
- Wilkinson, Thomas K.** Instructor, Part-time, Industrial, Technological and Occupational Education. B.A., American International College, 1950; M.A., Harvard University, 1956.
- Williams, Aubrey W., Jr.** Professor, Anthropology. B.A., University of North Carolina, 1955; M.A., 1957; Ph.D., University of Arizona, 1964.
- Williams, David L.** Associate Professor (Retired), Curriculum and Instruction. B.S., Bradley University, 1953; M.Ed., University of Illinois (Urbana), 1956; Ed.D., 1964.
- Williams, Eleanor** Associate Professor, Human Nutrition and Food Systems. B.S., Texas Woman's University, 1945; M.S., Iowa State University, 1947; Ph.D., Cornell University, 1963.
- Williams, Ellen D.** Associate Professor, Physics and Astronomy. B.S., Michigan State University, 1976; Ph.D., California Institute of Technology, 1981.
- Williams, Heien E.** Assistant Professor, College of Library and Information Services; Assistant Professor, Curriculum and Instruction. B.A., Morris College, 1954; M.S.L.S., Atlanta University, 1960; C.A.S., University of Illinois (Urbana), 1969; Ph.D., University of Wisconsin (Madison), 1983.
- Williams, Otis** Director, Nyumburu Center; Affiliate, Afro-American Studies Program. B.A., Morgan State University, 1970; M.A., University of Maryland.
- Williams, Rhonda M.** Assistant Professor, Economics. Assistant Professor, Afro-American Studies. B.A., Harvard-Radcliffe College, 1978; Ph.D., Massachusetts Institute of Technology, 1983.
- Williams, Thelma M.** Assistant Dean, College of Computer, Mathematical and Physical Sciences. B.S., University of Maryland, 1977; M.A., 1980; Ph.D., 1986.
- Williams, Walter F.** Professor, Animal Sciences. B.S., University of Missouri, 1951; M.S., 1952; Ph.D., 1955.
- Williams, William H.** Assistant Professor, History. A.B., Washington and Lee University, 1956; M.A., Duke University, 1960; Ph.D., 1965.
- Wliner, Benjamin** Assistant Professor, Mechanical Engineering. B.S., Tel-Aviv University, 1979; M.S., Harvard University, 1981; Ph.D., 1986.
- Wilson, Andrew S.** Professor, Physics and Astronomy. Astronomy Program. B.A., Cambridge University, 1969; M.A., 1973; Ph.D., 1973.
- Wilson, Forrest** Visiting Professor, Part-time, School of Architecture. Ph.D., Union of Experimenting Colleges & Universities, 1977.
- Wilson, Gayle E.** Associate Professor, English. B.A., Wayne State University, 1960; M.A., University of Rochester, 1962; Ph.D., 1965.
- Wilson, Jack M.** Professor, part-time, Physics and Astronomy. B.A., Thiel College, 1967; M.S., Carnegie Mellon, 1968; Ph.D., Kent State University, 1972.
- Wilson, Laura B.** Director, Center on Aging; Professor, Health Education. B.A., Simmons College, 1969; M.A., University of Pennsylvania, 1970; Ph.D., 1974.
- Wilson, Leda A.** Associate Professor, Family and Community Development. B.S., Lander College, 1943; M.S., University of Tennessee, 1950; Ed.D., 1954.
- Wilson, Mark** Associate Professor, Music. A.B., University of California (Los Angeles), 1970; M.S., 1972; Ph.D., 1974.
- Wilson, Robert M.** Professor, Curriculum and Instruction. B.S., California State College (PA), 1950; M.S., University of Pittsburgh, 1956; Ed.D., 1960.
- Wilson, Stephanie Y.** Lecturer, Part-time, Afro-American Studies. B.S., Goddard College, 1973; M.A., State of New York (Stony Brook), 1974; Ph.D., 1978.
- Wilson, William G.** Librarian/Lecturer, College of Library and Information Services. B.A., Louisiana State University, 1958; A.M.L.S., University of Michigan, 1960; M.A., Claremont Graduate School, 1971.
- Wiltz, Alcine J.** Professor and Chairman, Dance. B.A., University of Southwestern Louisiana, 1964; M.F.A., University of Wisconsin, 1967.
- Windle, Robert J.** Assistant Professor, College of Business and Management. B.A., College of William and Mary, 1977; M.S., University of Wisconsin-Madison, 1981; Ph.D., 1984.
- Winkick, Myron** Visiting Professor, Human Nutrition and Food Systems. B.A., Columbia University, 1951; M.S., University of Illinois, 1952; M.D., State University of New York, 1956.
- Winkelmann, Allen E.** Associate Professor, Aerospace Engineering. B.S., University of Minnesota, 1965; M.S., University of Maryland, 1967; Ph.D., 1976.
- Winkelkemper, H. E.** Associate Professor, Mathematics. B.A., National University of Mexico, 1963; M.A., Princeton University, 1965; Ph.D., 1970.
- Winkler-Crowley, Abby L.** Lecturer, Special Education. B.S., Boston University, 1973; M.A., Catholic University of America, 1981; Ph.D., 1983.
- Winstead, Warren J.** Director, College of Business and Management. B.A., University of Richmond, 1950; M.S., 1955; C.A.S., Harvard University, 1957; Ed.D., 1958.
- Winton, Calhoun** Professor, English. A.B., University of the South (Sewanee), 1948; M.A., Vanderbilt University, 1950; M.A., Princeton University, 1954; Ph.D., 1955.
- Wister, Carl E.** Instructor, Part-time, Agricultural and Extension Education. A.B., Emporia State University, 1956; M.S., 1957.
- Witzczak, Matthew W.** Professor, Civil Engineering. B.S., Purdue University, 1962; M.S., 1963; Ph.D., 1969.
- Withers, Josephine** Associate Professor, Art History. B.A., Oberlin College, 1960; M.A., Columbia University, 1965; Ph.D., 1971.
- Witherspoon, Christine L.** Assistant to the Dean, College of Behavioral and Social Sciences. B.A., Michigan State University, 1971; M.B.A., University of Maryland, 1988.
- Wolde-Tinsae, Amde M.** Professor, Civil Engineering. B.E.S., Johns Hopkins University, 1970; M.S., University of California (Berkeley), 1971; Ph.D., State University of New York (Buffalo), 1976.
- Wolfe, Peter** Professor, Mathematics. B.S., Saint Lawrence University, 1959; B.S.E.E., Rensselaer Polytechnic, 1959; M.S., Northwestern University, 1961; Ph.D., New York University, 1965.
- Wolfe, Stephen J.** Instructor, Industrial, Technological and Occupational Education. B.S., California State University of Pennsylvania, 1988; M.Ed., 1989.
- Wolniak, Stephen M.** Associate Professor, Botany. B.A., SUNY (Oswego), 1972; M.S., University of Illinois (Urbana), 1974; Ph.D., University of California (Berkeley), 1979.
- Wolpert, Scott A.** Professor, Mathematics. B.A., Johns Hopkins University, 1972; M.A., Stanford University, 1974; Ph.D., 1976.
- Wolvin, Andrew D.** Professor, Communication Arts and Theatre. B.S., University of Nebraska, 1962; M.A., 1963; Ph.D., Purdue University, 1968.
- Wonnacott, Paul** Professor, Economics. B.A., University of Western Ontario, 1955; M.A., Princeton University, 1957; Ph.D., 1959.
- Woo, Ching Hung** Professor, Physics and Astronomy. B.S., Louisiana Technological Institute, 1958; M.S., University of California (Berkeley), 1960; Ph.D., 1962.
- Wood, Francis E.** Professor, Entomology. B.S., University of Missouri, 1958; M.S., 1962; Ph.D., University of Maryland, 1970.
- Woodward, Nicholas B.** Research Associate, Geology. B.A., Cornell University, 1970; M.S., The Johns Hopkins University, 1978; Ph.D., The Johns Hopkins University, 1981.
- Wrenn, Jerry P.** Associate Professor and Assistant Chairman, Physical Education. B.S., East Carolina University, 1961; M.S., University of Tennessee, 1963; Ph.D., University of Maryland, 1970.
- Wright, Elissa Y.** Assistant Dean for Student Affairs, School of Public Affairs. B.A., Yale University, 1983; J.D., Stanford Law School, 1986.
- Wright, Winthrop R.** Associate Professor, History. B.A., Swarthmore College, 1958; M.A., University of Pennsylvania, 1960; Ph.D., 1964.
- Wu, Jyh-Yang** Assistant Professor, Mathematics. B.S., National Taiwan University, 1984; M.S., University of Chicago, 1987; Ph.D., 1989.
- Wuttig, Manfred R.** Professor, Chemical and Nuclear Engineering; Director, Engineering Materials Program. B.S., Technische Hochschule Dresden, 1955; M.S., 1958; Ph.D., 1962.
- Wyatt, David M.** Professor, English. B.A., Yale University, 1970; Ph.D., University of California (Berkeley), 1975.
- Wylie, Ann G.** Associate Professor, Geology. B.S., Wellesley College, 1966; Ph.D., Columbia University, 1972.
- Wysong, John W.** Professor, Agricultural and Resource Economics. B.S., Cornell University, 1953; M.S., University of Illinois (Urbana), 1954; Ph.D., Cornell University, 1957.

- Yaginuma, Kazuo** Instructor, Hebrew and East Asian. ESL. M.A., University of San Francisco, 1984; B.A., Ohtemou Gakuin University (Japan), 1973.
- Yakobson, Mikhail** Professor, Mathematics. M.A., Moscow State University, 1967; Ph.D., 1970.
- Yaney, George L.** Professor, History. B.E., Rensselaer Polytechnic Institute, 1952; M.A., University of Colorado, 1956; Ph.D., Princeton University, 1961.
- Yang, Chia-Hung** Assistant Professor, Electrical Engineering. B.A., National Tsing Hua University, 1979; M.S., Princeton University, 1983; Ph.D., 1987.
- Yang, Grace L.** Professor, Mathematics. B.A., National Taiwan University, 1960; M.A., University of California (Berkeley), 1963; Ph.D., 1966.
- Yang, Jackson C.S.** Professor, Mechanical Engineering. B.S., University of Maryland, 1958; M.A., 1961; Ph.D., 1963.
- Yang, James S.** Lecturer, Part-time, Housing and Design. B.F.A., Virginia Commonwealth University, 1983.
- Yanta, William** Lecturer, Part-time, Aerospace Engineering. B.S., University of Texas, 1962; M.S., Catholic University of America, 1964; Ph.D., 1973.
- Yanushevsky, Rafael** Visiting Professor, Mechanical Engineering. B.S., Polytechnic Institute of Kiev, 1960; M.S., 1961; Ph.D., Inst of Control Sciences of the USSR Acad of Scien, 1967.
- Yao, S. Bing** Professor, College of Business and Management. B.S., National Taiwan University, 1968; M.A., Western Michigan University, 1969; Ph.D., University of Michigan, 1974.
- Yeh, Kwan-nan** Professor, Textiles and Consumer Economics. B.S., National Taiwan University, 1961; M.S., Tulane University, 1965; Ph.D., University of Georgia, 1970.
- Yelser, Gail P.** Instructor, Part-time, Institute of Applied Agriculture. B.S., University of Maryland, 1975; M.S., 1982.
- Yeni-Komshian, Grace H.** Professor, Hearing and Speech Sciences. B.A., American University of Beirut, Lebanon, 1957; M.S., Cornell University, 1962; Ph.D., McGill University, 1965.
- Yeshe, Yaacov** Associate Professor, Computer Science (UMBC); Associate Professor, Institute for Advanced Computer Studies. B.Sc., Tel Aviv University, 1972; M.Sc., Weitzmann Institute of Science, 1975; Ph.D., 1979.
- Yorke, James A.** Professor, Mathematics; Director, Institute for Physical Science and Technology. A.B., Columbia University, 1963; Ph.D., University of Maryland, 1966.
- Young, Edgar P.** Professor/Instructor, Part-time, Animal Sciences. B.S., Ohio State University, 1954; M.S., 1956; Ph.D., 1958.
- Young, H. Peyton** Professor, School of Public Affairs. B.A., Harvard University, 1966; Ph.D., University of Michigan, 1970.
- Yuan, Robert T.** Professor, Microbiology. B.S., Antioch College, 1960; Ph.D., Albert Einstein College, 1966.
- Yudaya, Sivathanu** Research Associate, Mechanical Engineering. B.S., University of Kerala, 1984; M.S., University of Michigan, 1988; Ph.D., 1990.
- Zafirliou, Evangelos** Assistant Professor, Chemical and Nuclear Engineering, Assistant Professor, Systems Research Center. B.S., National Technical University, 1982; Ph.D., California Institute of Technology, 1986.
- Zagler, Don** Professor, Mathematics. B.S., Massachusetts Institute of Technology, 1968; Diploma Adv. Math., Oxford University, 1969; D. Phil. Math., 1972; Habilitation Math, University of Bonn, 1975.
- Zaki, Kawthar** Professor, Electrical Engineering. B.S., Ain Shams University (Cairo), 1962; M.S., University of California (Berkeley), 1966; Ph.D., 1969.
- Zanol, Eric J.** Associate Professor, College of Journalism. B.A., Pennsylvania State University, 1965; M.A., 1970; Ph.D., University of Illinois, 1977.
- Zappala, Michael O.** Assistant Professor, Spanish and Portuguese. B.A., Queen College of CUNY, 1969; M.A., Harvard University, 1970; Ph.D., 1975.
- Zedek, Mishael** Professor, Mathematics. M.S., Hebrew University of Jerusalem, 1952; Ph.D., Harvard University, 1956.
- Zeikowitz, Marvin M.** Associate Professor, Computer Science; Associate Professor, Institute for Advanced Computer Studies. B.S., Rensselaer Polytechnic Institute, 1967; M.S., Cornell University, 1969; Ph.D., 1971.
- Zen, E-An** Adjunct Professor, Geology. B.A., Cornell University, 1951; Ph.D., Harvard University, 1955.
- Zerbinos, Eugenia** Assistant Professor, College of Journalism. B.A., Michigan State, 1973; M.A., 1981; Ph.D., 1986.
- Zhang, Guangming** Assistant Professor, Mechanical Engineering, Assistant Professor, Systems Research Center. B.S., Tianjin University, PRC, 1966; M.S., 1983; M.S., University of Illinois at Urbana-Champaign, 1983; Ph.D., 1986.
- Zhu, Shaoyun** Visiting Research Scholar, Textiles and Consumer Economics. B.S., Fudan University (Shanghai, China), 1968; M.S., China Textile University, 1982.
- Zieha, Eugene L.** Lecturer, College of Business and Management. B.S., St. Louis University, 1946; M.S., 1948; Ph.D., University of Illinois, 1952.
- Zilfi, Madeline C.** Associate Professor, History. A.B., Mount Holyoke College, 1964; M.A., University of Chicago, 1971; Ph.D., 1976.
- Zipoy, David M.** Associate Professor, Physics and Astronomy, Astronomy Program. B.S., University of Minnesota, 1954; Ph.D., 1957.
- Zorn, Gus T.** Professor, Physics and Astronomy. B.S., Oklahoma State University, 1948; M.S., University of New Mexico, 1950; Ph.D., University of Padua, 1954.
- Zwanzig, Robert W.** Professor Emeritus, Institute for Physical Science and Technology. B.S., Polytechnic Institute of Brooklyn, 1948; M.S., University of Southern California, 1950; Ph.D., California Institute of Technology, 1952.

# APPENDICES

## ADDITIONAL POLICIES AND REGULATIONS PERTAINING TO STUDENTS

### General Summary

**Note:** Descriptions of these policies are for general information only. Please refer to specific texts for official language. Modifications may be made or other policies may be added throughout the year. Please contact the Office of Judicial Program additional Information.

In addition to the policies reprinted in their entirety in the appendices, students enrolled at College Park are expected to be aware of, and to abide by, the policies summarized below. Information about where the complete texts may be consulted follows each summary. This information was compiled and provided by the office of Judicial Programs.

**Alcoholic Beverage Policy and Procedures** forbid unauthorized possession, use, or distribution of alcoholic beverages on University property. Certain exceptions are specified. (Information subject to change pending legislation. Originally approved by the Board of Regents, September 26, 1969. Legal drinking age in the State of Maryland is 21 years. Reprinted in Student Handbook.)

**Policy on Amplifying Equipment** restricts the hours and locations of use for certain forms of sound amplifying equipment, provides a procedure for the authorization of otherwise restricted uses of sound amplifying equipment, and locates responsibility for complaints with those using the equipment. (Adopted by the University Senate, June 2, 1970. Reprinted in the Student Handbook.)

**Campus Activities Policies** regulate reservation of University facilities, advertising, co-sponsorship, cancellation and postponement, and various other matters relating to programs of student organizations. (Published in the Program Planning Handbook for Student Organizations. For more information, contact the Office of Campus Activities.)

**Policy on Demonstrations** establishes guidelines for demonstrations and picketing. Stipulates that the University will take steps necessary both to protect the right of individuals or groups to demonstrate and to protect the freedom of speech, assembly, and movement of any individual or group. (Adopted by the University Senate, June 2, 1970. Reprinted in the Student Handbook.)

**Examination Rules** set general standards for student conduct during examinations. They are applicable to all examinations given at the College Park campus unless contrary instructions are provided by the faculty member administering the examination. (Printed on all University examination books. See also Chapter 5 of this catalog.)

**Policy on Hazing and Statement on Hazing** prohibit hazing, which is defined by the National Interfraternity Conference as "any action taken or situation created, whether on or off the fraternity premises, to produce mental or physical discomfort, embarrassment, harassment, or ridicule. Violations of Section 9 of the Code of Student Conduct, the Maryland State Law on Hazing, and any actions which fit each chapter's National Organization's policy on hazing are also considered hazing. (For more information or copies of various hazing policies, contact the Office of Campus Activities, Assistant Director for Greek Affairs.)

**Campus Parking Regulations** cover registration, permits, fees, violations, enforcement, fines, towing and impounding, appeals, carpool programs, special events parking, emergency parking, and a number of other areas. Notably, the regulations provide that "[t]he responsibility of finding an authorized parking space rests with the driver" (emphasis added). (Current regulations in effect since July, 1990. An informational guide is distributed to all who register for parking. For more information, contact the Department of Campus Parking.)

**Policy Pertaining to Public Displays** defines standards for permissible displays—objects or structures not designed to be continuously carried or held by a demonstrator or picketer—so as simultaneously to protect freedom of expression and prevent unreasonable threats to the health, safety, security, or mission of the campus. (Approved by the President, March 29, 1989. For more information, contact the Office of the Vice President for Student Affairs.)

**Residence Hall Rules** define prohibited conduct in and around campus residence halls, buildings, and at Department of Residence Life sponsored activities, in addition to that which falls under the Residence Halls Agreement, Code of Student Conduct, and federal, state and local laws. The rules also specify standard sanctions for rule violations, and provide for an adjudication process. (Reprinted in Community Living, the Resident Halls and Dining Services Handbook. For more information, contact the Department of Residence Life.)

**Student Organization Registration Guidelines** define student organizations, responsibilities of officers, and registration, and establish types of registration, a registration process, certain privileges of registered student organizations in good standing, sanctions which may result from registration review, and guidelines for constitutions. (For more information, or for a copy of the guidelines, contact the Office of Campus Activities, Assistant Director for Policy and Program Development.)

## APPENDIX A: HUMAN RELATIONS CODE\*

\*The Human Relations Code is currently being revised by the Campus Senate to reflect the recent reorganization of the academic units at the University of Maryland at College Park. The following interim procedure is to be in effect until such time as the code is revised by the Campus Senate. For the nondepartmentalized colleges, an assistant vice chancellor shall assume the responsibilities formerly held by the division provost. For the departmentalized colleges, the dean of the college shall assume the responsibilities formerly held by the division provost.

### Article I Purpose

- A. The University of Maryland College Park affirms its commitments to a policy of eliminating discrimination on the basis of race, color, creed, sex, marital status, personal appearance, age, national origin, political affiliation, physical or mental handicap, or on the basis of the exercise of rights secured by the First Amendment of the United States Constitution. This code is established to prevent or eradicate such discrimination in accordance with due process within the campus community. In doing so the campus recognizes that it must strive actively and creatively to build a community in which opportunity is equalized.
- B. Accordingly, the Campus Senate of The University of Maryland at College Park, establishes this Human Relations Code to:
  1. prohibit discrimination as defined in this document within the College Park campus community both by educational programs and, to the extent specified herein, by a formal grievance procedure;
  2. establish the responsibilities of the Adjunct Committee on Human Relations of the Senate General Committee on Campus Affairs;
  3. establish the responsibilities of the Office of Human Relations Programs in connection with this code;
  4. establish mediation and grievance vehicles within the colleges of the campus, in conformity with the Campus Affirmative Action Plan;
  5. establish the responsibilities of Equal Education and Employment Opportunity (EEEE) Officers.
- C. Every effort will be made to make students and potential students, employees and potential employees, faculty members and potential faculty members aware of the opportunities that the campus provides for every individual to develop and utilize his talents and skills. It is the

intent of the campus to enhance among its students and employees respect by each person for that person's own race, ethnic background, or sex, as well as appreciation and respect for the race, ethnic background, or sex of other individuals.

- D. Development of a positive and productive atmosphere of human relations on the campus shall be encouraged through effective dialogue and broadening of communications channels. The Adjunct Committee on Human Relations and the Office of Human Relations Programs shall provide support and assistance, as authorized, to any individual or group deemed by them to have a positive probable impact in working toward increased understanding among all individuals and groups on the campus.
- E. The Senate Adjunct Committee on Human Relations shall advise the Office of Human Relations Programs in recommending policies that fulfill the provisions of this code. In particular:
1. The Senate Adjunct Committee on Human Relations shall be an adjunct committee of the standing Senate General Committee on Campus Affairs.
  2. The purpose of the Senate Adjunct Committee on Human Relations shall be to foster better human relations among all individuals and groups on the campus; to advise in the development of positive and creative human relations programs; to advise in the prevention and eradication of all forms of discrimination prohibited by this code, and to make regular assessments of the state of human relations within the purview of this campus.
  3. The functions of the Senate Adjunct Committee on Human Relations may include but are not limited to: requesting the Office of Human Relations Programs to conduct investigations of complaints of discrimination because of race, color, creed, sex, marital status, personal appearance, age, national origin, political affiliation, physical or mental handicap, or on the basis of the exercise of rights secured by the First Amendment of the United States Constitution; providing an "open forum" for effective dialogue among all segments of the campus community; recommending to appropriate campus bodies educational programs and activities to promote equal rights and understanding; periodically reviewing such programs and activities; initiating studies of campus-sponsored or recognized programs and activities to determine how improvement can be made in respect to human relations; continually reviewing progress toward these ends and making such further recommendations as experience may show to be needed; and participating to the extent set forth herein in formal human relations grievance actions.
- F. There shall be an Office of Human Relations Programs directly responsible to the chancellor. This office shall plan, develop, give direction to and coordinate the overall campus effort to prevent and eliminate discrimination based on race, color, creed, sex, marital status, personal appearance, age, national origin, political affiliation, physical or mental handicap, or on the basis of the exercise of rights secured by the First Amendment of the United States Constitution, in all areas of campus life (this overall effort is referred to herein as the "Human Relations Program"). The office shall represent, and have direct access to, the chancellor, and shall cooperate with the Senate Adjunct Committee on Human Relations on substantive matters concerning human relations. The office shall assist and coordinate the human relations activities of the Equal Employment and Educational Opportunity Officers and the equity officers representing the various units of the campus.

The duties and responsibilities of the Office of Human Relations Programs shall include but not be limited to the following: working with deans, directors, and department chairs to ensure full compliance, in spirit as well as in letter, with laws relating to discrimination and with the Campus Human Relations Code; advising campus offices in efforts to assist personnel to recognize and take advantage of career opportunities within the campus; working with appropriate offices in the surrounding community on such issues as off-campus housing practices affecting campus students and employees, transportation, etc.; recommending to the Off-Campus Housing Office removal from or reinstatement upon lists of off-campus housing, so as to ensure that listed housing is available on a nondiscriminatory basis. (N.B. any final action taken by the University shall be preceded by proper notice to the property owner involved, and an opportunity to be heard); conducting reviews of compliance with the Campus Affirmative Action Plan; initiating and carrying out programs for the elimination and prevention of racism and sexism on campus; distributing this code and informing the campus community of the interpretations of its provisions; sending periodic reports to the chancellor and to the Senate Adjunct Committee on Human Relations concerning the Human Relations Programs; and participating to the extent set forth herein in formal human relations grievance actions.

- G. For each of the colleges of the campus, the Division of Administrative Affairs, and the Division of Student Affairs, there shall be an equity officer, who is designated in accordance with the Affirmative Action Plan and who has the duties specified by the Campus Affirmative Action Plan and like duties with respect to the forms of discrimination prohibited by this code.

## Article II Coverage

- A. Kinds of Discrimination Prohibited
1. Discrimination in employment, job placement, promotion, or other economic benefits on the basis of race, color, creed, sex, marital status, personal appearance, age, national origin, political affiliation, physical or mental handicap, or on the basis of the exercise of rights secured by the First Amendment of the United States Constitution.
  2. Discrimination in criteria of eligibility for access to residence, or for admission to and otherwise in relation to educational, athletic, social, cultural, or other activities of the campus because of race, color, creed, sex, marital status, personal appearance, age, national origin, political affiliation, physical or mental handicap, or on the basis of the exercise of rights secured by the First Amendment of the United States Constitution.
- B. For the purposes of this code, "personal appearance" means the outward appearance of any person, irrespective of sex, with regard to bodily condition or characteristics, manner or style of dress, and manner or style of personal grooming, including, but not limited to, hair style and beards. It shall not relate, however, to the requirement of cleanliness, uniforms, or prescribed standards, when uniformly applied for admittance to a campus facility, or when uniformly applied to a class of employees, or when such bodily conditions or characteristics, or manner or style of dress or personal grooming presents a danger to the health, welfare or safety of any individual.
- C. This code shall apply to the campus community. The term "campus community" is limited to Campus students, faculty, and staff; and to departments, committees, offices and organizations under the supervision and control of the campus administration.
- D. Exceptions
1. The enforcement of Federal, State or County laws and regulations does not constitute prohibited discrimination for purposes of this code. Separate housing or other facilities for men and women, mandatory retirement-age requirements, separate athletic teams when required by athletic conference regulations and political, religious and ethnic/cultural clubs are not prohibited.
  2. Discrimination is not prohibited where based on a bona fide job qualification or a qualification required for the fulfillment of bona fide educational or other institutional goals. Complaints concerning the legitimacy of such qualifications may be the subject of human relations grievance actions.
  3. The provisions of this code shall not apply to potential students or potential employees of the University. However, applicants for admission or employment who believe they have been discriminated against by any part of the campus community may convey such belief together with all relevant facts to the Office of Human Relations Programs, for informational purposes.
  4. The grievance procedures under this code shall not apply to judgments concerning academic performance of students (e.g., grades, dissertation defenses), pending further study and action by the Campus Senate and University Administration.
  5. The campus, with the advice and approval of the Attorney General's Office, shall review on a continuing basis all new laws and regulations that apply to this campus to determine if any shall require changes in the coverage or exceptions to coverage of this code.
- E. This code shall apply to the campus community in relation to, but not only to, the following:
1. All educational, athletic, cultural, and social activities occurring on the campus or in another area under its jurisdiction;
  2. All services rendered by the campus to students, faculty, and staff, such as job placement and job recruitment programs and off-campus listings of housing;
  3. University-sponsored programs occurring off campus, including cooperative programs, adult education, athletic events, and any regularly scheduled classes;
  4. Housing supplied, regulated, or recommended by the campus for students, staff and visitors, including fraternities and sororities;
  5. Employment relations between the campus and all of its employees, including matters of promotion in academic rank, academic salary, and termination of faculty status, as limited in III.M.



### Article III Human Relations Enforcement Procedures

- A. In order to identify policies or practices that may reflect discrimination, the Senate Adjunct Committee on Human Relations may request the Office of Human Relations Programs to conduct periodic review of the operation of any unit of the campus. Units shall provide the information necessary for carrying out such reviews. This information shall be submitted through the chancellor's Office. Any such review under the authority granted in this statement of policy shall be undertaken only after specific authorization of the chancellor. In the event that the chancellor fails to authorize an investigation within a reasonable time of the request by the Senate Adjunct Committee on Human Relations, the chair of the Committee shall report that fact, together with reasons as he/she may have received from the chancellor concerning the matter, to the Senate.
- B. The Office of Human Relations Programs on its own motion shall identify policies, practices, or patterns of behavior that may reflect discrimination prohibited by this code or that may conflict with any other campus policy concerning human relations or with the Campus Affirmative Action Plan, and shall call these to the attention of the appropriate officials of the unit involved and recommend appropriate action. Those subject to allegations of discrimination shall be afforded all the protections of due process. The office shall endeavor by negotiation to eliminate the alleged discrimination. Where such efforts fail, the office may on its own motion report the matter to the chancellor and to the Senate Adjunct Committee on Human Relations. Documentation of the recommendations by the office in all such cases shall be maintained on file by the office.
- C. To the maximum extent consistent with the purposes of this code, the confidentiality of personal papers and other records and the principle of privileged communication shall be respected by all persons involved in the enforcement procedures of this code. Nothing in this code shall be construed so as to conflict with the requirements of Article 76A of the Maryland Annotated Code. Persons giving information in connection with the procedures described in this code shall be advised by the person receiving such information of the limits of confidentiality which may properly be observed in code procedures and that all documents may be subject to subpoena in subsequent administrative or judicial proceedings.
- D. Any member of the campus community who believes that he or she has been or is being discriminated against in ways prohibited by this code may consult informally and confidentially with the unit EEO Officer and/or the equity officer and/or the Office of Human Relations Programs prior to filing a formal complaint.
- E. The Office of Human Relations Programs shall receive formal complaints from any member or group within the campus community claiming to be aggrieved by alleged discrimination prohibited by this code and/or any other campus document or policy relating to human relations practices. Such complaints should give in writing the names of complainant(s) and respondent(s) and the time, the place, and a specific description of the alleged discrimination. Complaints shall be submitted to the Office of Human Relations Programs, or else to the unit EEO Officer or the equity officer. Complaints must be submitted within one hundred and twenty (120) days of the alleged discrimination act(s), or within one hundred and twenty (120) days of the first date by which the complainant reasonably has knowledge thereof. Complaints not submitted directly to the Office of Human Relations Programs shall be forwarded to the Office of Human Relations Programs within five (5) working days of their receipt. Copies of the complaint shall be forwarded by the Office of Human Relations Programs to the respondent and to the appropriate unit chair or director, dean, or vice chancellor.
- F. Complainants under this code shall be required, as a condition precedent, to waive any alternative campus administrative procedure that may then be available. A complaint that has been heard under some alternative campus procedure cannot subsequently be heard under the procedure of this code. In the case of a complaint heard under the Classified Employees Grievance Procedure, this restriction shall apply only when the complaint has entered Step Three of that procedure.
- G. The Office of Human Relations Programs and/or the equity officer shall ensure that each complainant is informed of his/her right to file the complaint with the appropriate State and Federal agencies. Forms for complaints to State and Federal agencies will be provided or the complainant will be informed where they are available.
- H. All complaints of discrimination that are not connected with the official functions of the campus or not falling within the scope of discrimination prohibited by this code shall be referred to the appropriate campus, municipal, County, State, or Federal agencies by the Office of Human Relations Programs.
- I. After a complaint has been filed, the Office of Human Relations Programs shall promptly undertake an informal investigation in order to make a preliminary determination as to whether or not the subject

matter of the complaint falls within the code, and whether or not there is probable cause for the complaint. This finding shall be reported to the complainant, the respondent, the chancellor, and the chair of the Senate Adjunct Committee on Human Relations. The burden of proof in this investigation and throughout these enforcement procedures rests with the complainant.

- J. If the finding is that there is not probable cause to believe that discrimination has been or is being committed within the scope of this code, the Office of Human Relations Programs may dismiss the complaint. Such dismissal shall be reported to the complainant, the respondent, the chancellor, and the chair of the Senate Adjunct Committee on Human Relations. The complainant in such a case may appeal the dismissal of the case to the Senate Adjunct Committee on Human Relations, which may direct that a Human Relations Grievance Committee conduct a grievance hearing according to the procedures set forth herein, if in the judgment of the Senate Adjunct Committee on Human Relations there is probable cause to believe that discrimination has been or is being committed within the scope of this code. The Senate Adjunct Committee on Human Relations shall have access to the complaint file for this purpose. A record of its deliberations shall be placed in the file according to the procedures established by the Office of Human Relations Programs. If the committee finds no probable cause, it may dismiss the complaint, and report such dismissal to the complainant, the respondent, and the chancellor.
- K. If the finding is that there is probable cause to believe that discrimination has been or is being committed within the scope of this code, the Office of Human Relations Programs shall endeavor to eliminate the alleged discrimination by conference conciliation and persuasion. If by this process, an agreement is reached for elimination of the alleged discrimination, the agreement shall be reduced to writing and signed by the respondent, the complainant and the director of the Office of Human Relations Programs. The agreement shall be available to the chancellor, the equity officer, and to the chair of the Senate Adjunct Committee on Human Relations, upon request.
- L. If a finding of probable cause is made but no mutually satisfactory solution can be reached under the procedures outlined in section K immediately preceding, the Office of Human Relations Programs shall initiate the following procedure: the Office shall notify the Senate Adjunct Committee on Human Relations of the failure to reach a mutually satisfactory solution, whereupon, providing the complainant requests in writing a Human Relations Grievance Hearings, a Human Relations Grievance Committee shall be selected according to the procedures described in Article IV following. Grievance hearing shall be closed unless both parties to the dispute agree that the hearing, or any part thereof, shall be open to the public. All parties to the dispute shall be sent within five (5) working days of the written request of such a hearing, written notification of the time and place of the beginning of the hearing and a specific statement of the charges. Hearings shall be held as promptly as is consistent with allowing adequate time for the parties to prepare their cases. Continuances may be granted within the discretion of the Office of Human Relations Programs. All parties shall have ample opportunity to present their facts and arguments in full during the hearing. All findings, recommendations, and conclusions by the Grievance Committee shall be based solely on the evidence presented during the hearing, and shall be based on a preponderance of the evidence having probative effect. The burden of proof rests with the complainant. The Grievance Committee may be assisted by an adviser. All the parties to the dispute and the Grievance Committee may invite persons to testify during the hearing. Each side shall have the right to cross-examine witnesses. Each party has the right to be represented by counsel or other representative, but the University has no obligation to provide such counsel for any party to the dispute. If a party intends to be represented by legal counsel during the hearing, he/she shall inform the Office of Human Relations Programs of this fact no later than seventy-two (72) hours prior to the hearing, and that office shall provide that information to the other party or parties. A verbatim record shall be kept of all sessions in which testimony and evidence are presented regarding the case, and this record shall be made available to all parties to the dispute at the conclusion of the proceedings. Upon request the chair of the Grievance Committee may, in his or her discretion, recess the hearing to permit review of the record by one or more parties in the conduct of their case. The chair of a Human Relations Grievance Committee with the advice of the adviser, if there is one, shall rule on all matters of procedure and admissibility of evidence. Any member of the committee not concurring in the ruling of the chair may request a closed session of the committee for debate on the point. A majority vote of the committee will determine the final decision. Formal rules of evidence shall not be applicable to any hearing before a Human Relations Grievance Committee, and any evidence or testimony that the committee believes to be relevant to a fair determination of the complaint may be admitted. The committee reserves the right to exclude incompetent, irrelevant, immaterial and repetitious evidence.

- M. In cases of allegations regarding prohibited discrimination concerning academic employment matters, a Human Relations Grievance Committee shall not substitute its judgment of academic competence for the judgment of the appropriate colleagues of the complainant. The function of the Grievance Committee shall be to determine
- whether there were clearly enunciated University, campus and department standards, policies, procedures, and priorities by which to assess the merit of the complaint, and whether the complainant was given a reasonable opportunity to demonstrate his/her academic merit;
  - whether the stated standards, policies, procedures, and priorities were applied to the complainant in a nondiscriminatory manner.
- N. Within ten (10) working days after hearing all the evidence and arguments, the Human Relations Grievance Committee shall prepare a written decision based solely on the evidence presented at the hearing. This decision shall include a summary of the evidence before the committee and the committee's findings as to whether or not a violation of the code has occurred, and the recommendations of the committee. Grievance Committees may recommend whatever forms of relief they deem appropriate, but must take due cognizance of the limitations imposed by State law and by the procedures established by the Board of Regents, for example, the procedures by which promotion in academic rank is achieved. Within five (5) working days after the decision has been filed in the Office of Human Relations Programs, the director of that office will formally notify all parties to the dispute, the chancellor, and the Senate Adjunct Committee on Human Relations of the decision.
- O. The chancellor shall within ten (10) working days of receipt of the decision of the Human Relations Grievance Committee issue an order specifying what actions, if any, must be taken by individuals or groups found to be guilty of violating the provisions of this code.
- P. When a hearing has been scheduled by an outside agency or court, the Office of Human Relations Programs may, with the approval of the Senate Adjunct Committee on Human Relations, prior to the convening of a Human Relations Grievance Committee to hear a case, postpone or terminate the campus grievance proceedings when such postponement or termination is in its judgment warranted by administrative considerations such as staff limitations and workload, or at the request of a party upon a showing that the campus hearing will either conflict with the off-campus hearing, or that participation in the campus hearing will unreasonably burden a party's preparation of his/her case or otherwise work to his/her prejudice. Such postponement or termination shall be reported to the complainant, respondent, and chancellor. In any case where a complaint has been the subject of prior administrative or judicial resolution or where a complaint becomes the subject of such resolution during the course of proceedings under this code, the procedures of this code will not be applicable or will terminate, as the case may be.
- Q. The chancellor shall provide a written explanation of the order whenever that order is not in keeping with the findings and recommendations of the Human Relations Grievance Committee. This explanation shall be sent to all parties to the dispute, to the chair of the Senate Adjunct Committee on Human Relations, to the director of the Human Relations Programs, and to the chair of the Senate. The chair of the Senate Adjunct Committee on Human Relations shall report to the Senate Executive Committee concerning the order and explanation at the next meeting of the Executive Committee, and that body shall put the matter on the agenda of the next meeting of the Senate.
- R. When required by law, copies of the Human Relations Grievance Committee's findings and recommendations and of the Chancellor's order and explanation, if any, shall be sent to the State and Federal agencies charged with enforcement of Article 49B of the Annotated Code of Maryland and the Equal Employment Opportunity Act of 1968 or their successors.
- S. When a complainant receives a decision on his/her charge of discrimination from a Human Relations Grievance Committee that decision shall not be subject to review under any grievance procedure in force on the campus.
- T. No affirmative relief shall be made to a complainant by the University unless the complainant executes the following release as part of a settlement agreement:

The complainant hereby waives, releases, and covenants not to sue The University of Maryland or its officers, agents, or employees with respect to any matters that were or might have been alleged as charges filed under the Human Relations Code in the instant case, subject to performance by The University of Maryland, its officers, agents, and employees, of the promises contained in this settlement agreement.

## Article IV Constitution of Human Relations Grievance Committee

- A Human Relations Grievance Committee shall consist of five members selected by an affirmative vote of at least two members of a selection panel consisting of 1. The vice chancellor of the unit of the campus within which the alleged discrimination falls. In cases of disputed jurisdiction, decisions as to which vice chancellor shall participate will be made by the several vice chancellors. 2. The director of the Office of Human Relations Programs. 3. The chair of the Senate Adjunct Committee on Human Relations. If any of these persons is unable to participate, he or she shall designate a suitable replacement.
- The selection of a Human Relations Grievance Committee shall be made in such a way as to promote a fair and impartial judgment. An effort shall be made to constitute the Grievance Committee of persons reasonably familiar with the kind of employment or other situation that the case concerns.
- A determined effort shall be made to gain the consent of complainant and respondent concerning the membership of the Grievance Committee. If in the judgment of the selection panel such efforts become unreasonably prolonged, membership will be determined by majority vote of the selection panel.
- None of the members of a Grievance Committee shall have been involved in the action that is the subject of the complaint. This selection panel shall remove a member of a Grievance Committee whenever it finds that member to have a personal involvement in that case; and may excuse a member from serving on the Grievance Committee on grounds of illness or on other reasonable grounds.
- Members of the Senate Adjunct Committee on Human Relations shall not be eligible concurrently for inclusion on Human Relations Grievance Committees.
- The chair of a Human Relations Grievance Committee shall be elected by the members of the committee.
- Members of a Human Relations Grievance Committee and those officially involved in a hearing shall not be penalized either academically or financially for time missed from work or classes during official meetings of the committee.

## Article V The Equal Education and Employment Opportunity Officer

- Equal Education and Employment Opportunity Officers shall be instrumental in the implementation of the Human Relations Code within each unit of the College Park Campus.
- Employees on all levels within each unit of the campus will have access to the assistance of an EEEO Officer. In non-academic units, EEEO Officers shall be elected by unit employees under the supervision of the equity officer within whose responsibility the unit falls, or shall be selected by the unit director in consultation with the appropriate equity officer, in either case in accordance with the Affirmative Action Plan of that unit. EEEO Officers in the academic colleges shall be chosen in the manner prescribed by the council of each college.
- The functions of EEEO Officers shall include but not be limited to:
  - Advising unit administrators with respect to the preparation plans, procedures, regulations, reports, and other matters pertaining to the Campus Human Relations Program.
  - Evaluating periodically the effectiveness and sufficiency of unit Affirmative Action Plans and other unit plans in relation to the goals of this code, and reporting these to unit administrators with recommendations as to what improvements or corrections are needed.
  - Participating in the development of policies and programs within units with respect to hiring and recruitment, training and upgrading, and in all matters pertaining to the elimination of discrimination prohibited by this code. If a unit fails to develop policies and programs of this nature, it is the task of the EEEO officer to act in an advocacy role and call this fact first to the attention of the unit administrator, and if no responsive action ensues, then to the Collegiate Assistant for Affirmative Action. The EEEO officer is free at all times to report such cases directly to the Office of Human Relations Programs and the Senate Adjunct Committee on Human Relations.
  - Serving in a liaison capacity between the unit to which he/she is assigned and all segments of its personnel and attempting to remedy problems brought to his/her attention regarding alleged discrimination.

5. Advising students or employees of the unit who have reason to believe that discrimination as defined in this code is occurring. At the request of the aggrieved person the EEOO officer shall keep any or all aspects of the grievance confidential until a formal complaint has been filed. If the aggrieved so requests, the EEOO officer shall attempt to resolve the matter, calling upon the assistance of the equity officer where appropriate. The EEOO officer will keep a record of such advisory and conciliatory activities and periodically brief the equity officer.
  6. Advising and otherwise aiding complainants in making formal complaints under this code. When a complaint is filed with an EEOO officer, the complaint shall be forwarded by that officer within five (5) working days to the equity officer and the Office of Human Relations Programs. The EEOO officer shall be available to assist in a preliminary investigation of the complaint conducted under the general supervision of the Office of Human Relations Programs, to determine whether there is probable cause to believe that prohibited discrimination has occurred.
  7. Making recommendations to the Office of Human Relations Programs to help facilitate human relations programs on campus.
  8. Assisting units in publicizing the functions of EEOO officers.
  9. Collecting pertinent information regarding hiring, upgrading and promotion opportunities within units and disseminating such information to appropriate personnel.
- D. The EEOO officer shall have the full support of the unit administration, the college administration, and the Office of Human Relations Programs. The EEOO officer shall be afforded reasonable time from their regular duties to perform the functions of the office. These functions shall qualify as part of a workday in the case of a staff member and as partial fulfillment of required committee loads in the case of faculty. The EEOO officer shall be free from interference, coercion, harassment, discrimination, or unreasonable restraints in connection with the performance of the duties specified in this code.

## Article VI Effective Date

This code shall be effective as of October 18, 1976, and shall apply only to those complaints alleging discriminatory acts that occurred on or after that date.

## APPENDIX B: CAMPUS POLICY AND PROCEDURES ON SEXUAL HARASSMENT

### I. Policy

The University of Maryland, College Park, is committed to maintaining a work and learning environment in which students, faculty, and staff can develop intellectually, professionally, personally, and socially. Such an environment must be free of intimidation, fear, coercion, and reprisal. The Campus prohibits sexual harassment. Sexual harassment may cause others unjustifiable offense, anxiety and injury. Sexual harassment threatens the legitimate expectation of all members of the campus community that academic or employment progress is determined by the publicly stated requirements of job and classroom performance, and that the campus environment will not unreasonably impede work or study.

Sexual harassment by University faculty, staff, and students is prohibited. This constitutes Campus policy. Sexual harassment may also constitute violations of the criminal and civil laws of the State of Maryland and the United States. For the purpose of this Campus policy, sexual harassment is defined as: (1) unwelcome sexual advances; or (2) unwelcome requests for sexual favors; and (3) other behavior of a sexual nature where:

- A. Submission to such conduct is made either explicitly or implicitly a term or condition of an individual's employment or participation in a University-sponsored educational program or activity; or
- B. Submission to or rejection of such conduct by an individual is used as the basis for academic or employment decision affecting that individual; or
- C. Such conduct has the purpose or effect of unreasonably interfering with an individual's academic or work performance, or of creating an intimidating, hostile, or offensive educational or working environment.

In assessing whether a particular act constitutes sexual harassment forbidden under this policy, the standard shall be the perspective of a rea-

sonable person within the College Park Campus community. The rules of common sense and reason shall prevail. Allegations of sexual harassment shall be judged with attention to the facts particular to the case and the context in which the alleged incident(s) occurred.

Conduct prohibited under this policy may manifest itself in many different ways. Sexual harassment may, for example, be as undisguised as a direct solicitation of sexual favors, or solicitation accompanied by overt threats. Harassment may also be implied, arising from the relative situation of the parties. In this regard, the following types of acts are more likely than not to result in allegations of sexual harassment: unwelcome physical contact, sexual remarks about a person's clothing, body, or sexual relations, conversation of a sexual nature or similar jokes and stories, and the display of sexually explicit materials in the workplace or used in the classroom which are without defensible educational purpose.

Sexual harassment may occur within a variety of relationships. It may occur among peers. It may occur where no relation exists between the parties other than being co-employees, or co-students. Especially injurious, on the other hand, is harassment in relationships characterized by an inequality of power, where one party has institutional authority over the other. Inherent in these relationships is the power and fear of reprisal. Typically, such relationships are found between employer and employee; senior faculty and junior faculty; graduate teaching assistant and undergraduate; and faculty and student, when the student is enrolled in a faculty member's class or when the student is in a continuing position to require evaluation or work or letters of recommendation from the faculty. Such relationships can be immediate, here and now, or based upon future expectations, e. g., the need for future evaluations and references. Sexual harassment may occur between persons of the same or different genders.

Education and awareness are the best tools for the elimination of sexual harassment. The Campus is committed to taking appropriate action against those who violate the provisions of the Policy. The Campus is committed to protecting targets of harassment from retaliation.

### II. Procedures

Individuals who believe themselves subjected to an incident of sexual harassment should be aware that there are many ways to bring it to the attention of the University, and, where proper, obtain redress or protection. There is an informal route. There are also more formal procedures of long-standing which are sufficiently broad to deal with sexual harassment. Preventing sexual harassment is a responsibility of the entire campus community. The Campus has made this a priority, but ultimately, no satisfactory investigation or resolution of a complaint can occur without the initiative and continuous cooperation of the person who feels injured. Similarly, allegations of sexual harassment are extremely serious, with potential for great harm to all persons if ill-conceived or without foundation. Procedures which implement campus policy recognize that potential. The Campus is committed to protecting the rights of the alleged offender as well as the offended.

#### A. Informal Consideration

An incident of sexual harassment may be reported to any Campus or University official or faculty member, including an individual's supervisor, department chair or dean, the Director of Personnel, a departmental or college equity officer, the Director of the Office of Human Relations, and to the Chancellor's Legal Office (454-4671). When an individual receives a report of sexual harassment, he or she will notify the Legal Office prior to taking any action to investigate or resolve the matter informally. The Legal Office will normally manage and coordinate all matters relating to complaints. Complainants will be advised of relevant campus policies and procedures, and the informal and formal means of resolving the matter will be explained. While a written complaint is not required to initiate an informal investigation, the Legal Office must receive a signed complaint from the offended person before any sanctions or other action can be undertaken against an individual for sexual harassment. If the matter is to be investigated, consideration shall be given to the situation and wishes of the complainant. The investigation of a complaint will include discussing the matter with the person accused of sexual harassment. The findings of the investigation shall be confidentially reported to the Chancellor and to the relevant vice chancellor, dean, chairman or supervisor for any necessary action. Sanctions for sexual harassment may range from reprimand to termination, depending upon the circumstances of the case.

#### B. Formal Complaints

Formal grievance procedures for resolving sexual harassment complaints are available based on the classification of the aggrieved person. All faculty members may file with the dean of their academic unit under the Faculty Grievance Procedure contained within the

Faculty Handbook of the College Park Campus, University of Maryland. Associate Staff employees may file with the Employee Specialist under the Associate Staff Grievance Procedure contained within the Personnel Policies and Rules for Associate Staff Employees of the University of Maryland. Office of Personnel, 1129 Lee Building, 454-4811. Classified employees may file with the Employee Specialist under the Classified Grievance Procedure contained within The Handbook of Classified Employees, Office of Personnel, 1129 Lee Building, 454-4811. Students may file under the code of Student Conduct, Office of Judicial Programs, 2108 Mitchell Building, 454-2927. Faculty, associate staff, classified staff, and students may file under the UMCP Human Relations Code with a Campus unit equity administrator or the Campus Compliance Officer, Office of Human Relations Program, 1107 Hornbake Library, 454-4124.

## APPENDIX C: CODE OF STUDENT CONDUCT AND ANNOTATIONS

Approved by the Board of Regents January 25, 1980

Note: Students subject to disciplinary charges should request a copy of the document Preparing for a Hearing, available in the Judicial Programs Office. (Footnotes that appear throughout the Code of Student Conduct refer to the Annotations beginning on page 275.)

### Rationale

1. The primary purpose for the imposition of discipline in the University setting is to protect the campus community. Consistent with that purpose, reasonable efforts will also be made to foster the personal and social development of those students who are held accountable for violations of University regulations.<sup>1</sup>

### Definitions

2. When used in this code:<sup>(2)</sup>
  - (a) the term "aggravated violation" means a violation that resulted or foreseeably could have resulted in significant damage to persons or property or that otherwise posed a substantial threat to the stability and continuance of normal University or University sponsored activities.
  - (b) the term "cheating" means intentionally using or attempting to use unauthorized materials, information or study aids in any academic exercise.
  - (c) the term "distribution" means sale or exchange for personal profit.
  - (d) the term "fabrication" means intentional and unauthorized falsification or invention of any information or citation in an academic exercise.
  - (e) the term "group" means a number of persons who are associated with each other and who have not complied with University requirements for registration as an organization.
  - (f) the terms "institution" and "University" mean The University of Maryland College Park.
  - (g) the term "organization" means a number of persons who have complied with University requirements for registration.
  - (h) the term "plagiarism" means intentionally or knowingly representing the words or ideas of another as one's own in any academic exercise.
  - (i) the term "reckless" means conduct which one should reasonably be expected to know would create a substantial risk of harm to persons or property or which would otherwise be likely to result in interference with normal University or University sponsored activities.<sup>(3)</sup>
  - (j) the term "student" means a person taking or auditing courses at the institution either on a full or part-time basis.<sup>(4)</sup>
  - (k) the term "University premises" means buildings or grounds owned, leased, operated, controlled or supervised by the University.
  - (l) the term "weapon" means any object or substance designed to inflict a wound, cause injury, or incapacitate, including, but not limited to, all firearms, pellet guns, switchblade knives, knives with blades five or more inches in length, and chemicals such as "Mace" or tear-gas.
  - (m) the term "University sponsored activity" means any activity on or off campus that is initiated, aided, authorized, or supervised by the University.
  - (n) the terms "will" or "shall" are used in the imperative sense

### Interpretation of Regulations

3. Disciplinary regulations at the University are set forth in writing to give students general notice of prohibited conduct. The regulations should be read broadly and are not designed to define misconduct in exhaustive terms.

### Inherent Authority

4. The University reserves the right to take necessary and appropriate action to protect the safety and well-being of the campus community.<sup>(5)</sup>

### Student Participation

5. Students are asked to assume positions of responsibility in the University judicial system so that they might contribute their skills and insights to the resolution of disciplinary cases. Final authority in disciplinary matters, however, is vested in the University administration and in the Board of Regents.

### Standards of Due Process

6. Students subject to expulsion, suspension<sup>(6)</sup> or disciplinary removal from University housing<sup>(7)</sup> will be accorded a judicial board hearing as specified in part 28 of this code. Students subject to less severe sanctions will be entitled to an informal disciplinary conference<sup>(8)</sup>, as set forth in parts 30 and 31.
7. The locus of inquiry in disciplinary proceedings shall be the guilt or innocence of those accused of violating disciplinary regulations. Formal rules of evidence shall not be applicable, nor shall deviations from prescribed procedures necessarily invalidate a decision or proceeding, unless significant prejudice to a student respondent or the University may result.<sup>(9)</sup>

### Violations of Law and Disciplinary Regulations

8. Students may be accountable to both civil authorities and to the University for acts that constitute violations of law and of this code.<sup>(10)</sup> Disciplinary action at the University will normally proceed during the pendency of criminal proceedings and will not be subject to challenge on the ground that criminal charges involving the same incident have been dismissed or reduced.

### Prohibited Conduct

9. The following misconduct is subject to disciplinary action:
  - (a) intentionally or recklessly causing physical harm to any person on University premises or at University sponsored activities, or intentionally or recklessly causing reasonable apprehension of such harm.
  - (b) unauthorized use, possession or storage of any weapon on University premises or at University sponsored activities.
  - (c) intentionally initiating or causing to be initiated any false report, warning or threat of fire, explosion or other emergency on University premises or at University sponsored activities.
  - (d) intentionally or recklessly interfering with normal University or University sponsored activities, including, but not limited to, studying, teaching, research, University administration, or fire, police or emergency services.
  - (e) knowingly violating the terms of any disciplinary sanction imposed in accordance with this code.
  - (f) intentionally or recklessly misusing or damaging fire safety equipment.
  - (g) unauthorized distribution or possession for purposes of distribution of any controlled substance or illegal drug<sup>(11)</sup> on University premises or at University sponsored activities.
  - (h) intentionally furnishing false information to the University.
  - (i) forgery, unauthorized alteration, or unauthorized use of any University document or instrument of identification.
  - (j) all forms of academic dishonesty, including cheating, fabrication, facilitating academic dishonesty, and plagiarism.<sup>(12)</sup>
  - (k) intentionally and substantially interfering with the freedom of expression of others on University premises or at University sponsored activities.<sup>(13)</sup>
  - (l) theft of property or of services on University premises or at University sponsored activities, knowing possession of stolen property on University premises or at University sponsored activities.
  - (m) intentionally or recklessly destroying or damaging the prop-

- erty of others on University premises or at University sponsored activities.
- (n) failure to comply with the directions of University officials, including campus police officers, acting in performance of their duties.
  - (o) violation of published University regulations or policies, as approved and compiled by the Vice President for Student Affairs.<sup>133</sup> Such regulations or policies may include the residence hall contract, as well as those regulations relating to entry and use of University facilities, sale or consumption of alcoholic beverages, use of vehicles\*\* and amplifying equipment, campus demonstrations, and misuse of identification cards.
  - (p) use or possession of any controlled substance or illegal drug on University premises or at University sponsored activities.<sup>134</sup>
  - (q) unauthorized use or possession of fireworks on University premises.

\*Allegations of academic dishonesty are processed in accordance with the procedures set forth in graduate and undergraduate catalogs.

\*\*Parking and Traffic Violations may be processed in accordance with procedures established by the Vice President for Student Affairs.

#### Sanctions

10. Sanctions for violations of disciplinary regulations consist of:
  - (a) **EXPULSION:** permanent separation of the student from the University. Notification will appear on the student's transcript. The student will also be barred from University premises. (Expulsion requires administrative review and approval by the President and may be altered, deferred, or withheld.)
  - (b) **SUSPENSION:** separation of the student from the University for a specified period of time. Permanent notification will appear on the student's transcript. The student shall not participate in any University sponsored activity and may be barred from University premises. Suspended time will not count against any time limits of the Graduate School for completion of a degree. (Suspension requires administrative review and approval by the Vice President for Student Affairs and may be altered, deferred, or withheld.)
  - (c) **DISCIPLINARY PROBATION:** the student shall not represent the University in any extracurricular activity or run for or hold office in any student group or organization. Additional restrictions or conditions may also be imposed. Notification will be sent to appropriate University offices, including the Office of Campus Activities.
  - (d) **DISCIPLINARY REPRIMAND:** the student is warned that further misconduct may result in more severe disciplinary action.
  - (e) **RESTITUTION:** the student is required to make payment to the University or to other persons, groups, or organizations for damages incurred as a result of a violation of this code.
  - (f) **OTHER SANCTIONS:** other sanctions may be imposed instead of or in addition to those specified in sections (a) through (e) of this part. For example, students may be subject to dismissal from University housing for disciplinary violations that occur in the residence halls. Likewise, students may be subject to restrictions upon or denial of driving privileges for disciplinary violations involving the use or registration of motor vehicles. Work or research projects may also be assigned.
11. Violations of sections (a) through (g) in part nine of this code may result in expulsion from the university,<sup>135</sup> unless specific and significant mitigating factors are present. Factors to be considered in mitigation shall be the present demeanor and past disciplinary record of the offender, as well as the nature of the offense and the severity of any damage, injury, or harm resulting from it.
12. Violations of sections (h) through (l) in part nine of this code may result in suspension from the University, unless specific and significant mitigating factors as specified in part eleven are present.
13. Repeated or aggravated violations of any section of this code may also result in expulsion or suspension or in the imposition of such lesser penalties as may be appropriate.
14. Attempts to commit acts prohibited by this code shall be punished to the same extent as completed violations.<sup>136</sup>

#### Interim Suspension<sup>137</sup>

15. The Vice President for Student Affairs or a designee may suspend a student for an interim period pending disciplinary proceedings or medical evaluation, such interim suspension to become immediately effective without prior notice, whenever there is evidence that the continued presence of the student on the University campus poses a substantial threat to himself or to others or to the stability and continuance of normal University functions.

16. A student suspended on an interim basis shall be given an opportunity to appear personally before the Vice President for Student Affairs or a designee within live business days from the effective date of the interim suspension in order to discuss the following issues only:
  - (a) the reliability of the information concerning the student's conduct, including the matter of his identity;
  - (b) whether the conduct and surrounding circumstances reasonably indicate that the continued presence of the student on the University campus poses a substantial threat to himself or to others or the stability and continuance of normal University functions.

#### The Judicial Programs Office

17. The Judicial Programs Office directs the efforts of students and staff members in matters involving student discipline. The responsibilities of the office include:
  - (a) determining the disciplinary charges to be filed pursuant to this code.
  - (b) interviewing and advising parties<sup>138</sup> involved in disciplinary proceedings.
  - (c) supervising, training, and advising all judicial boards.
  - (d) reviewing the decisions of all judicial boards.<sup>139</sup>
  - (e) maintaining of all student disciplinary records.
  - (f) developing of procedures for conflict resolution.
  - (g) resolving of cases of student misconduct, as specified in parts 30 and 31 of this code.
  - (h) collecting and dissemination of research and analysis concerning student conduct.
  - (i) submitting of a statistical report each semester to the campus community, reporting the number of cases referred to the office, the number of cases resulting in disciplinary action, and the range of sanctions imposed.<sup>139</sup>

#### Judicial Panels

18. Hearings or other proceedings as provided in this code may be held before the following boards or committees:
  - (a) **CONFERENCE BOARDS,** as appointed in accordance with part 31 of this code.
  - (b) **RESIDENCE BOARDS,** as established and approved by the Vice President for Student Affairs.<sup>141</sup> Students residing in group living units owned, leased, operated, or supervised by the University may petition the Vice President for authority to establish judicial boards. Such boards may be empowered to hear cases involving violations of this code, as prescribed by the Vice President for Student Affairs.
  - (c) **THE CENTRAL BOARD** hears cases involving disciplinary violations that are not referred to Residence Boards or resolved in accordance with parts 30 and 31 of this code. The Central Board is composed of five full-time students, including at least two graduate students.
  - (d) **THE APPELLATE BOARD** hears appeals from Residence boards, the Central Board, and ad hoc boards, in accordance with part 39 of this code. The Appellate Board is composed of five full-time students, including at least two graduate students.
  - (e) **AD HOC BOARDS** may be appointed by the Director of Judicial Programs when a Conference Board, a Residence Board, the Central Board, the Appellate Board, or the Senate Adjunct Committee are unable to obtain a quorum or are otherwise unable to hear a case.<sup>142</sup> Each ad hoc board shall be composed of three members, including at least one student.
  - (f) **THE SENATE COMMITTEE ON STUDENT CONDUCT** hears appeals as specified in part 38 of this code. The committee also approves the initial selection of all judicial board members, except members of conference and ad hoc boards.<sup>143</sup>
19. The presiding officer of each judicial board and of the Senate Adjunct Committee on Student Conduct may develop bylaws that are not inconsistent with any provision in this code. Bylaws must be approved by the Director of Judicial Programs.<sup>144</sup>

#### Selection and Removal of Board Members

20. Members of the various judicial boards are selected in accordance with procedures developed by the Director of Judicial Programs.
21. Members of conference and ad hoc boards are selected in accordance with parts 31 and 18 (e), respectively.
22. Prospective members of the Central Board and the Appellate Board are subject to confirmation by the Senate Committee on Student Conduct.
23. Members of the Senate Committee on Student Conduct are selected in accordance with the bylaws of the University Senate.
24. Prior to participating in board or committee deliberations, new mem-

bers of the Senate Adjunct Committee on Student Conduct and of all judicial boards, except conference and ad hoc boards, will participate in one orientation session offered at least once each academic year by the Judicial Programs Office.

25. Student members of any judicial board or committee who are charged with any violation of this code or with a criminal offense<sup>24</sup> may be suspended from their judicial positions by the Director of Judicial Programs during the pendency of the charges against them. Students convicted for any such violation or offense may be disqualified from any further participation in the University judicial system by the Director of Judicial Programs. Additional grounds and procedures for removal may also be set forth in the bylaws of the various judicial panels.

### Case Referrals

26. Any person<sup>25</sup> may refer a student or a student group or organization suspected of violating this code to the Judicial Programs Office. Persons making such referrals are required to provide information pertinent to the case and will normally be expected to appear before a judicial board as the complainant.<sup>27</sup>

### Deferral of Proceedings

27. The Director of Judicial Programs may defer disciplinary proceedings for alleged violations of this code for a period not to exceed ninety days. Pending charges may be withdrawn thereafter, dependent upon the good behavior of the respondent.

### Hearing Referrals

28. Staff members in the Judicial Programs Office will review case referrals to determine whether the alleged misconduct might result in expulsion, suspension, or disciplinary removal from University housing.<sup>28</sup> Students subject to those sanctions shall be accorded a hearing before the appropriate judicial board. All other cases shall be resolved in the Judicial Programs Office after an informal disciplinary conference, as set forth in parts 30 and 31 of this code.
29. Students referred to a judicial board hearing may elect instead to have their case resolved in accordance with parts 30 and 31. The full range of sanctions authorized by this code may be imposed, although the right of appeal shall not be applicable.

### Disciplinary Conferences<sup>29</sup>

30. Students subject to or electing to participate in a disciplinary conference in the Judicial Programs Office are accorded the following procedural protections:
- written notice of charges at least three days prior to the scheduled conference.
  - reasonable access to the case file<sup>30</sup> prior to and during the conference.
  - an opportunity to respond to the evidence against them and to call appropriate witnesses in their behalf.
  - the right to be accompanied and assisted by a representative, in accordance with Part 33 of this code.
31. Disciplinary conferences shall be conducted by the Director of Judicial Programs or a designee.<sup>31</sup> Complex or contested cases may be referred by the Director to a conference board, consisting of one member of the Central Board, one member of the Appellate Board, and a staff member in the Division of Student Affairs. Conference Board members shall be selected on a rotating basis by the Director of Judicial Programs.

### Hearing Procedures

32. The following procedural guidelines shall be applicable in disciplinary hearings:
- respondents shall be given notice of the hearing date and the specific charges against them at least five days in advance and shall be accorded reasonable access to the case file, which will be retained in the Judicial Programs Office.
  - the presiding officer of any board may subpoena witnesses upon the motion of any board member or of either party and shall subpoena witnesses upon request of the board advisor. Subpoenas must be approved by the Director of Judicial Programs and shall be personally delivered or sent by certified mail, return receipt requested. University students and employees are expected to comply with subpoenas issued pursuant to this procedure, unless compliance would result in significant and unavoidable personal hardship or substantial interference with normal University activities.<sup>32</sup>

- respondents who fail to appear after proper notice will be deemed to have pleaded guilty to the charges pending against them.
- hearings will be closed to the public, except for the immediate members of the respondent's family and for the respondent's representative. An open hearing may be held, at the discretion of the presiding officer, if requested by the respondent.
- the presiding officer of each board shall exercise control over the proceedings to avoid needless consumption of time and to achieve the orderly completion of the hearing. Except as provided in section (o) of this part, any person, including the respondent, who disrupts a hearing may be excluded by the presiding officer or by the board advisor.
- hearings may be tape recorded or transcribed. If a recording or transcription is not made, the decision of the board must include a summary of the testimony which shall be sufficiently detailed to permit review by appellate bodies and by staff members in the Judicial Programs Office.
- any party or the board advisor may challenge a board member on the grounds of personal bias. Board members may be disqualified upon majority vote of the remaining members of the board, conducted by secret ballot,<sup>33</sup> or by the Director of Judicial Programs.
- witnesses shall be asked to affirm that their testimony is truthful and may be subject to charges of perjury, pursuant to part 9 (h) of this code.
- prospective witnesses, other than the complainant and the respondent, may be excluded from the hearing during the testimony of other witnesses. All parties, the witnesses, and the public shall be excluded during board deliberations.
- the burden of proof shall be upon the complainant, who must establish the guilt of the respondent by a preponderance of the evidence.<sup>34</sup>
- formal rules of evidence shall not be applicable in disciplinary proceedings conducted pursuant to this code. The presiding officer of each board shall give effect to the rules of confidentiality and privilege, but shall otherwise admit all matters into evidence which reasonable persons would accept as having probative value in the conduct of their affairs. Unduly repetitious or irrelevant evidence may be excluded.<sup>35</sup>
- respondents shall be accorded an opportunity to question those witnesses who testify for the complainant at the hearing.
- affidavits shall not be admitted into evidence unless signed by the affiant and witnessed by a University employee, or by a person designated by the Director of Judicial Programs.
- board members may take judicial notice of matters which would be within the general experience of University students.<sup>36</sup>
- board advisors may comment on questions of procedure and admissibility of evidence and will otherwise assist in the conduct of the hearing. Advisors will be accorded all the privileges of board members, and the additional responsibilities set forth in this code, but shall not vote. All advisors are responsible to the Director of Judicial Programs and shall not be excluded from hearings or board deliberations by any board or by the presiding officer of any board.
- the Director of Judicial Programs may appoint a special presiding officer to any board in complex cases or in any case in which the respondent is represented by an attorney. Special presiding officers may participate in board deliberations, but shall not vote.<sup>37</sup>
- a determination of guilt shall be followed by a supplemental proceeding in which either party and the board advisor may submit evidence or make statements concerning the appropriate sanction to be imposed. The past disciplinary record<sup>38</sup> of the respondent shall not be supplied to the board by the advisor prior to the supplementary proceeding.
- final decisions of all judicial panels shall be by majority vote of the members present and voting. A tie vote will result in a recommended acquittal in an original proceeding. A tie vote in an appellate proceeding will result in an affirmation of the original decision.
- final decisions of all boards, except conference boards, shall be accompanied by a brief written opinion.

### Attorneys and Representatives

33. Respondents or complainants participating in any disciplinary proceeding may be accompanied by a representative, who may be an attorney.<sup>39</sup> Parties who wish to be represented by an attorney in a disciplinary proceeding must so inform the Judicial Programs Office in writing at least two business days prior to the scheduled date of the proceeding. Representatives may not appear in lieu of respondents.

## Student Groups and Organizations

34. Student groups and organizations may be charged with violations of this code.
35. A student group or organization and its officers may be held collectively<sup>(43)</sup> or individually responsible when violations of this code by those associated with<sup>(41)</sup> the group or organization have received the tacit or overt consent or encouragement of the group or organization or of the group's or organization's leaders, officers, or spokesmen.
36. The officers or leaders or any identifiable spokesperson<sup>(42)</sup> for a student group or organization may be directed by the Vice President for Student Affairs or a designee to take appropriate action designed to prevent or end violations of this code by the group or organization or by any persons associated with the group or organization who can reasonably be said to be acting in the group's or organization's behalf. Failure to make reasonable efforts to comply with the Vice President's directive shall be considered a violation of part 9 (n) of this code, both by the officers, leaders, or spokesmen for the group or organization and by the group or organization itself.
37. Sanctions for group or organization misconduct may include revocation or denial of recognition or registration, as well as other appropriate sanctions, pursuant to part 10 (f) of this code.

## Appeals

38. Any disciplinary determination resulting in expulsion or suspension<sup>(43)</sup> may be appealed by the respondent to the Senate Committee on Student Conduct. The Senate Committee shall also hear appeals from denials of petitions to void disciplinary records, pursuant to part 48 of this code.
39. Final decisions of residence boards, the Central Board and ad hoc boards, not involving the sanctions specified in part 38, may be appealed by the respondent to the Appellate Board.<sup>(44)</sup>
40. Requests for appeals must be submitted in writing to the Judicial Programs Office within seven business days from the date of the letter notifying the respondent of the original decision. Failure to appeal within the allotted time will render the original decision final and conclusive.<sup>(45)</sup>
41. A written brief in support of the appeal must be submitted to the Judicial Programs Office within ten business days from the date of the letter notifying the respondent of the original decision. Failure to submit a written brief within the allotted time will render the decision of the lower board final and conclusive.<sup>(46)</sup>
42. Appeals shall be decided upon the record of the original proceeding and upon written briefs submitted by the parties. De novo hearings shall not be conducted.
43. Appellate bodies may:
  - (a) affirm the finding and the sanction imposed by the original board.
  - (b) affirm the finding and reduce, but not eliminate, the sanction, in accordance with parts 44 and 44 (a) of this code.
  - (c) remand the case to the original board, in accordance with parts 44 and 44 (b).
  - (d) dismiss the case, in accordance with parts 44 and 44 (c).
44. Deference shall be given to the determinations of lower boards:<sup>(47)</sup>
  - (a) sanctions may only be reduced if found to be grossly disproportionate to the offense.
  - (b) cases may be remanded to the original board if specified procedural errors or errors in interpretation of University regulations were so substantial as to effectively deny the respondent a fair hearing, or if new and significant evidence became available that could not have been discovered by a properly diligent respondent before or during the original hearing.<sup>(48)</sup> The decision of the lower board on remand shall be final and conclusive.
  - (c) cases may be dismissed only if the finding is held to be arbitrary and capricious.<sup>(49)</sup>
  - (d) decisions of the Appellate Board shall be recommendations to the Director of Judicial Programs.<sup>(50)</sup> Decisions of the Senate Committee on Student Conduct shall be recommendations to the Vice President for Student Affairs.
45. The imposition of sanctions will normally be deferred during the pendency of appellate proceedings, in the discretion of the Director of Judicial Programs.

## Disciplinary Files and Records

46. Case referrals may result in the development of a disciplinary file in the name of the respondent, which shall be voided if the respondent is found innocent of the charges.<sup>(51)</sup> The files of respondents found guilty of any of the charges against them will be retained as a disciplinary record for three years from the date of the letter providing notice of final disciplinary action.<sup>(52)</sup> Disciplinary records may be

retained for longer periods of time or permanently, if so specified in the sanction.

47. Disciplinary records may be voided<sup>(53)</sup> by the Director of Judicial Programs for good cause, upon written petition of respondents. Factors to be considered in review of such petitions shall include:
  - (a) the present demeanor of the respondent
  - (b) the conduct of the respondent subsequent to the violation.
  - (c) the nature of the violation and the severity of any damage, injury, or harm resulting from it.
48. Denials of petitions to void disciplinary records shall be appealable to the Senate Committee on Student Conduct, which will apply the standard of review specified in parts 44 and 44 (c). The requirements for appeals as set forth in parts 40 and 41 shall be applicable.<sup>(54)</sup>
49. Disciplinary records retained for less than ninety days or designated as "permanent" shall not be voided without unusual and compelling justification.<sup>(55)</sup>

## Annotations

1. The University is not designed or equipped to rehabilitate or incapacitate persons who pose a substantial threat to themselves or to others. It may be necessary, therefore, to remove those individuals from the campus and to sever the institutional relationship with them, as provided in this code of conduct and by other University regulations.\*

Any punishment imposed in accordance with the code may have the value of discouraging the offender and others from engaging in future misbehavior. In cases of minor disciplinary violations, the particular form of punishment may also be designed to draw upon the educational resources of the University to bring about a lasting and reasoned change in behavior. The underlying rationale for punishment need not rest on deterrence or "reform" alone, however. A just punishment may also be imposed because it is "deserved" and because punishment for willful offenses affirms the autonomy and integrity of the offender. The latter concept was well expressed by D.J.B. Hawkins in his essay "Punishment and Moral Responsibility" in *Modern Law Review* 205:

The vice of regarding punishment entirely from the points of view of reformation and deterrence lies precisely in forgetting that a just punishment is deserved. The punishment of men then ceases to be essentially different from the training of animals, and the way is open for the totalitarian state to undertake the forcible improvement of its citizens without regard to whether their conduct has made them morally liable to social coercion or not. But merit and demerit, reward and punishment, have a different significance as applied to men and as applied to animals. A dog may be called a good dog or a bad dog, but his goodness or badness can be finally explained in terms of heredity and environment. A man, however, is a person, and we instinctively recognize that he has a certain ultimate personal responsibility for at least some of his actions. Hence merit and demerit, reward and punishment, have an irreducible individual significance as applied to men. This is the dignity and the tragedy of the human person.

A similar view was expressed by Justice Powell, dissenting in **Goss v. Lopez** (42 L. Ed. 2d 725, 745):

Education in any meaningful sense includes the inculcation of an understanding in each pupil of the necessity of rules and obedience thereto. This understanding is no less important than learning to read and write. One who does not comprehend the meaning and necessity of discipline is handicapped not merely in his education but throughout his subsequent life. In an age when the home and church play a diminishing role in shaping the character and value judgments of the young, a heavier responsibility falls upon the schools. When an immature student merits censure for his conduct, he is rendered a disservice if appropriate sanctions are not applied.

2. An effort is made in the code to use a simplified numbering and lettering system, without use of Roman numerals or subsets of letters and numbers. Any part of the code can be found by reference to one number and one letter (e.g., part 10 (a) explains the meaning of expulsion).
3. Culpable conduct should include conscious acts posing a substantial risk of harm to others (e.g. throwing a heavy object out a tenth floor window above a sidewalk). If the act itself, however, is unintended (e.g., if one is distracted by a noise while climbing a flight of stairs and drops a heavy object) the individual may have failed to use reasonable care, but is not normally deserving of the moral stigma associated with a "conviction" for a disciplinary offense.

4. Former students may be charged for violations that allegedly occurred during their enrollment at the University.
5. Colleges and Universities are not expected to develop disciplinary regulations that are written with the scope or precision of a criminal code. Rare occasions may arise when conduct is so inherently and patently dangerous to the individual or to others that extraordinary action not specifically authorized in the rules must be taken.
6. The terms "suspension" and "interim suspension" are to be distinguished throughout the code and are not interchangeable.
7. Disciplinary removal from University housing should be distinguished from administrative removal for violations of the residence contract. The latter does not leave students with a disciplinary record and does not come under the purview of this code.
8. The standard set forth here represents the minimal procedural protection to be accorded to students charged with most disciplinary violations. Students who are subject to lengthy suspensions or to expulsion may be entitled to more formal procedures, including a hearing with a right to cross-examine the witnesses against them. **Goss v. Lopez 419 U.S. 565 (1975).**
9. The Supreme Court has recently rejected the theory that state schools are bound by principles of federal administrative law requiring agencies to follow their own regulations. Board of Curators, **University of Missouri v. Horowitz 55 L. Ed 2d 124, 136.** See, generally, "Violations by Agencies of Their Own Regulations" 87 *Harvard Law Review* 629 (1974).
10. Respondents in disciplinary proceedings may be directed to answer questions concerning their conduct. Students who refuse to answer on grounds of the Fifth Amendment privilege may be informed that the hearing panel could draw negative inferences from their refusal that might result in their suspension or dismissal. If the student then elects to answer, his statements could not be used against him in either state or federal court. **Garrity v. New Jersey 385 U.S. 493 (1967).** See also **Furutani v. Ewigleben 297 F. Supp. 1163 (N.D. Cal. 1969).**
11. The "controlled substances" or "illegal drugs" prohibited in this section are set forth in Schedules I through V in Article 27, part 279 of the **Annotated Code of Maryland.**
12. Colleges and Universities should be a forum for the free expression of ideas. In the recent past, however, unpopular speakers have been prevented from addressing campus audiences by students who effectively "shouted them down." Both Yale and Stanford Universities have treated such actions (which are to be distinguished from minor and occasional heckling) as serious disciplinary violations. See the "Report from the Committee on Freedom of Expression at Yale University" which is available in the Judicial Programs Office.
- The following language from the Yale report may be used to elaborate upon the intent and scope of part 9 (k) of this code:
1. "There is no right to protest within a University building in such a way that any University activity is disrupted. The administration, however, may wish to permit some symbolic dissent within a building but outside the meeting room, for example, a single picket or a distributor of handbills".
  2. [A] "member of the audience may protest in a silent, symbolic fashion, for example, by wearing a black armband. More active forms of protest may be tolerated such as briefly booing, clapping hands or heckling. But any disruptive activity must stop and not be repeated when the chair or an appropriate University official requests silence.
  3. "Nor are racial insults or any other "fighting words" a valid ground for disruption or physical attack. The banning or obstruction of lawful speech can never be justified on such grounds as that the speech or the speaker is deemed irresponsible, offensive, unscholarly, or untrue."
13. A compilation of published regulations that have been reviewed and approved by the Vice President shall be available for public inspection during normal business hours in the Judicial Programs Office.
14. The "controlled substances" or "illegal drugs" prohibited in this section are set forth in Schedules I through V in Article 27, part 279 of the **Annotated Code of Maryland.**
15. This part and parts 12 and 13 represent an attempt to give needed guidance to those who are assessing penalties. Moreover, the direction of the guidance is toward imposition of more severe disciplinary sanctions in serious cases. Nonetheless, the language concerning "mitigating factors" is broad enough to give decision makers considerable leeway to "do justice," depending upon the facts in each case. The burden of establishing facts in mitigation should, of course, be upon the respondent.
16. There does not seem to be any rational basis for imposing less severe penalties for attempts than for completed violations. The authors of the **Model Penal Code**, for example, have written that:
- To the extent that sentencing depends upon the antisocial disposition of the actor and the demonstrated need for a corrective action, there is likely to be little difference in the gravity of the required measures depending on the consummation or the failure of the plan.
- See LaFave, **Criminal Law Treatise** p. 453.
17. These procedures are analogous to those found in the "emergency" disciplinary rules adopted by the Board of Regents in 1971 and are consistent with the formal opinion of the Maryland Attorney General on this subject, dated January 23, 1969. See also **Goss v. Lopez, C419 U.S. 565 (1975).**
- Nothing in this provision would prohibit the Vice President from modifying the terms of an interim suspension, so long as the hearing requirement specified in part 16 was met. For example, a suspended student might be allowed to enter University premises solely for the purpose of attending classes.
18. Staff members in the Judicial Programs Office should endeavor to arrange a balanced presentation before the various judicial boards and may assist both complainants and respondents.
19. This language does not effect any change in previous policy concerning the powers of judicial boards. All board decisions, including those rendered by Conference Boards, shall be treated as recommendations.
20. See annotation one, *supra*. The deterrent effect of punishment is diminished if the community is unaware of the number and general nature of sanctions imposed. The Director of Judicial Programs may, for example, arrange for publication of the statistical report in the campus press each semester.
21. Boards established pursuant to this section might include modified versions of the present "Greek" or residence hall boards.
22. It is intended that a quorum will consist of three members (out of five). The authority to appoint ad hoc boards should be broadly construed and might be especially useful, for example, when a judicial board or the Senate Committee is charged with hearing a case involving one of its own members. The final determination as to whether a panel is "unable to hear a case" should be within the discretion of the Director of Judicial Programs.
23. The power of confirmation represents a significant grant of authority to the Senate Committee. The committee is presently underutilized and might best contribute to the judicial system by becoming more intimately involved with it. Moreover, confirmation procedures will give committee members direct contact with board members and will also allow the committee to exercise more control over the quality of Judicial Board decisions.
24. Proposed bylaws must be submitted to the Attorney General for review.
25. It could be a public embarrassment for the University to have a student charged with or convicted of a serious crime sit in judgment over other students in disciplinary proceedings. The various state criminal codes are usually so broad and archaic, however, that automatic suspension or removal should not result from any violation of any law (e.g., New York makes it a criminal misdemeanor for anyone "to dance continuously in a dance contest for twelve or more hours without respite").
26. Case referrals should not be limited to members of the "campus community." A student who assaults another person on campus should not escape University judicial action merely because the person assaulted was a visitor (or, as in a recent case, a former



student who had just withdrawn from the University).

27. The Director of Judicial Programs may appoint a trained volunteer from the campus community to serve as the complainant. It would be preferable, however, to employ a "community advocate" to present all disciplinary cases.

Several measures in the code are designed to restore balance in disciplinary proceedings, even in those cases in which the complainant is inexperienced with administrative adjudication:

- (a) a hearing officer may be appointed in complex or serious cases. See part 32 (p).
  - (b) the role of attorneys or advisors may be restricted. See part 33 and annotation 39.
  - (c) the "disciplinary conference" procedure is designed to eliminate adversary proceedings in minor cases. See parts 30-31 and annotation 29.
28. Staff members may consider the mitigating factors specified in part 11 to determine the permissible sanction to be imposed if the respondent is found guilty of charges. For example, a student involved in a minor altercation might be charged pursuant to part 9 (a), but referred to a disciplinary conference, thereby precluding the possibility of expulsion or suspension for the alleged misconduct.
29. The hearing procedures specified at part 32 need not be followed in disciplinary conferences. Instead a disciplinary conference would normally consist of an informal non-adversarial meeting between the respondent and a staff member in the Judicial Programs Office. Complainants would not be required to participate, unless their personal testimony was essential to the resolution of a dispositive factual issue in the case. Documentary evidence and written statements could be relied upon, so long as the respondent was given access to them in advance and allowed to respond to them at the conference. Respondents would also be allowed to bring appropriate witnesses with them and might be accompanied by a representative, who may participate in discussions, although not in lieu of participation by the respondent.

The conference procedure is designed to reduce the steady growth of unnecessary legalism in disciplinary proceedings. The worst features of the adversary system (including the concept that judicial proceedings are a "contest" to be "won" by clever manipulation of procedural rules) undermine respect for the rule of law. Colleges and universities can and should be a testing ground for development of carefully reasoned alternatives to current procedural excesses in the larger society.\*\*

Procedures comparable to the disciplinary conference (referred to as "structured conversations") are suggested by David L. Kirp in his 1976 Stanford Law Review article "Proceduralism and Bureaucracy: Due Process in the School Setting" 38 Stanford Law Review 841:

The benefits of such conversations in the school setting may better be appreciated by contrasting them with the typical due process hearing. Hearings are designed to determine the facts of a particular controversy, and apply predetermined rules to the facts thus found. At that point, the function of the hearing is at an end. The wisdom of the underlying substantive rules has no relevance, nor is broader discussion of grievances generally encouraged, unless it is somehow pertinent to the dispute at hand.

Conversation knows no such limits. It too serves as a vehicle for resolving what are likely to be factually uncomplicated disputes, but it does more than that. It enables students to feel that they are being listened to and may encourage them to raise underlying grievances. It provides administrators with a relatively inexpensive vehicle for monitoring, and hence a basis for reshaping institutional relationships. The outcome of these "orderly thoughtful conversations" may well be decisions different in their particulars from what might otherwise have been anticipated; repeated conversations that touch upon similar student grievances may ultimately lead disciplinarians to reassess whether control is so vital, and collaboration so improbable, as a means of assuring institutional order.

The conference procedure would not be used in any case that might result in any form of separation from the University. Accordingly, the procedure appears to meet or exceed the due process requirements set forth by the United States Supreme Court for cases involving suspensions of ten days or less. In *Goss v. Lopez* the Court held:

We stop short of construing the Due Process Clause to require, countrywide, that hearings in connection with short suspensions must afford the student the opportunity to secure counsel, to confront and cross-examine witnesses supporting the charge, or to call his own witnesses to verify his version of the incident. Brief disciplinary suspensions are almost countless. To impose in each such case even truncated trial-type procedures might well overwhelm administrative facilities in many places and, by diverting resources, cost more than it would save in educational effectiveness. Moreover, further formalizing the suspension process and escalating its formality and adversary nature may not only make it too costly as a regular disciplinary tool but also destroy its effectiveness as part of the teaching process.

On the other hand, requiring effective notice and an informal hearing permitting the student to give his version of the events will provide a meaningful hedge against erroneous action. At least the disciplinarian will be alerted to the existence of disputes about facts and arguments about cause and effect. He may then determine himself to summon the accuser, permit cross-examination, and allow the student to present his own witnesses. In more difficult cases, he may permit counsel. In any event, his discretion will be more informed and we think the risk of error substantially reduced (42 L. Ed. 2d 725, 740).

30. The case file consists of materials that would be considered "education records," pursuant to the Family Educational Rights and Privacy Act. Personal notes of University staff members or complainants are not included.
31. Determinations made in accordance with parts 30 and 31 are not appealable.
32. Internal subpoenas may be desirable, since cases have arisen in which complainants or respondents were unable to present an effective case due to the indifference and lethargy of potential witnesses. A student who refuses to respond to a subpoena may be charged with a violation of part 9(n) of the code.

The Director of Judicial Programs should not approve a subpoena unless the expected testimony would be clearly relevant. Likewise, a subpoena designed to embarrass or harass a potential witness should not be authorized.

The subpoena power specified here is not designed to reach documents or other materials.

33. Board members should be disqualified on a case by case basis only; permanent removal should be accomplished in accordance with part 25. Board members should not be readily disqualified. The term "personal bias" involves animosity toward a party or favoritism toward the opposite party. See, generally, Davis, Administrative Law Treatise "Bias" Section 12.03.
34. See *Bernstein v. Real Estate Commission* 221 Md. 221 (1959), which established the "preponderance" standard for State administrative proceedings.
35. Testimony containing hearsay may be heard, if relevant. A final determination should not be based on hearsay alone.
36. Every statement or assertion need not be proven. For example, board members may take notice that many students commute to the University.
37. Student presiding officers are often at a disadvantage when the respondent is represented by an attorney. The proceedings might progress more rapidly and efficiently if a special presiding officer were appointed. Generally, a staff member in the Judicial Programs Office would be selected for such a responsibility, although other University employees with legal training might also be called upon.
38. Information pertaining to prior findings of disciplinary and residence hall violations might be reported, as well as relevant criminal convictions. Prior allegations of misconduct should not be disclosed.
39. A disciplinary hearing at the University is not analogous to a criminal trial. The presiding officer and the board advisor are authorized to exercise active control over the proceedings in order to elicit relevant facts and to prevent the harassment or intimidation of witnesses. No party or representative may use threatening or abusive language, engage in excessive argumentation, interrupt the proceedings with

redundant or frivolous objections, or otherwise disrupt the hearing.

Students have not been determined to have a constitutional right to full legal representation in University disciplinary hearings. The privilege of legal representation, granted in this part, should be carefully reviewed in any subsequent revision of the code.

40. Punishment of one or several individuals for the acts of others should be avoided if the identities of the specific offenders can be readily ascertained.
41. Association does not require formal membership. Individuals who might reasonably be regarded as regular participants in group or organization activities may be held to be associated with the group or organization.
42. Leaders or spokesmen need not be officially designated or elected. For example, if a group or organization accepted or acquiesced in the act or statement of an individual associated with it, that individual might reasonably be regarded as a leader or a spokesman for the group or organization.
43. "Suspension" includes deferred suspension but not interim suspension or suspension that is withheld. See annotation six.
44. Students left with a disciplinary record after a disciplinary conference may request that their record be voided, in accordance with part 47. Denials may be appealed, pursuant to part 48.
45. The decision will be "final and conclusive" on the part of the judicial board, but will remain a recommendation to the Director of Judicial Programs.
46. This part is intended to discourage frivolous appeals. Respondents who are genuinely interested in pursuing an appeal can reasonably be expected to prepare a written brief.
47. Appellate bodies that do not give deference (i.e., a presumption of validity) to lower board decisions will distort the entire disciplinary system. Respondents would be encouraged to "test their strategy" and "perfect their technique" before lower boards, since the matter would simply be heard again before a "real" board with final authority.
 

Lower board members usually have the best access to the evidence, including an opportunity to observe the witnesses and to judge their demeanor. Members of appellate bodies should be especially careful not to modify a sanction or to remand or dismiss a case simply because they may personally disagree with the lower board's decision.

The opportunity to appeal adverse decisions has not been determined to be a requirement of constitutional "due process" in student disciplinary cases.\*\*\* There is presently no legal obstacle to adopting an amendment to the code which would eliminate the appellate system altogether.
48. Respondents who obtain information at the hearing that might lead to new evidence are required to request an adjournment rather than wait to raise the matter for the first time on appeal.
49. An arbitrary and capricious decision would be a decision "unsupported by any evidence." The cited language has been adopted by the Federal Courts as the proper standard of judicial review, under the due process clause, of disciplinary determinations made by State boards or agencies. See *McDonald v. Board of Trustees of the University of Illinois* 375 F. Supp. 95, 108 (N.D. Ill., 1974).
50. See annotation 19.
51. Voided files will be so marked, shall not be kept with active disciplinary records, and shall not leave any student with a disciplinary record.
52. Disciplinary records may be reported to third parties, in accordance with University regulations and applicable State and Federal law.
53. Void records shall be treated in the manner set forth in annotation 51.
54. The scope of review shall be limited to the factors specified at part 47. An inquiry into the initial determination of guilt or innocence is not permitted. For example, when considering the "nature" of the violation, pursuant to part 47 (c), it is to be assumed that the violation occurred and that the respondent was responsible for it.

55. Some discretion must be retained to void even "permanent" disciplinary records. It may be unnecessary, for example, to burden a graduating senior with a lifelong stigma for an act committed as a freshman. Social norms also change rapidly. "Unacceptable" conduct in one generation may become permissible and commonplace in the next.

\*See the procedures for mandatory medical withdrawal developed by the Vice President for Student Affairs.

\*\*See Macklin Fleming, *The Price of Perfect Justice: In our pursuit of perfectibility, we necessarily neglect other elements of an effective procedure, notably the resolution of controversies within a reasonable time at a reasonable cost, with reasonable uniformity we impair the capacity of the legal order to achieve the basic values for which it was created, that is, to settle disputes promptly and peaceably, to restrain the strong, to protect the weak, and to conform the conduct of all to settled rules of law.*

\*\*\*See the due process standard set forth in *Dixon v. Alabama* 294 F.2d 150, 158-159 (Fifth Cir., 1961), Cert. den. 368 U.S. 930.

## APPENDIX D: UNIVERSITY POLICY ON DISCLOSURE OF STUDENT RECORDS

### Buckley Amendment

The University of Maryland adheres to a policy of compliance with the Family Educational Rights and Privacy Act (Buckley Amendment). As such, it is the policy of the University (1) to permit students to inspect their education records, (2) to limit disclosure to others of personally identifiable information from education records without students' prior written consent, and (3) to provide students the opportunity to seek correction of their education records where appropriate.

#### I. Definitions

- A. "Student" means an individual who is or who has been in attendance at The University of Maryland. It does not include any applicant for admission to the University who does not matriculate, even if he or she previously attended the University. (Please note, however, that such an applicant would be considered a "student" with respect to his or her records relating to that previous attendance.)
- B. "Education records" include those records that contain information directly related to a student and that are maintained as official working files by the University. The following are not education records:
  - (1) records about students made by professors and administrators for their own use and not shown to others;
  - (2) campus police records maintained solely for law enforcement purposes and kept separate from the education records described above and not shown to others;
  - (3) employment records, except where a currently enrolled student is employed as a result of his or her status as a student;
  - (4) records of a physician, psychologist, or other recognized professional or paraprofessional made or used only for treatment purposes and available only to persons providing treatment. However, these records may be reviewed by an appropriate professional of the student's choice;
  - (5) records that contain only information relating to a person's activities after that person is no longer a student at the University.
- II. It is the policy of The University of Maryland to permit students to inspect their education records.

#### A. Right of Access

Each student has a right of access to his or her education records, except confidential letters of recommendation received prior to January 1, 1975, and financial records of the student's parents.

#### B. Waiver

A student may, by a signed writing, waive his or her right of access to confidential recommendations in three areas: admission to any educational institution, job placement, and receipt of honors and awards. The University will not require such waivers as a condition for admission or receipt of any service or benefit normally provided to students. If the student chooses to waive his or her right of access, he or she will be notified, upon written request, of the names of all persons making confidential recommendations. Such recommendations will be used only for the purpose for which they were specifically intended. A waiver may be revoked in writing at

any time, and the revocation will apply to all subsequent recommendations, but not to recommendations received while the waiver was in effect.

### C. Types and Locations of Education Records, Titles of Records Custodians

Please note that all requests for access to records should be routed through the Registrations Office (see II.D. below).

#### (1) Admissions

Applications and transcripts from institutions previously attended.

a. Undergraduate|Director of Undergraduate Admissions, North Administration

b. Graduate|Director of Graduate Records, South Administration

#### (2) Registrations

All ongoing academic and biographical records. Graduate and Undergraduate|Director of Registrations, North Administration.

#### (3) Departments

Departmental offices; Chairs (Check first with the Director of Registrations). (Miscellaneous records kept vary with the department.)

#### (4) Deans

Deans' offices of each school. Miscellaneous records.

#### (5) Resident Life

North Administration, Director of Resident Life. Students' housing records.

#### (6) Advisors

Pre-Law Advisor: Hornbake Library

Pre-Dental Advisor: Turner Laboratory

Pre-Medical Advisor: Turner Laboratory

Letters of evaluation, personal information sheet, transcript, test scores (if student permits).

#### (7) Judicial Affairs

North Administration Building, Director of Judicial Affairs. Students' judicial and disciplinary records.

#### (8) Counseling Center

Shoemaker Hall, Director. Biographical data, summaries of conversations with students, test results. (Where records are made and used only for treatment purposes, they are not education records and are not subject to this policy.)

#### (9) Financial Aid

Undergraduate|Mitchell Building, Director of Financial Aid. Graduate and Professional Schools|Located in deans' offices. Financial aid applications, needs analysis statements, awards made (no student access to parents' confidential statements).

#### (10) Career Development Center

Undergraduate Library, Director. Recommendations, copies of academic records (unofficial). (Note WAIVER section.)

#### (11) Business Services

Lee Building, Director. All student accounts receivable, records of students' financial charges, and credits with the University.

### D. Procedure to be Followed

Requests for access should be made in writing to the Office of Registrations. The University will comply with a request for access within a reasonable time, at least within 45 days. In the usual case, arrangements will be made for the student to read his or her records in the presence of a staff member. If facilities permit, a student may ordinarily obtain copies of his or her records by paying reproduction costs. The fee for copies is \$.25 per page. No campus will provide copies of any transcripts in the student's records other than the student's current University transcript from that campus. Official University transcripts (with University seal) will be provided at a higher charge.

III. It is the policy of The University of Maryland to limit disclosure of personally identifiable information from education records unless it has the student's prior written consent, subject to the following limitations and exclusions.

#### A. Directory Information

(1) The following categories of information have been designated directory information:

Name

Address

Telephone listing

Date and place of birth

Photograph

Major field of study

Participation in officially recognized activities and sports

Weight and height of members of athletic teams

Dates of attendance

Degrees and awards received

Most recent previous educational institution attended

(2) This information will be disclosed even in the absence of consent unless the student files written notice requesting the University not to disclose any or all of the categories within three weeks of the first day of the semester in which the student begins each school year. This notice must be filed annually within the above allotted time to avoid automatic disclosure of directory information. The notice should be filed with the campus Registrations Office. See II.C.

(3) The University will give annual public notice to students of the categories of information designated as directory information.

(4) Directory information may appear in public documents and otherwise be disclosed without student consent unless the student objects as provided above.

(5) All requests for non-disclosure of directory information will be implemented as soon as publication schedules will reasonably allow.

(6) The University will use its best efforts to maintain the confidentiality of those categories of directory information that a student properly requests not be publicly disclosed. The University, however, makes no representations, warranties, or guarantees that directory information designated for non-disclosure will not appear in public documents.

### B. Prior Consent not Required

Prior consent will not be required for disclosure of education records to the following parties:

(1) School officials of The University of Maryland who have been determined to have legitimate educational interests;

(a) "School officials" include instructional or administrative personnel who are or may be in a position to use the information in furtherance of a legitimate objective;

(b) "Legitimate educational interests" include those interests directly related to the academic environment;

(2) Officials of other schools in which a student seeks or intends to enroll or is enrolled. Upon request, and at his or her expense, the student will be provided with a copy of the records that have been transferred;

(3) Authorized representatives of the Comptroller General of the U.S., the Secretary of Education, the Secretary of the Department of Health and Human Services, the Director of the National Institute of Education, the Administrator of the Veterans' Administration, but only in connection with the audit or evaluation of federally supported education programs, or in connection with the enforcement of or compliance with Federal legal requirements relating to these programs. Subject to controlling Federal law or prior consent, these officials will protect information received so as not to permit personal identification of students to outsiders and destroy such information when it is no longer needed for these purposes;

(4) Authorized persons and organizations that are given work in connection with a student's application for, or receipt of, financial aid, but only to the extent necessary for such purposes as determining eligibility, amount, conditions, and enforcement of terms and conditions;

(5) State and local officials to which such information is specifically required to be reported by effective state law adopted prior to November 19, 1974;

(6) Organizations conducting educational studies for the purpose of developing, validating, or administering predictive tests, administering student aid programs, and improving instruction. The studies shall be conducted so as not to permit personal identification of students to outsiders, and the information will be destroyed when no longer needed for these purposes;

(7) Accrediting organizations for purposes necessary to carry out their functions;

(8) Parents of a student who is a dependent for income tax purposes. (Note: The University may require documentation of dependent status such as copies of income tax forms.)

(9) Appropriate parties in connection with an emergency, where knowledge of the information is necessary to protect the health or safety of the student or other individuals;

(10) In response to a court order or subpoena, the University will make reasonable efforts to notify the student before complying with the court order.

### C. Prior Consent Required

In all other cases, the University will not release personally identifiable information in education records or allow access to those records without prior consent of the student. Unless disclosure is to the student himself or herself, the consent must be written, signed, and dated, and must specify the records to

be disclosed, the identity of the recipient, and the purpose of disclosure. A copy of the record disclosed will be provided to the student upon request and at his or her expense.

#### D. Record of Disclosures

The University will maintain with the student's education records a record for each request and each disclosure, except for the following:

- (1) disclosures to the student himself or herself;
- (2) disclosures pursuant to the written consent of the student (the written consent itself will suffice as a record);
- (3) disclosures to instructional or administrative officials of the University;
- (4) disclosures of directory information. This record of disclosures may be inspected by the student, the official custodian of the records, and other University and governmental officials.

IV. It is the policy of The University of Maryland to provide students the opportunity to seek correction of their education records.

#### A. Request to Correct Records

A student who believes that information contained in his or her education records is inaccurate, misleading, or violative of privacy or other rights may submit a written request to the Office of Registrations specifying the document(s) being challenged and the basis for the complaint. The request will be sent to the person responsible for any amendments to the record in question. Within a reasonable period of time of receipt of the request, the University will decide whether to amend the records in accordance with the request. If the decision is to refuse to amend, the student will be so notified and will be advised of the right to a hearing. He or she may then exercise that right by written request to the Office of the Chancellor.

#### B. Right to a Hearing

Upon request by a student, the University will provide an opportunity for a hearing to challenge the content of the student's records. A request for a hearing should be in writing and submitted to the Office of Registrations. Within a reasonable time of receipt of the request, the student will be notified in writing of the date, place, and time reasonably in advance of the hearing.

##### (1) Conduct of the Hearing

The hearing will be conducted by a University official who does not have a direct interest in the outcome. The student will have a full and fair opportunity to present evidence relevant to the issues raised and may be assisted or represented by individuals of his or her choice at his or her own expense, including an attorney.

##### (2) Decision

Within a reasonable period of time after the conclusion of the hearing, the University will notify the student in writing of its decision. The decision will be based solely upon evidence presented at the hearing and will include a summary of the evidence and the reasons for the decision. If the University decides that the information is inaccurate, misleading, or otherwise in violation of the privacy or other rights of the student, the University will amend the records accordingly.

#### C. Right to Place an Explanation in the Records

If, as a result of the hearing, the University decides that the information is not accurate, misleading, or otherwise in violation of the student's rights, the University will inform the student of the right to place in his or her record a statement commenting on the information and/or explaining any reasons for disagreeing with the University's decision. Any such explanation will be kept as part of the student's record as long as the contested portion of the record is kept and will be disclosed whenever the contested portion of the record is disclosed.

#### V. Right to File Complaint

A student alleging University noncompliance with the Family Educational Rights and Privacy Act may file a written complaint with the Family Educational Rights and Privacy Act Office (FERPA), Department of Education, Switzer Building, 400 Maryland Avenue, S.W., Room 4074, Washington, D.C. 20202.

## APPENDIX E: SMOKING POLICY AND GUIDELINES

Effective Spring Semester 1986

## Policy

It is hereby established as the policy of the College Park Campus to achieve a public environment as close to smoke-free as practicably possible. Obtaining and maintaining this result will require the willingness, understanding, and patience of all members of the campus community working together.

## Guidelines

The following guidelines shall serve to implement the Campus Smoking Policy:

#### A. Smoking is prohibited in indoor locations where smokers and non-smokers occupy the same area. Such areas include:

1. Academic areas: classrooms, lecture halls, seminar rooms, laboratories, libraries, computing facilities.
2. Conference rooms, auditoria, exhibition areas, indoor athletic facilities, theaters, pavilions, and retail stores.
3. Health facilities
4. Common/public areas (shared spaces not fully enclosed by floor-to-ceiling partitions and doors) including: stairwells, elevators, escalators, lobbies, hallways, waiting rooms, reception areas, restrooms, and customer service areas.
5. Any area in which a fire or safety hazard exists.

#### B. Unit heads, or their designees, may establish the following locations as "Smoking Permitted Areas":

1. Up to one-third of dining, large lounge, and other large open spaces, as long as ventilation is adequate. Smoking of cigars and pipes, however, is prohibited.
2. Rooms that have closed doors and floor-to-ceiling partitions as long as ventilation is adequate and non-smokers in adjacent areas are not exposed to second hand or side-stream smoke.
3. The Director of the Stamp Student Union may, at his/her discretion, allow groups and organizations with permanent offices in the Union to determine the smoking policy in those offices. Such individual policies must adhere to the restrictions set forth in Section III, B. 2 of this policy.

The Director of the Stamp Student Union may, at his/her discretion, allow cigarette smoking by groups making use of the Grand Ballroom, the Colony Ballroom, the Atrium, and other rooms in the Union if he/she determines that it is appropriate to the nature of the event scheduled.

#### C. As a general rule, preferential consideration shall be given to non-smokers whenever it is clear that they are being exposed involuntarily to smoke.

## APPENDIX F: ACADEMIC INTEGRITY

The academic regulations and requirements of The University of Maryland College Park are designed to provide and enhance a maximum educational environment for the entire campus academic community. The success of the design depends upon the mutual respect, courteous treatment, and consideration of everyone involved. The following statements contain procedures and expectations for both faculty and students. For questions about the interpretation of these statements, students should contact their academic advisor, department chair, or dean.

## Resolution on Academic Integrity

Approved by Board of Regents: May 8, 1981

WHEREAS, it is the responsibility of The University of Maryland to maintain integrity in teaching and learning as a fundamental principle on which a university is built; and

WHEREAS, all members of the University community share in the responsibility for academic integrity; therefore

BE IT RESOLVED, that The University of Maryland Board of Regents hereby adopts the following Statement of Faculty, Student and Institutional Rights and Responsibilities for Academic Integrity

## Statement of Faculty, Student and Institutional Rights and Responsibilities for Academic Integrity

## Preamble

At the heart of the academic enterprise are learning, teaching, and scholarship. In universities these are exemplified by reasoned discussion between student and teacher, a mutual respect for the learning and teaching process, and intellectual honesty in the pursuit of new knowledge. In the traditions of the academic enterprise, students and teachers have certain rights and responsibilities which they bring to the academic community. While the following statements do not imply a contract between the teacher or the University and the student, they are nevertheless conventions which the University believes to be central to the learning and teaching process.

## Faculty Rights and Responsibilities

1. Faculty shall share with students and administration the responsibility for academic integrity.
2. Faculty are accorded freedom in the classroom to discuss subject matter reasonably related to the course. In turn they have the responsibility to encourage free and honest inquiry and expression on the part of students.
3. Faculty are responsible for the structure and content of their courses, but they have the responsibility to present courses that are consistent with their descriptions in the University catalog. In addition, faculty have the obligation to make students aware of the expectations in the course, the evaluation procedures, and the grading policy.
4. Faculty are obligated to evaluate students fairly and equitably in a manner appropriate to the course and its objectives. Grades shall be assigned without prejudice or bias.
5. Faculty shall make all reasonable efforts to prevent the occurrence of academic dishonesty through the appropriate design and administration of assignments and examinations, through the careful safeguarding of course materials and examinations, and through regular reassessment of evaluation procedures.
6. When instances of academic dishonesty are suspected, faculty shall have the right and responsibility to see that appropriate action is taken in accordance with University regulations.

## Student Rights and Responsibilities

1. Students shall share with faculty and administration the responsibility for academic integrity.
2. Students shall have the right of inquiry and expression in their courses without prejudice or bias. In addition, students shall have the right to know the requirements of their courses and to know the manner in which they will be evaluated and graded.
3. Students shall have the obligation to complete the requirements of their courses in the time and manner prescribed and to submit to evaluation of their work.
4. Students shall have the right to be evaluated fairly and equitably in a manner appropriate to the course and its objectives.
5. Students shall not submit as their own work any work which has been prepared by others. Outside assistance in the preparation of this work, such as librarian assistance, tutorial assistance, typing assistance, or such assistance as may be specified or approved by the instructor is allowed.
6. Students shall make all reasonable efforts to prevent the occurrence of academic dishonesty. They shall by their own example encourage academic integrity and shall themselves refrain from acts of cheating and plagiarism or other acts of academic dishonesty.
7. When instances of academic dishonesty are suspected, students shall have the right and responsibility to bring this to the attention of the faculty or other appropriate authority.

## Institutional Responsibility

1. Campuses or appropriate administrative units of The University of Maryland shall take appropriate measures to foster academic integrity in the classroom.
2. Campuses or appropriate administrative units shall take steps to define acts of academic dishonesty, to ensure procedures for due process for students accused or suspected of acts of academic dishonesty, and to impose appropriate sanctions on students guilty of acts of academic dishonesty.
3. Campuses or appropriate administrative units shall take steps to determine how admission or matriculation shall be affected by acts

of academic dishonesty on another campus or at another institution. No student suspended for disciplinary reasons at any campus of The University of Maryland shall be admitted to any other University of Maryland campus during the period of suspension.

AND, BE IT FURTHER RESOLVED, that campuses or appropriate administrative units of the University of Maryland will publish the above Statement of Faculty, Student and Institutional Rights and Responsibilities for Academic Integrity in faculty handbooks and in student handbooks and catalogs; and

BE IT FURTHER RESOLVED, that the Board of Regents hereby directs each campus or appropriate administrative unit to review existing procedures or to implement new procedures for carrying out the institutional responsibilities for academic integrity cited in the above Statement; and

BE IT FINALLY RESOLVED, that the Board of Regents hereby directs each campus or appropriate administrative unit to submit to the President or his designee for approval the campus' or unit's procedure for implementation of the institutional responsibility provisions of the above Statement.

## APPENDIX G: STATUTE OF LIMITATIONS FOR THE TERMINATION OF DEGREE PROGRAMS

The following policies apply to all undergraduate degree programs terminated at the University of Maryland College Park at the beginning of the Spring, 1990 Semester and thereafter.

1. All students enrolled at the University of Maryland College Park or at a Maryland community college program articulated with the terminated degree program during the semester in which the program is terminated must complete the major requirements of the terminated degree program within five calendar years of the date upon which the program is terminated. If only a few students are enrolled in a terminated program, a shorter time limit may be imposed based on a study of the academic records of all students enrolled in the program. If a shorter time period is imposed, all students enrolled in the program will be notified of its length.
2. Students who, prior to the termination date had been enrolled in the terminated program or a Maryland community college articulated with the terminated program, but who subsequently interrupt their studies at the University of Maryland College Park or the community college for one or more semesters will be allowed to enter or re-enter the program only if a careful analysis of their records by the appropriate dean indicates they will be able to complete the major requirements of the terminated program within the remaining time period specified.
3. When a program is terminated the University of Maryland College Park will make a good faith effort to notify those students who had interrupted their studies in that program. As part of that good faith effort, the University of Maryland College Park will publish in its re-enrollment forms, catalogues, and schedules of classes a statement advising returning students that programs may have been terminated and that the student needs to check the current status of the program.
4. At the end of the time period specified for completion of major requirements after the termination date of the program, the relevant department or college will evaluate the records of each student enrolled in the program for fulfillment of departmental major requirements and will notify students whether they have completed these requirements. Such notice shall be in writing and sent to the student's last known addresses.
5. When a degree program is terminated, the University will send notification of the time limit for completion of the major requirements to all students enrolled in the program at that time. It will also attempt to send notification to students who interrupted their studies while enrolled in the program in the preceding three years, insofar as such students can reasonably be identified. This notification will be sent to the students' last known addresses on file with the University. Such notifications also will be sent to the Maryland community colleges having programs articulated with the terminated program.

Adjunct Committee on Academic Standards and Procedures  
Approved December 7, 1989

## APPENDIX H: POLICY AND PETITION FOR THE DETERMINATION OF IN-STATE STATUS FOR ADMISSION, TUITION, AND CHARGE-DIFFERENTIAL PURPOSES

An initial determination of in-state status for admission, tuition, and charge-differential purposes will be made by the University at the time a student's application for admission is under consideration. The determination made at that time, and any determination made thereafter, shall prevail for each subsequent semester until the determination is successfully challenged in a timely manner. A student may request a re-evaluation of his or her status by filing a **Petition for In-State Classification for Admission, Tuition, and Charge-Differential Purposes** (hereinafter referred to as **Petition**). A student must meet the requirements for in-state status and submit a completed **Petition** (including all documents required therein) by the last day of late registration for the semester the student wishes to be classified as in-state. No change in status requested by the student shall be given retroactive effect prior to the semester for which a timely **Petition** was filed. Only one **Petition** per semester may be filed by a student.

In those instances where an entering class size is established and where an application deadline is stated, in-state conditions for admission must be satisfied as of the announced closing application date.

A determination of in-state status is valid only if a student actually enrolls in the semester for which he or she applied. Determinations which are made in cases where the student does not actually enroll are not valid for a subsequent semester (with respect to which all requirements must be independently satisfied and a new and timely **Petition** submitted).

### General Policy

1. It is the policy of the University of Maryland to grant in-state for admission, tuition, and charge-differential purposes in the following cases:
  - a. where a student is financially dependent upon a parent, parents, or spouse who has maintained a domicile in Maryland (see paragraph 4 under **Definitions** and paragraphs 3 and 4 under **Application**) for at least six (6) consecutive months immediately prior to and including the last day available for late registration for the forthcoming semester; provided further, that such financial dependence has existed for at least six (6) consecutive months immediately prior to and including the last day available for late registration for the forthcoming semester.
  - b. where a student is financially independent and has maintained a domicile in Maryland (see paragraph 4 under **Definitions** and paragraphs 3 and 4 under **Application**) for at least six (6) consecutive months immediately prior to and including the last day available for late registration for the forthcoming semester; provided further, that such financial independence has existed for at least twelve (12) consecutive months immediately prior to and including the last day available for late registration for the forthcoming semester.
  - c. where a student is the spouse or dependent child of a full-time employee of the University.
  - d. where student is a full-time employee of the University of Maryland or a graduate assistant.
  - e. where a student is a full-time member of the Armed Forces of the United States and resides in the State of Maryland.
    - i. dependent spouse of full-time members of the Armed Forces of the United States, residing in the State of Maryland, shall be granted in-state status.
    - ii. dependent children of full-time members of the Armed Forces of the United States may be eligible to receive state status provided the criteria set forth in paragraph 1.a have been satisfied.
2. It is the policy of the University of Maryland to attribute out-of-state status for admission, tuition, and charge-differential purposes in all other cases.
3. Each campus of the University will be responsible for making the in-state determination for the prospective or enrolled student.
4. In-state status is lost at any time a financially independent student establishes a domicile outside the State of Maryland. If the parent(s) or other persons through whom the student has attained in-state status establish a domicile in another state, the student shall be assessed out-of-state tuition and charges six months after the out-of-state move occurs.

5. A student shall notify the University in writing with fifteen (15) days of any change of circumstances which may alter his or her in-state classification.

### Definitions

1. A student is financially dependent if he or she receives half of his or her support from another person or persons, or appears as a dependent on the federal or state income tax return of any other person. Conversely, a student is financially independent if he or she declares himself or herself so, if he or she receives less than half of his or her support from any other person or persons and if he or she does not appear as a dependent on the federal or state income tax return of any other person.
2. A parent includes a natural parent, a parent by legal adoption and an adoptive parent, and a legally-appointed guardian.
3. A spouse is a partner in a legally contracted marriage.
4. For the purpose of determining entitlement to in-state status at the University of Maryland, a domicile is a person's permanent place of abode; there must exist a demonstrated intent to live permanently in Maryland, and a legal ability under Federal and State law to reside permanently in the State. For purposes of this policy, only one (1) domicile may be maintained at a given time.

### Application

1. A student requesting redetermination to in-state status who asserts that he or she is **financially dependent** upon a parent(s) or spouse domiciled in Maryland, as previously defined, will be required to produce by affidavit, in addition to other proof, documentation of the student's earnings for the year immediately prior to and including the last day of late registration for the semester for which the determination is requested.
2. A student requesting in-state status who asserts that he or she is **financially independent** will be required to present, by affidavit, documentation cited in paragraph one (1).
3. An individual's immigration status will not preclude the award of in-state status if that individual has the legal capacity to remain permanently in the United States.
4. In determining domicile, the University shall take into consideration, but shall not be limited to, the following criteria as they pertain to the individual case. **These criteria must be met at least six (6) months prior to the announced closing application date and/or the last day available for registration for the forthcoming semester:**
  - a. Owning or renting and occupying real property in Maryland as one's residence on a year-round basis.
  - b. Maintaining a substantially uninterrupted presence within Maryland for six (6) consecutive months, including those months when the University is not in regular session.
  - c. Maintaining within the State of Maryland all or substantially all personal possessions.
  - d. Paying Maryland income tax on all earned taxable income, including all taxable income earned outside the State.
  - e. Giving Maryland as the home address on federal and state income tax forms.
  - f. Registering all owned motor vehicles in Maryland accordance with Maryland law.
  - g. Possessing a valid Maryland driver's license, if licensed, in accordance with Maryland law.
  - h. If registered to vote, being so registered in Maryland; transferring voter registration to Maryland at the earliest legal permissible date.

**N.B.** The documentation offered in these instances may be required to be affidavit form.
5. The burden rest upon the student to demonstrate to the satisfaction of the University than an in-state classification is appropriate.
6. In the event that inaccurate, false, and/or misleading information is presented, the University, may at its discretion, revoke any subsequent assignment of in-state status. In such case the student shall, at a minimum, be required to pay all cost differentials between in-state and out-of-state status beginning with the semester for which in-state status was obtained. In the vent in-state status is assigned as a result of administrative or clerical error, the University may, at its discretion, revoke this assignment. In such case the student may be required to pay all cost differentials between in-state and out-of-state status beginning with the semester for which in-state status was erroneously assigned.

## Appeals

1. A student who has been denied reclassification following the submission of a **Petition** may request a personal interview with a campus classification officer (or his or her designee) in order to present any and all evidence relevant to the student's classification, and to answer questions which may have been raised about his or her status. Such request must be in writing and must be received by the University no later than ten (10) days from the date of the University's written denial of the **Petition**.
2. If the decision of the campus classification officer is adverse to the student, a written appeal may be filed with the Secretary of the Intercampus Review Committee (IRC), Office of Undergraduate Admissions, Mitchell Building, University of Maryland at College Park, College Park, Maryland 20742. Such written appeal must be received in the above office no later than fifteen (15) days from the date of the written adverse decision of the campus classification officer, and must set forth in detail all facts and arguments upon which the appeal is based. The written appeal shall be considered by the IRC which shall reach a decision in the case. The decision of the IRC shall be final and binding.
3. Unless otherwise specifically requested by the IRC, information and arguments not presented by the student to the campus classification officer shall not thereafter be considered on appeal. Insofar as the burden of proof rests upon the student, failure to provide complete and timely responses to requests for information by the University may result in a denial of the appeal.

## Decisions

Decisions on requests for redetermination may require an extended period of time. It is hoped that a decision in each case will be made within ninety (90) days of a request for redetermination. During this period of time, or any further period of time required by the University, fees and charges based on the previous determination must be paid. If the determination is changed, any excess fees and charges will be refunded.

## Implementation

This policy will become effective with any terms of the University beginning on or after the Fall 1982 semester. The terms of this policy will not be applied retroactively.

## APPENDIX I: UNDERGRADUATE STUDENT GRIEVANCE PROCEDURE

**\*The Undergraduate Student Grievance Procedure is currently being revised by the Campus Senate to reflect the recent reorganization of the academic units at College Park. The following interim procedure is to be in effect until such time as the procedure is revised by the Campus Senate. For the nondepartmentalized colleges, the dean for Undergraduate Studies shall assume the responsibilities formerly held by the division provost. For the departmentalized colleges, the dean of the College shall assume the responsibilities formerly held by the division provost.**

Approved by Board of Regents: April 14, 1981

### I. Purpose

The following procedure provides a means for an undergraduate student to present a complaint resulting from a believed violation of the "Expectations of Faculty and Academic Units," set forth in Section II, below, to have that complaint examined as a matter of regular procedure, and to receive a final determination thereon. This procedure offers a vehicle for seeking redress with respect to acts or omissions of individual faculty members, or of an academic department/program/ or college. Redress may be sought under this procedure without fear of reprisal or discrimination.

### II. Scope of Grievances: Expectations of Faculty and Academic Units

The academic regulations and requirements of the College Park campus are designed to provide and enhance a maximum educational environment for the entire campus academic community. The success of the design depends upon the mutual respect, courteous treatment, and consideration of everyone involved.

- A. The following are considered to be reasonable student expectations of faculty:
  1. A written description at the beginning of each undergraduate course specifying in general terms the content, nature of assignments, examination procedures, and the bases for determining final grades. In cases where all or some of this information cannot be provided at the beginning of the course, a clear explanation of the delay and the bases of course development shall be provided.
  2. Reasonable notice of major papers and examinations in the course.
  3. A reasonable number of recitations, performances, quizzes, tests, graded assignments and/or student/instructor conferences to permit evaluation of student progress throughout the course.
  4. Unless prohibited by statute or contract, a reasonable opportunity to review papers and examinations after evaluation by the instructor, while the materials remain reasonably current;
  5. A reasoned approach to the subject which attempts to make the student aware of the existence of different points of view.
  6. Reasonable access to the instructor during announced regular office hours or by appointment;
  7. Regular attendance by assigned faculty and reasonable adherence to published campus schedules and location of classes and examinations. Classes not specified in the schedules are to be arranged at a mutually agreeable time on campus, unless an off-campus meeting is clearly justified.
  8. Reasonable confidentiality of information gained through student-faculty contact.
  9. Public acknowledgement of significant student assistance in the preparation of materials, articles, books, devices and the like.
  10. Assignment of materials to which all students can reasonably be expected to have access.
- B. The academic units (programs, departments, colleges, schools) in cooperation with the Office of the Dean for Undergraduate Studies and the Office of Records and Registrations shall, whenever possible, provide the following:
  1. Accurate information on academic requirements through designated advisors and referral to other parties for additional guidance.
  2. Specific policies and procedures for the award of academic honors and awards, and the impartial application thereof.
  3. Equitable course registration in accordance with University policy and guidelines.
- C. The scope of the matters which may constitute a grievance cognizable under this Undergraduate Student Grievance Procedure is limited to believed violations of the expectations of faculty and academic units set forth above in paragraphs A and B of this section.

### III. Human Relations Code/Alternative Grievance Procedures

A Human Relations Code, with an implementing Office of Human Relations Programs, presently exists for the campus. The Undergraduate Student Grievance Procedure and the Human Relations Code may not be used simultaneously or consecutively with one another with respect to the same (or substantially the same) issue/complaint or with respect to issues/complaints arising out of or pertaining to the same set of facts. The procedures of the Human Relations Code and/or of any other University grievance/review process may not be utilized to challenge the procedures, actions, determinations or recommendations of any person(s) or board(s) acting pursuant to the authority and/or requirements of the Undergraduate Student Grievance Procedure.

### IV. General Limitations

Notwithstanding any provision of this Undergraduate Student Grievance Procedure to the contrary, the following matters do not constitute the basis for a grievance and are not susceptible of challenge thereby:

- A. Policies, regulations, decisions, resolutions, directives and other acts of the Board of Regents of The University of Maryland, of the Office of the President of The University of Maryland, and of the Chancellor of The University of Maryland College Park.
- B. Any statute or any regulation, directive or order of any department or agency of the United States or the State of Maryland, and any other matter outside of the control of The University of Maryland.
- C. Course offerings.
- D. The staffing and structure of any academic department or program.
- E. The fiscal management of The University of Maryland, and the allocation of University resources.
- F. Any issue(s)/act(s) which does not affect the complaining party personally and directly.

- G. Matters of academic judgment relating to an evaluation of a student's academic performance and/or of his/her academic qualifications; except that the following matters of a procedural nature may be reviewed under this Undergraduate Student Grievance Procedure if filed as a formal grievance within thirty (30) days of the first meeting of the course to which they pertain:
1. Whether reasonable notice has been given as to the relative value of all work considered in determining the final grade and/or assessment of performance in the course (e.g., the relative value of examinations, papers, laboratories and other academic exercises and requirements. The remedy with respect to a grievance based upon this subsection shall be the giving of notice by the faculty member.
  2. Whether a reasonably sufficient number of examinations, papers, laboratories and other academic exercises and requirements have been scheduled to present the student with a reasonable opportunity to demonstrate his/her academic merit. The remedy with respect to a grievance based upon this subsection shall be the scheduling of such additional academic exercises as the faculty member, in consultation with the Dean and upon consideration of the written opinion of the College hearing board, shall deem appropriate.
- (ii) all facts which the student believes to be relevant to the grievance;
- (iii) the resolution sought;
- (iv) all arguments upon which the student relies in seeking such resolution.
- b. In order to be considered, a grievance must be filed in a timely manner. To be filed in a timely manner, the written grievance (as set forth in subparagraph 2. a. above) must be **received** by the appropriate college screening board within thirty (30) days of the act, omission or matter which constitutes the basis of the grievance, or within thirty (30) days of the date the student is first placed upon reasonable notice thereof, whichever is later. It is the responsibility of the student to ensure timely filing.
- c. The college screening board shall immediately notify the faculty member against whom a grievance has been timely filed, or the head of the academic unit against which a grievance has been filed, and forward to them a copy of the grievance together with all other relevant material and information known to it. The faculty member or head of the academic unit shall within ten (10) days after receipt thereof, make a complete written response to the college screening board, in the event the faculty member receives the written grievance and other relevant materials and information from the college screening board after the last day of classes of the semester in which the grievance is filed, then the time for making a written response is extended to and includes ten (10) days after the first day of classes of the next succeeding semester in which the faculty member is teaching/working on campus (however, this extension shall not be available to a faculty member whose appointment terminates on or before the last day of the semester in which the grievance is filed). A copy of said response shall be sent by the college screening board to the student. In its discretion, the college screening board may request further written submissions from the student, the faculty member and/or the head of the academic unit.
- d. The college screening board shall review the case to determine if a formal hearing is warranted:

Notwithstanding any language in this paragraph or elsewhere in this Undergraduate Student Grievance Procedure, nothing herein shall be construed to permit a challenge, either directly or indirectly, to the award of a specific grade.

No recommendation or decision may be made pursuant to the Undergraduate Student Grievance Procedure which conflicts with or modifies, directly or indirectly, any policy, statute, regulation or other matter set forth in paragraphs A and B of this section.

"Class" grievances and concomitant remedies are not cognizable; however, a screening or hearing board may, in its discretion, consolidate grievances presenting similar facts and issues, and recommend such generally applicable relief as it deems warranted.

## V. Finality

A student who elects to utilize the Undergraduate Student Grievance Procedure agrees that in doing so he/she shall abide by the final disposition arrived at thereunder, and shall not subject this disposition to review under any other procedure within the University. For the purpose of this limitation, a student shall be deemed to have elected to utilize the Undergraduate Student Grievance Procedure when he/she files a written grievance as set forth in section VI.A.2. and VI.B. below.

## VI. Procedure

### A. Grievance Against Faculty Member, Academic Department, Program or College

#### 1. Resolution of grievance by informal means.

The initial effort in all cases shall be to achieve a resolution of the grievance through the following informal means:

- a. In the case of a grievance against an individual faculty member, the student should first contact the member, present the grievance in its entirety, and attempt a complete resolution; if any portion of the grievance thereafter remains unresolved, the student may present such part to the immediate administrative supervisor of the faculty member concerned. A grievance may be initially presented directly to the administrative supervisor of the faculty member if he or she is not reasonably available to discuss the matter. The supervisor shall attempt to mediate the dispute; should a resolution mutually satisfactory to both the student and the faculty member be achieved, the case shall be closed.
- b. In the case of a grievance against an academic department, program school or college, the student should contact the department head, director or dean thereof, present the grievance in its entirety, and attempt a complete resolution.

#### 2. Resolution of grievance by formal means.

Should a student be dissatisfied with the disposition of his/her grievance following the attempt to resolve it informally according to the steps set forth in subparagraph A. 1. above, he/she may obtain a formal resolution thereof pursuant to the following procedure:

- a. The student shall file with the Screening Board for Academic Grievances of the college (hereinafter "college screening board") from which the matter arises, a written grievance. The written grievance must set forth in detail:
  - (i) the act, omission or matter complained of;

- (ii) all facts which the student believes to be relevant to the grievance;
  - (iii) the resolution sought;
  - (iv) all arguments upon which the student relies in seeking such resolution.
- b. In order to be considered, a grievance must be filed in a timely manner. To be filed in a timely manner, the written grievance (as set forth in subparagraph 2. a. above) must be **received** by the appropriate college screening board within thirty (30) days of the act, omission or matter which constitutes the basis of the grievance, or within thirty (30) days of the date the student is first placed upon reasonable notice thereof, whichever is later. It is the responsibility of the student to ensure timely filing.
- c. The college screening board shall immediately notify the faculty member against whom a grievance has been timely filed, or the head of the academic unit against which a grievance has been filed, and forward to them a copy of the grievance together with all other relevant material and information known to it. The faculty member or head of the academic unit shall within ten (10) days after receipt thereof, make a complete written response to the college screening board, in the event the faculty member receives the written grievance and other relevant materials and information from the college screening board after the last day of classes of the semester in which the grievance is filed, then the time for making a written response is extended to and includes ten (10) days after the first day of classes of the next succeeding semester in which the faculty member is teaching/working on campus (however, this extension shall not be available to a faculty member whose appointment terminates on or before the last day of the semester in which the grievance is filed). A copy of said response shall be sent by the college screening board to the student. In its discretion, the college screening board may request further written submissions from the student, the faculty member and/or the head of the academic unit.
- d. The college screening board shall review the case to determine if a formal hearing is warranted:
- (i) The college screening board shall dismiss all or part of a grievance which it concludes:
    - (a) is untimely;
    - (b) is based upon a nongrievable matter;
    - (c) is being pursued concurrently in another review/grievance procedure within the University and/or in a court of law or equity;
    - (d) has been previously decided pursuant to this or any other review/grievance procedure within the University and/or by a court of law or equity;
    - (e) is frivolous;
    - (f) is intended to harass, embarrass, and/or has otherwise been filed in bad faith;
  - (ii) The college screening board in its discretion may dismiss all or part of a grievance which it concludes:
    - (a) is insufficiently supported;
    - (b) is premature;
    - (c) is otherwise inappropriate or unnecessary to present to the college hearing board.
- e. The college screening board shall meet and review grievances in private. A decision to dismiss a grievance shall require the majority vote of at least three members. If a grievance is dismissed either in whole or in part, the student shall be so informed and given a concise statement as to the basis for such action; however, the decision of the college screening board to dismiss a grievance is final and is not subject to appeal.
- f. If the college screening board determines that a grievance is appropriately one for a hearing, it will so inform the dean. The dean shall thereafter within fifteen (15) days convene a college hearing board to hear the grievance, except that for good cause in the discretion of the dean, such time may be extended.
- g. The following rules apply to the conduct of a hearing by the college hearing board:
- (i) Reasonable notice of the time and place of the hearing shall be given to the student and the faculty member or head of an academic unit. Notice shall include a brief statement of the violation(s) alleged and the remedy sought by the student.
    - (ii) A record of the hearing, including all exhibits, shall be kept;
    - (iii) The hearing shall be closed to the public unless a public hearing is specifically requested by both parties;
    - (iv) Each party shall have an opportunity to make an opening statement, present evidence, present witnesses, cross-examine witnesses, offer personal testimony, and such other material as is relevant to the grievance. It is the responsibility of each party to ensure that those witnesses



whom he/she wishes to present are available, as well as to have his/her case completely prepared at the time of the hearing.

- (v) The student shall first present his/her case; the faculty member or head of the academic unit shall then present his/her response.
  - (vi) Upon the completion of the presentation of all evidence, each party shall have an opportunity to present oral arguments and a closing statement. The chair of the college hearing board may in his discretion set time limits upon such arguments and statements.
  - (vii) Upon the request of either party, all persons to be called as witnesses shall be sequestered.
  - (viii) Incompetent, irrelevant, immaterial and unduly repetitious evidence may be excluded in the discretion of the chair of the college hearing board.
  - (ix) Each party may be assisted in the presentation of his/her case by a student or faculty member of his/her choice.
  - (x) It is the responsibility of the chair of the college hearing board to manage the hearing and to decide all questions relating to the presentation of evidence and appropriate procedure, and is the final authority on all such matters, except as are specifically established herein.
  - (xi) All documents and materials filed with the college screening board by the student and the faculty member or the head of an academic unit, shall be forwarded to the college hearing board for its consideration, and shall become part of the record of the hearing.
  - (xii) The college hearing board shall have the right to examine any person or party testifying before it, and on its own motion, to request the presence of any person for the purpose of testifying and the production of any evidence the chair believes to be relevant.
  - (xiii) The above-enumerated procedures and powers of the college hearing board are non-exclusive; the chair of the college hearing board may take such action as is necessary in his/her determination to facilitate the orderly and fair conduct of the hearing and as is not inconsistent with the procedures set forth herein.
- h. Upon completion of the hearing, the college hearing board shall meet privately to consider the validity of the grievance. The burden of proof rests upon the student to establish a violation of the expectations of faculty and academic units, set forth in Section II, above, and any concomitant right to relief. It must be shown by a preponderance of the evidence that a substantial departure from the expectations has occurred, and that such substantial departure has operated to the actual prejudice and injury of the student. A decision by the college hearing board upholding the grievance, either in whole or part, shall require the majority vote of at least three members. The decision of the college hearing board shall address only the validity of the grievance, and shall be forwarded to the dean in a written opinion.
- i. In the event the college hearing board decided in part or in whole on behalf of the student, it may submit an informal recommendation to the dean with respect to such relief as it may believe is warranted by the facts as proven in the hearing.
  - j. The dean shall immediately, upon receipt of the written opinion, forward copies to the student and the faculty member or head of the academic unit. Each party has ten (10) days from the date of receipt to file with the dean an appeal of the decision of the college hearing board. The sole grounds for appeal shall be:
    - (i) a substantial prejudicial procedural error committed in the conduct of the hearing in violation of the procedures established herein. Discretionary decisions of the chair of the college hearing board shall not constitute the basis of an appeal;
    - (ii) the existence of new and relevant evidence of a significant nature which was not reasonably available, at the time of the hearing. The appeal shall be in writing and set forth in complete detail the grounds relied upon. A copy of the appeal shall also be sent to the opposite party, who shall have ten (10) days following receipt to file a written response with the dean.
  - k. In the absence of a timely appeal, or following receipt and consideration of all timely appeals and responses, the dean in his/her discretion may:
    - (i) dismiss the grievance;
    - (ii) grant such redress as he/she believes is appropriate, except that no affirmative relief shall be made to a student unless the student executes the following release:

"The complainant hereby waives, releases and covenants

not to sue The University of Maryland or its officers, agents or employees with respect to any matters which were or might have been alleged as a grievance filed under the Undergraduate Student Grievance Procedure in the instant case, subject to performance by The University of Maryland, its officers, agents and employees, of the promises contained in a final decision under this Procedure."

- (iii) reconvene the college hearing board to rehear the grievance in part or whole and/or to receive new evidence;
  - (iv) convene a new college hearing board to rehear the case in its entirety
- l. The dean shall inform all parties of his/her decision in writing and the grievance shall thereafter be concluded. The decision of the provost shall be final and binding, and not subject to appeal or review.
  - m. For the nondepartmentalized colleges, the dean for Undergraduate Studies shall assume the duties performed by the deans of the departmentalized colleges.

## B. Grievance Against Administrative Dean for Undergraduate Studies, College Dean

### 1. Resolution of grievance by informal means.

The initial effort in all cases shall be to achieve a resolution of the grievance through informal means. The student should first contact the administrative dean, present the grievance in its entirety, and attempt a complete resolution; if any portion of the grievance thereafter remains unresolved, the student may present such part to the Vice President for Academic Affairs. A Grievance may be initially presented directly to the Vice President if the administrative dean is not reasonably available to discuss the matter. The Vice President shall attempt to mediate the dispute; should a resolution mutually satisfactory to both the student and the administrative dean/college dean be achieved, the case shall be closed.

### 2. Resolution of grievance by formal means.

Should a student be dissatisfied with the disposition of his/her grievance following the attempt to resolve it informally according to the steps set forth in subparagraph B.1. above, he/she may obtain a formal resolution thereof pursuant to the following procedure:

- a. The student shall file with the President a written grievance. The written grievance must set forth in detail:
  - (i) the act, omission or matter complained of;
  - (ii) all facts which the student believes to be relevant to the grievance;
  - (iii) the resolution sought;
  - (iv) all arguments upon which the student relies in seeking such resolution.
- b. In order to be considered, a grievance must be filed in a timely manner. To be filed in a timely manner, the written grievance (as set forth in 2. a. above) must be received by the President within thirty (30) days of the act, omission or matter which constitutes the basis of the grievance, or within thirty (30) days of the date the student is first placed upon reasonable notice thereof, whichever is later. It is the responsibility of the student to ensure timely filing.
- c. The President shall forward the grievance to the college screening board of a college other than that from which the grievance has arisen.
- d. The college screening board shall immediately notify the administrative dean against whom a grievance has been timely filed, and forward him/her a copy of the grievance with all other relevant material and information known to it. The administrative dean shall within ten (10) days after receipt thereof, make a complete written response to the college screening board; in the event the administrative dean receives the written grievance and other relevant materials and information from the college screening board after the last day of classes of the semester in which the grievance is filed, then the time for making a written response is extended to and includes ten (10) days after the first day of classes of the next succeeding semester. A copy of said response shall be sent by the college screening board to the student. In its discretion, the college screening board may request further written submissions from the student and/or the administrative dean.
- e. The college screening board shall thereafter review and act on the grievance in the same manner and according to the requirements set forth in subparagraphs A.2.d. through A.2.e. of this section, for the review of grievances against faculty members, academic departments, programs and colleges.
- f. If the college screening board determines that a grievance is appropriately one for a hearing, it will so inform the President. The President shall thereafter within fifteen (15) days, convene a campus hearing board to hear the grievance; except that for

- good cause in the discretion of the President, such time may be extended.
- g. The campus hearing board shall conduct hearings in accordance with the rules established in subparagraph A.2.g. above, for the conduct of hearings by a college hearing board. Upon completion of a hearing, the campus hearing board shall meet privately to consider the grievance in the same manner and according to the same rules as set forth in subparagraph A.2.h. for the consideration of grievances by a college hearing board, except that the board's decision shall be forwarded to the President.
  - h. In the event the campus hearing board decides in part or in whole on behalf of the student, it may submit an informal recommendation to the President with respect to such relief as it may believe is warranted by the facts as proven in the hearing.
  - i. The President shall immediately, upon receipt of the written opinion, forward copies to the student and the administrative dean. Each party has ten (10) days from the date of receipt to file with the President an appeal of the decision of the campus hearing board. The sole grounds for appeal shall be:
    - (i) a substantial prejudicial procedural error committed in the conduct of the hearing in violation of the procedures established herein. Discretionary decisions of the chair of the campus hearing board shall not constitute the basis of an appeal;
    - (ii) the existence of new and relevant evidence of a significant nature which was not reasonably available at the time of the hearing.

The appeal shall be in writing and set forth in complete detail the grounds relied upon. A copy of the appeal shall also be sent to the opposite party, who shall have ten (10) days following receipt to file a written response with the President.
  - j. In the absence of a timely appeal, or following receipt and consideration of all timely appeals and responses, the President in his discretion may:
    - (i) dismiss the grievance;
    - (ii) grant such redress as he/she believes is appropriate, except that no affirmative relief shall be made to a student unless the student executes the following release: "The complainant hereby waives, releases and covenants not to sue The University of Maryland or its officers, agents or employees with respect to any matters which were or might have been alleged as a grievance filed under the Undergraduate Student Grievance Procedure in the instant case, subject to performance by The University of Maryland, its officers, agents and employees, of the promises contained in a final decision under this Procedure."
    - (iii) reconvene the campus hearing board to rehear the grievance in part or whole and/or to receive new evidence;
    - (iv) convene a new campus hearing board to rehear the case in its entirety.
  - k. The Chancellor shall inform all parties of his decision in writing, and the grievance shall thereafter be concluded. The decision of the Chancellor shall be final and binding, and not subject to appeal or review.

## VII. Composition of Screening and Hearing Boards

The following procedures shall govern the selection, composition and establishment of the college screening boards, and the college and campus hearing boards. The procedures are directive only, and for the guidance and benefit of the deans and President. The selection, composition and establishment of a board is not subject to challenge by a party as part of this grievance procedure or any other grievance/review procedure in the University; except that at the start of a hearing, a party may challenge for good cause a member(s) of the college or campus hearing board before whom the party is appearing. The chair of the hearing board shall consider the challenge and may replace such member(s) if in his/her discretion it is believed such action is necessary to achieve an impartial hearing and decision. A challenge of the chair shall be decided in the discretion of the most senior of the other faculty members on the board. Decisions with respect to a challenge shall be final and not subject to further review or appeal.

### A. College Screening Boards for Academic Grievances

1. Membership of Screening Boards
  - a. Prior to the beginning of each academic year, the college council of each college shall choose at least fifteen (15) faculty members and fifteen (15) students to be eligible to serve on boards considering academic grievances from that college. Concurrently, it shall choose three (3) other faculty members to be eligible to serve on boards considering academic grievances for the Administrative Dean for Undergraduate Studies.

The names shall be forwarded to the Administrative Dean.

- b. Prior to the beginning of each academic year, the Administrative Council of the Administrative Dean for Undergraduate Studies shall choose at least fifteen (15) students to be eligible to serve on a screening board to review grievances arising within academic units under the administration of the Administrative Dean for Undergraduate Studies. These names shall be forwarded to the Administrative Dean.

### 2. Establishment of Screening Boards

- a. Upon receipt of the names of the designated faculty and students, the dean shall appoint a five-member college screening board which shall consist of three (3) faculty members and two (2) students, and each shall serve on the college screening board for the academic year or until a new board is appointed by the dean, whichever occurs later. The dean shall also designate two (2) alternative faculty members and two (2) alternative students from the names presented by the college council to serve on the college screening board should a vacancy occur. The dean shall designate one of the faculty members to be chair of the college screening board. Members of the college screening board shall not serve on a college hearing board during the same year, except that alternative members may serve on a hearing board other than one considering a case in which the member had previously been involved in the screening process. A member of the college screening board shall not review a grievance arising out of his/her own department or program; in such instance, an alternative member shall serve in his/her place.
- b. Upon receipt of the names of the faculty members designated by each college council and the students designated by the administrative council, the Administrative Dean for Undergraduate Studies shall appoint a five-member screening board to review grievances arising within the academic units under his/her administration. This screening board shall thereafter be established and composed in accordance with the procedures set forth in subparagraph A.2.a. of the section, for college screening boards.

### B. College Hearing Boards for Academic Grievances

For each grievance referred by a college screening board, the dean shall appoint a five-member college hearing board. The college hearing board shall be composed of three (3) faculty members and two (2) students selected by the dean from among those names previously designated by the college council and not appointed to the college screening board. The dean shall designate one (1) faculty member as chair. No faculty member or student shall be appointed to hear a grievance arising out of his/her own department or program. The Administrative Dean for Undergraduate Studies shall appoint in the same manner, a hearing board to hear each grievance referred by the screening board reviewing grievances arising from the academic units under his administration. The members of the hearing board shall be selected from among those names previously forwarded to the Administrative Dean by the college councils and from those who had not been appointed to the screening board.

### C. Campus Hearing Board for Academic Grievances For each case referred by a college screening board to the President for a hearing, the President shall appoint a five-member campus hearing board. The campus hearing board shall be composed of three (3) faculty members and two (2) students selected by the President from among those names designated by the college councils and remaining after the establishment of screening boards. The Presidents shall designate one faculty member as chair. No faculty member or student shall be appointed to hear a grievance arising out of his/her own college or administrative unit.

## VIII. Definitions

- A. "Days"
  - "Days" or "day" refer to days of the academic calendar, not including Saturdays, or Sundays.
- B. "Party"
  - "Party" or "parties" refer to the student and the individual faculty member or head of the academic unit against whom a grievance is made.

## APPENDIX J: PROCEDURES FOR REVIEW OF ALLEGED ARBITRARY AND CAPRICIOUS GRADING

Approved by Board of Regents: March 12, 1982

## Purpose

1. The following procedures are designed to provide a means for undergraduate students to seek review of final course grades alleged to be arbitrary and capricious. Before filing a formal appeal, students are urged to resolve grievances informally with the instructor and/or the administrator of the academic unit offering the course. Students who file a written appeal under the following procedures shall be expected to abide by the final disposition of the appeal, as provided in part seven, and shall be precluded from seeking review of the matter under any other procedure within the University.

## Definitions

2. When used in these procedures
  - (a) the term "arbitrary and capricious" grading means: i) the assignment of a course grade to a student on some basis other than performance in the course, or ii) the assignment of a course grade to a student by resorting to unreasonable standards different from those which were applied to other students in that course, or iii) the assignment of a course grade by a substantial, unreasonable and unannounced departure from the instructor's previously articulated standards.
  - (b) the words "Day" or "Days" refer to working days at the University, excluding Saturdays, Sundays and University holidays.
  - (c) the word "administrator" is defined as the administrative head of the academic unit offering the course.

## Procedures

3. A student who believes his/her final grade in a course is improper and the result of arbitrary and capricious grading should first confer promptly with the instructor of the course. If the instructor has left the University or is on approved academic leave or cannot be reached by the student after a reasonable effort, the student shall consult with the administrator. If the student and the instructor or administrator are unable to arrive at a mutually agreeable solution, the student may file an appeal within twenty days after the first day of instruction of the next semester (excluding summer terms) to a standing committee consisting of three tenured faculty members of the academic unit offering the course. If the instructor of the course is a member of the committee, that instructor shall be disqualified and replaced by a tenured faculty member selected by the administrator.

4. The student shall file an appeal by submitting to the committee a written statement detailing the basis for the allegation that a grade was improper and the result of arbitrary and capricious grading, and presenting relevant evidence. The appeal shall be dismissed if:
  - i) the student has submitted the same, or substantially the same, complaint to any other formal grievance procedure;
  - ii) the allegations, even if true, would not constitute arbitrary and capricious grading;
  - iii) the appeal was not timely; or
  - iv) the student has not conferred with the instructor or with the instructor's immediate administrative supervisor, in accordance with part three of these procedures.
5. If the appeal is not dismissed, the committee shall submit a copy of the student's written statement to the instructor with a request for a prompt written reply. If it then appears that the dispute may be resolved without recourse to the procedures specified in part six, the committee will attempt to arrange a mutually agreeable solution.
6. If a mutually agreeable solution is not achieved, the committee shall proceed to hold an informal, nonadversarial fact-finding meeting concerning the allegations. Both the student and the instructor shall be entitled to be present throughout this meeting and to present any relevant evidence, except that the student shall not be present during the discussion of any other student. Neither the student nor the faculty member shall be accompanied by an advocate or representative. The meeting shall not be open to the public.
7. The committee shall deliberate privately at the close of the fact-finding meeting. If a majority of the committee finds the allegation supported by clear and convincing evidence, the committee shall take any action which they feel would bring about substantial justice, including, but not limited to:
  - i) directing the instructor to grade the student's work anew, or
  - ii) directing the instructor to administer a new final examination or paper in the course, or
  - iii) directing the cancellation of the student's registration in the course, or
  - iv) directing the award of a grade of "pass" in the course, except that such a remedy should be used only if no other reasonable alternative is available.

The committee is not authorized to award a letter grade or to reprimand or otherwise take disciplinary action against the instructor. The decision of the committee shall be final and shall be promptly reported in writing to the parties. The administrator of the academic unit shall be responsible for implementing the decision of the committee.

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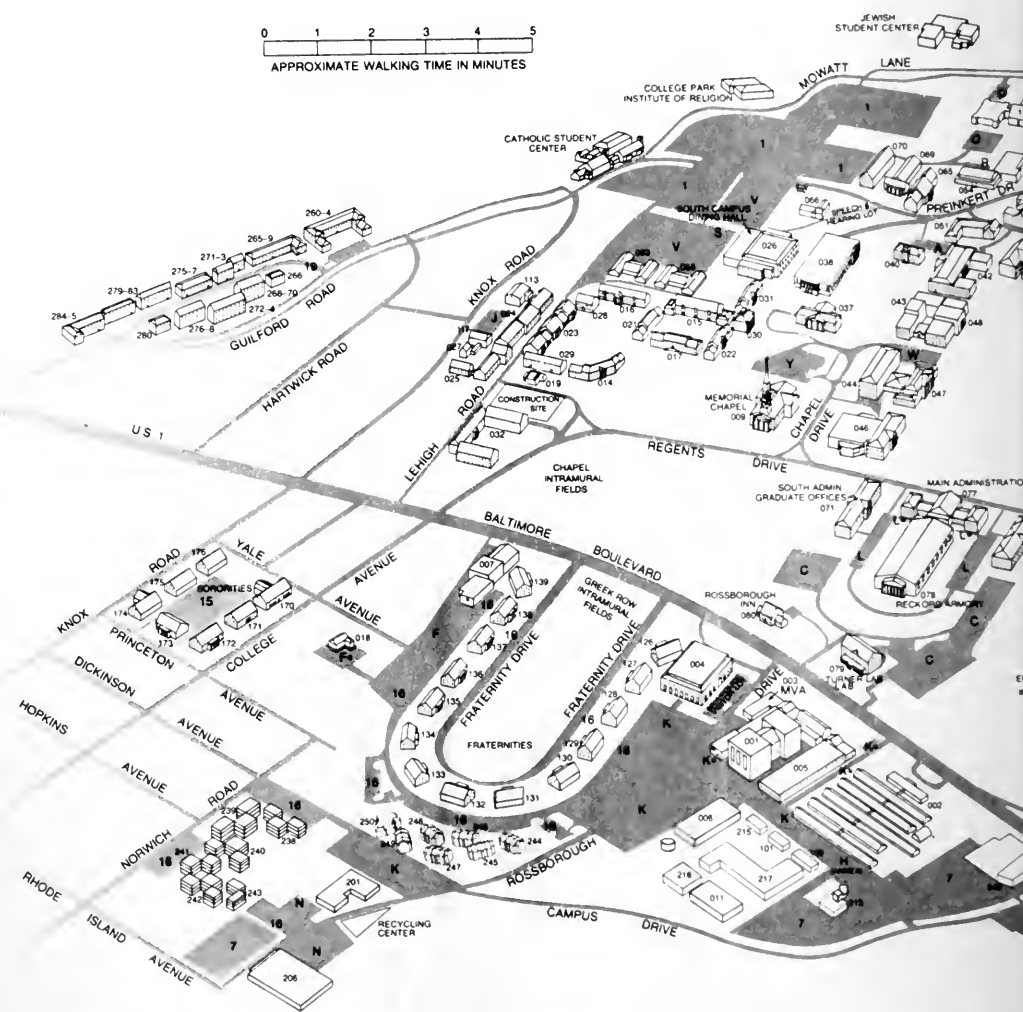
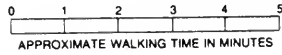
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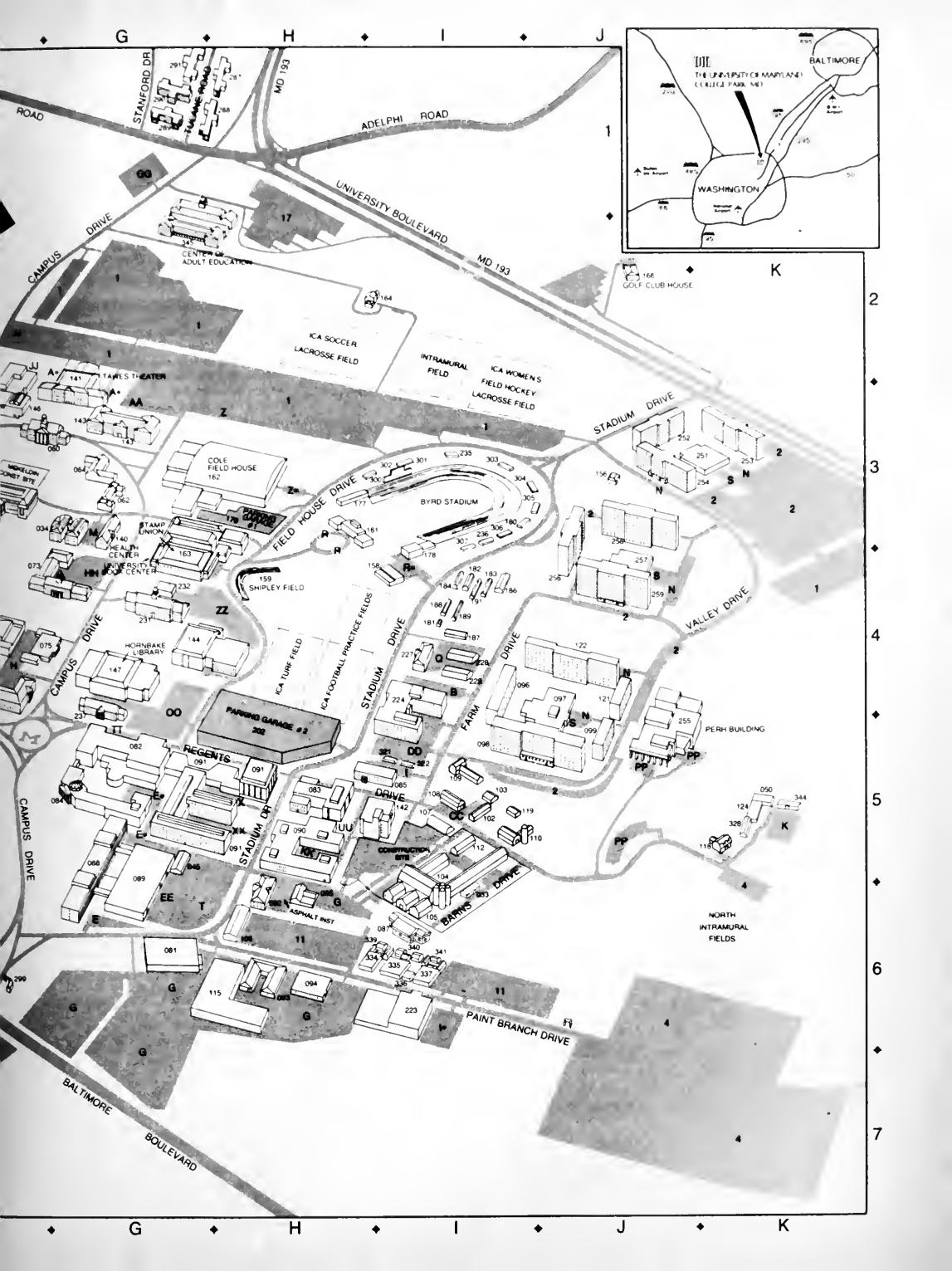
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A B C D E





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