

# DEPARTMENTS AND CAMPUS-WIDE PROGRAMS

## ACCOUNTING

For information, consult the College of Business and Management entry.

## AEROSPACE ENGINEERING (ENAE)

### A. James Clark School of Engineering

3181 Engineering Classroom Bldg., 405-2376

Chair: Fourney (Acting)

Professors: Anderson, Chopra, Lee, Melnik

Associate Professors: Akin, Barlow, Celi, Jones, Leishman, Lewis, Vizzini, Winkelmann

Assistant Professors: Baeder, Pines, Sanner, Werely

Lecturers: Chander, Korkegi, Mills, Nelson, Obrimski, Regan, Russell, 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 movements; 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 (CRER) 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 Space Systems Laboratory operates the Neutral Buoyancy Research facility for investigating assembly of space structures in a simulated zero gravity environment together with robots and their associated controllers. 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.

## Requirements for Major

The Freshman curriculum is the same for all Engineering departments. Please consult the A. James Clark School of Engineering entry.

<b>Sophomore Year</b> .....	<b>I</b>	<b>II</b>
MATH 246—Differential Equations .....		3
MATH 241—Calculus III .....	4	
PHYS 262,263—General Physics .....	4	4
ENAE 261—Aerospace Analysis & Computation .....	3	
ENES 221—Dynamics .....	3	
ENAE 281—Fundamentals of Aeronautical Systems .....	3	
ENAE 282—Fundamentals of Astronautical Systems .....	3	
CORE—Requirements of CORE .....	3	3
Total .....	17	16

<b>Junior Year</b> .....	<b>I</b>	<b>II</b>
ENME 217—Thermodynamics .....	3	
ENAE 311—Aerodynamics I .....	3	
ENAE 301—Dynamics of Aerospace Systems .....	3	
ENAE 321,322—Aerospace Structures I,II .....	3	3
ENAE 362—Aerospace Instrumentation & Experiments .....	3	
ENAE 332—Control of Aerospace Systems .....	3	
CORE—Requirements of CORE .....	6	3

### AERONAUTICAL TRACK:

ENAE 414—Aerodynamics II .....	3
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### SPACE SYSTEMS TRACK:

ENAE 404—Space Flight Dynamics .....	3
Total .....	18 5

### Senior Year

ENAE 423—Aerospace Structures III .....	3
ENAE 464—Aerospace Engineering Lab .....	3
CORE—Requirements of CORE .....	3

### ELECTIVES:

Aerospace Electives .....	3	3
Technical Electives .....	3	

### AERONAUTICAL TRACK:

ENAE 403—Aircraft Flight Dynamics .....	3
ENAE 455—Aircraft Propulsion & Power .....	3
ENAE 481—Principles of Aircraft Design .....	3
ENAE 482—Aeronautical Systems Design .....	3

### SPACE SYSTEMS TRACK:

ENAE 441—Space Navigation & Guidance .....	3
ENAE 457—Space Propulsion & Power .....	3
ENAE 483—Principles of Space Systems Design .....	3
ENAE 484—Space Systems Design .....	3
Total .....	15 15

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
- ENAE 488W—Design of Remotely Piloted 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

<sup>4</sup>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**

See Clark School of Engineering entrance requirements.

**Advising**

Advising is mandatory. Each student is assigned to one of the full time faculty members who must be consulted and whose approval is required on the request for course registration each semester. The list of advisor assignments is available in the main office, 405-2376.

**Cooperative Program**

Participation in the Co-op program is encouraged. See Clark School 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 the 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

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**AFRO-AMERICAN STUDIES PROGRAM  
(AASP)**

**College of Behavioral and Social Sciences**

2169 Lefrak Hall, 405-1158

Director: S. Harley  
 Associate Professors: Harley, Williams, E. Wilson\* (GVPT.)  
 Assistant Professors: Johnson\* (GVPT), Lashley, F. Wilson  
 Lecturer: Chateaubert

\* Joint Appointment with unit indicated.

The Afro-American Studies Program offers an interdisciplinary Bachelor of Arts degree in the study of the contemporary life, history, and culture of African Americans. The curriculum emphasizes the historical development of African American social, political and economic institutions, while preparing students to apply analytic, social science skills in the creation of

solutions to the pressing socio-economic problems confronting African American communities.

This program is under revision. Students should consult with a departmental advisor for updated information.

Two program options lead to the Bachelor of Arts degree. Both require a 12 credit core of course work that concentrates on Afro-American history and culture.

**The General Concentration** provides a broad cultural and historical perspective. This concentration 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 a departmental seminar 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, nine credit hours of electives in a policy area (with departmental approval) and an internship or a thesis or a policy 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 Requirements:** In addition to the core requirements, 18 credits of AASP Upper-Division Electives (300-400 numbers), AASP 400 or AASP 402 and AASP 397.

	<b>Semester Credit Hours</b>
CORE Liberal Arts and Sciences .....	43
AASP Core (total 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
<b>Upper-Division Electives in Afro-American Studies .....</b>	<b>18</b>

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

**Public Policy Concentration Requirements:** In addition to the core, three credits of statistics; 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.

	<b>Semester Credit Hours</b>
Core Liberal Arts and Sciences .....	43
AASP CORE (total 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:**

STAT 100 Elementary Statistics and Probability	
OR SOCY 201 Introductory Statistics for Sociology	
OR Equivalent Statistics Course (Sophomore Year).....	3
AASP 301 (Formerly 428J).....	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
One additional analytical skills course outside of AASP, with AASP approval.....	3

**POLICY ELECTIVES IN AFRO-AMERICAN STUDIES .....** 9

## 72 Agricultural Sciences, General

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Students may select, with AASP approval, elective courses from other departments.

### FINAL OPTION:

One of the following courses is required:

AASP 386—Internship .....	6
AASP 397—Senior Thesis .....	3
AASP 497—Policy Seminar in Afro-American Studies .....	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.

### Honors Program

Academically talented undergraduates may enroll in the University Honors Program with a specialization in Afro-American Studies. The honors program includes seminars and lectures presented by distinguished UMCP faculty and guests. A reduced ratio of students to faculty ensures a more individualized study focus. In addition, AASP majors with junior standing may petition to become individual honors candidates in Afro-American Studies.

### BA/MPM Program

In this innovative joint program candidates earn a bachelor's degree in Afro-American Studies and a master's degree in public management after approximately five years. The BA/MPM is designed to integrate the study of the history, culture, and life of African Americans with technical skills,

## AGRICULTURAL AND RESOURCE ECONOMICS (AREC)

### College of Agriculture

Symons Hall, 405-1293

Professor and Chair: Just

Professors: Bender (Emeritus), Bockstael, Brown, Cain, Chambers, Foster (Emeritus), Gardner, Hardie, Hueth, Lopez, McConnell, Moore, Musser, Nerlove, Poffenberger (Emeritus), Stevens (Emeritus), Strand, Tuthill (Emeritus), Wysong

Associate Professors: Hanson, Horowitz, Leathers, Lichtenberg, Lipton, Olson

Assistant Professors: McNew, Whittington

Agricultural and Resource Economics majors complete a set of prerequisite courses, a core of classes offered by the Agricultural and Resource Economics Department, and a set of fields comprised of selected courses from outside the Department. The core includes courses in economic reasoning, agribusiness management, environmental and resource policy, agricultural policy, and analytical methods. The program permits students flexibility in choosing fields to fit their career interests. Majors must complete one and should complete two fields. The curriculum balances breadth and depth, and lets students develop academic skills in two or more areas. The program provides a good foundation for careers in economics, resource or environmental policy, agribusiness, and international agriculture.

### Advising

Because the program is flexible, advising is mandatory. Appointments may be made in Room 2200 Symons Hall, 405-1291.

### Awards

Scholarships honoring Arthur and Pauline Seidenspinner and Ray Murray are available. Contact the Department Chair or a faculty advisor for more information, 405-1293.

## Requirements for Major

### Prerequisite Courses

The core courses have some or all of these courses as prerequisites. Your advisor can provide specifics. All of these courses must be successfully completed.

	Semester Credit Hours
<b>Major Core Courses</b>	
ECON 201 - Principles of Economics .....	3
ECON 203 - Principles of Economics II .....	3
ECON 306 - Intermediate Microeconomic Theory.....	3
ECON 321 (or BMGT 230) - Economic (or Business) Statistics .....	3
MATH 220 (or MATH 140) - Calculus .....	3
STAT 100 (or MATH 111) - Introduction to Probability .....	3

### Core Courses

Seven of these courses must be successfully completed.

AREC 306 - Farm Management .....	3
AREC 404 - Prices of Agricultural Products .....	3
AREC 405 - Economics of Agricultural Production .....	3
AREC 407 - Agricultural Finance .....	3
AREC 414 - Agricultural Business Management .....	3
AREC 427 - Economics of Agricultural Marketing Systems .....	3
AREC 433 - Food and Agricultural Policy .....	3
AREC 445 - Agricultural Development in the Third World .....	3
AREC 453 - Economics of Natural Resource Use .....	3
AREC 482 - Agricultural Applications of Mathematical Programming .....	3
AREC 484 - Introduction to Econometrics in Agriculture .....	3

### Fields

All majors must complete one of the following fields. Two are strongly encouraged.

### • Business Management

BMGT 220 - Principles of Accounting I .....	3
BMGT 221 - Principles of Accounting II .....	3
BMGT 340 - Business Finance .....	3
BMGT 350 - Marketing Principles and Organization .....	3
BMGT 364 - Management and Organization Theory .....	3
BMGT 380 - Business Law I .....	3

### • Farm Production

AGRO 101 or HORT 100 - Introduction to Crop Science or Horticulture .....	4
ANSC 101 - Principles of Animal Science .....	3
ENBE 100 - Basic Agricultural Engineering Technology .....	3
Three other courses in agronomy, animal sciences or horticulture, chosen from a list of selected courses.	

### • Food Production

PHYS 117 (or PHYS 121) - Introduction to Physics .....	4
ENBE 414 - Mechanics of Food Processing .....	4
FDSC 111 - Contemporary Food Industry and Consumerism .....	3
FDSC 412 - Principles of Food Processing I .....	3
FDSC 413 - Principles of Food Processing II .....	3
FDSC 431 - Food Quality Control .....	4

### • Environmental and Resource Policy

ECON 381 - Environmental Economics .....	3
ECON 385 - Economics of Natural Resources .....	3

Four other courses in biological sciences and chemistry, political science, natural resource management or geography, chosen from a list of selected courses.

### • International Agriculture

ECON 305 - Intermediate Macroeconomic Theory and Policy .....	3
ECON 315 - Economic Development of Underdeveloped Areas .....	3
ECON 380 - Comparative Economic Systems .....	3
ECON 440 - International Economics .....	3
GEOG 422 - Population Geography .....	3
One other course in international agricultural production, chosen from a list of selected courses.	

### • Political Process

GVPT 100 - Principles of Government and Politics .....	3
GVPT 170 - American Government .....	3
Four other courses in government and politics, chosen from a list of selected courses.	

### • Advanced Degree Preparation

ECON 407 - Advanced Macroeconomics .....	3
ECON 417 - Advanced Microeconomics .....	3
ECON 422 - Quantitative Methods in Economics I .....	3
ECON 423 - Quantitative Methods in Economics II .....	3
Two other courses in mathematics or mathematical economics, chosen from a list of selected courses.	

### • Student-Designed Field

This field requires a written proposal listing at least six courses totaling 18 or more credits. The proposal must be submitted to the Undergraduate Committee of the Agricultural and Resource Economics Department.

## The Major

Agronomy instruction combines the principles of basic sciences with a thorough understanding of plants and soils and environmental sciences. This amalgamation of basic and applied sciences provides the opportunity for careers 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 environmental soil scientists, golf course managers, agribusiness 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. 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.** CORE Program Requirements (40 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 117—Introduction to Physics <b>OR</b>	
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
BIOL 106—General Biology .....	4
BOTN 441—Plant Physiology .....	4
One of the following:4	
BOTN 212—Plant Taxonomy(4)	
BIOL 222—Principles of Genetics (4)	
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
GEOL 100—Physical Geology .....	3
AGRO 422—Soil 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 453—Woody Plant Materials .....	3

AGRO 415—Soil Survey and Land Use .....	3
Electives (HORT 160 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 .....	61
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	
GEOG 345—Climatology	
AREC 432—Introduction to Natural Resources Policy	
Electives .....	31-32

## Fieldwork and Internship Opportunities

Internships with scientists are available at nearby federal and state agencies.

## Student Organizations

Student chapters of the Agronomy Club and Soil Conservation Service provide students with opportunities for professional activities. The department's soil judging team participates in regional and national competitions.

## Scholarships

Several scholarships and awards are available to Agronomy students. Contact the Associate Dean's office at (301) 405-2078 for additional information.

Course Code: AGRO

## AMERICAN STUDIES (AMST)

### College of Arts and Humanities

2101 South Campus Surge Building, 405-1354

Associate Professor and Chair: Kelly

Professors: Caughey, Diner

Associate Professors: Lounsbury, Mintz, Paoletti, Parks, Sies

### 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 in 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, art history, and others), or pertinent courses grouped thematically (e.g., Afro-American studies, women's studies, ethnic studies).

### Requirements for Major

The major requires 45 hours, at least 24 of which must be at the 300-400 level. Of those 45 hours, 21 must be in AMST courses, with the remaining 24 in two 12 core areas outside the regular AMST departmental offerings. No grade lower than a C may be applied toward the major.

**Distribution of the 45 hours:**

**AMST Courses (21 hours required)**

1. AMST 201/Introduction to American Studies (3): required of majors.
2. Three (3) or six (6) hours of additional lower-level course work.
3. AMST 330/Critics of American Culture (3): required of majors.
4. Six (6) or nine (9) hours of upper-level course work. 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 choose two outside core areas of 12 hours each. At least one of the cores must be in a discipline traditionally associated with American Studies. The other core may be thematic. Upon entering the major, students 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.

**Interdisciplinary or Thematic Cores**

Afro-American Studies, Women's Studies, Urban Studies, Popular Culture, Personality and Culture, Comparative Culture, Material Culture, Ethnic Studies, Business and Economic History, Folklore, Government and Politics, Education, Philosophy, Journalism.

Course Code: AMST

**ANIMAL SCIENCES (ANSC)**

**College of Agriculture**

1415A Animal Sciences Center, 405-1373

**Department of Animal Sciences**

Chair: Westhoff  
 Professors: Douglass, Erdman, Mather, Peters, Soares, Vijay, Westhoff  
 Associate Professors: Barao, DeBarthe, Hartsock, Majeskie, Russek-Cohen, Stricklin, Varner  
 Assistant Professor: Deuel  
 Emeriti: Flyger, Foster, King, Leffel, Mattick, Morris, Vandersall, Williams, Young

**Department of Poultry Science**

Rm. 3113 Animal Sciences Center, 405-5775

Chair: Heath (Acting)  
 Professors: Heath, Kuenzel, Ottinger, Thomas, Wabeck  
 Associate Professors: Doerr, Mench  
 Adjunct Associate Professors: Hill, Rattner, Sparling  
 Affiliate Associate Professor: Place

**The Major**

Animal Sciences prepares students for veterinary school, graduate school and careers in research, sales and marketing, aquaculture, and animal production. The curricula apply the principles of biology and technology to the care, management, and study of dairy and beef cattle, equine, fish, sheep, swine, and poultry. Students complete the Animal Sciences Core courses and choose one of four specialization areas: Animal Management and Industry, Avian Business, Laboratory Animal Management, and Sciences that prepare for admission to graduate, veterinary, or medical school. A new Animal Sciences Center includes classrooms, lecture hall, social area, teaching labs, pilot processing plant, and animal rooms adjacent to a teaching farm where horses, sheep, swine, and cattle are maintained throughout the year.

**Requirements for Major**

Curriculum requirements in animal sciences can be completed through the Departments of Animal Sciences or Poultry Science.

**Required of All Students**

**Semester  
Credit Hours**

CORE Program Requirements*	40
ANSC 101—Principles of Animal Science	3
ANSC 211—Animal Anatomy	4
ANSC 212—Animal Physiology	3
ANSC 215—Comparative Animal Nutrition	3
ANSC 4**—Senior Capstone	3
BIOL 105—Principles of Biology I	4
BIOL 106—Principles of Biology II	4
BIOL 222—Introductory Genetics	4
CHEM 103—General Chemistry I	4
CHEM 104—Fundamentals of Organic and Biochemistry	4
or	
CHEM 113 and CHEM 233 General Chemistry II and Organic Chemistry I	
Mathematics: MATH 115 or above	3
PHYS 121—Fundamentals of Physics	4
or	
ENBE 100—Basic Agricultural Engineering Techniques	3
ECON 201—Principles of Economics	3
MICB 200—General Microbiology	4

\*Includes 16 required credits listed below

All students must complete 23 or 24 credits of additional course work listed under one of the following areas of specialization:

ANIMAL MANAGEMENT AND INDUSTRY  
 AVIAN BUSINESS  
 EQUINE STUDIES  
 LABORATORY ANIMAL MANAGEMENT  
 SCIENCES

**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: 1415A Animal Sciences Center, 405-1373.

**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, 1415A Animal Sciences Center.

**Student Organizations**

ANSC majors are encouraged to participate in one or more of the following social/professional student organizations. The Animal Husbandry Club, the University of Maryland Cavalry, and the Veterinary Science Club. For more information see ANSC Undergraduate Studies Office, 1415A Animal Sciences Center.

Course Code: ANSC

**ANTHROPOLOGY (ANTH)**

**College of Behavioral and Social Sciences**

1111 Woods Hall, 405-1423

Professor and Chair: Leone  
 Professors: Agar, Chambers, Gonzalez (Emerita), Whitehead, Williams  
 Associate Professors: Jackson, Wali  
 Assistant Professor and Assistant Chair: Stuart  
 Assistant Professor: Seidel  
 Lecturers: Kedar, Nagle  
 Research Associates: Kaljee (CuSAG), Peterson (CuSAG)  
 Affiliate Faculty: Bolles (WMST), Gonzalez (CIDCM)<sup>†</sup>  
 Adjunct Faculty: Potter (National Park Service)

\*Joint appointment with unit indicated

<sup>†</sup>Distinguished Scholar-Teacher

### The Major

Anthropology, the holistic study of humanity, seeks to understand humans as a whole—as social animals who are capable of symbolic communication through which they produce a rich cultural record—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 in their attitudes, customary behavior, and artifacts. Since children learn their culture from the preceding generation, who in turn learned it from the preceding generation, culture has grown and changed through time as the species has spread over the earth. Anthropology is not the history of kings and great women or men or of wars and treaties; it is the history and the science of the biological evolution of human species, and of the cultural evolution of human beings' knowledge and customary behavior.

Anthropology at UMCP offers rigorous training for many career options. A strong background in anthropology is a definite asset in preparing for a variety of academic and profession fields, ranging from the law and business, to comparative literature, philosophy and the fine arts. Whether one goes on to a Master's or a Ph.D., the anthropology B.A. prepares one for a wide range of non-academic employment, such as city and public health planning, development consulting, program evaluation, and public archaeology.

### 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, biological anthropology, and linguistics. Within each area, the department offers some degree of specialization and provides a variety of opportunities for research and independent study. Laboratory courses are offered in biological anthropology, archaeology, and ethnographic 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 and research components.

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 both teaching and research purposes. The other two laboratories are a teaching laboratory in biological anthropology and the Laboratory for Applied Ethnography and Community Action Research.

All students have access to a 20-workstation IBM computer laboratory located at 1102 Woods Hall.

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 30 hours of courses with the prefix ANTH with a grade of C or better in each course and 18 hours of supportive courses. The courses are distributed as follows:

- Eighteen hours of required courses that must include ANTH 101, 102, 397, 401, 451 (or 441), and 371 or 361 (461);
- Twelve hours of elective courses in anthropology of which nine hours must be at the 300-level or above;
- Eighteen hours of supporting courses (courses outside of anthropology offerings in fields that are complementary to the student's specific anthropological interests). Supporting courses are to be chosen by the student and approved by a faculty advisor. Quantitative methods course(s) beyond MATH 110 are strongly encouraged, as is foreign language course work. With the advisor's endorsement, up to six hours of anthropology courses may be counted as "supporting".

In addition to the above requirements, anthropology majors must meet the requirements of the College of Behavioral and Social Sciences, as well as the requirements of the University's general education program.

### 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 early 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, 405-1435.

### 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.

Course Code: ANTH

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## APPLIED MATHEMATICS PROGRAM

College of Computer, Mathematical and Physical Sciences  
1104 Mathematics, 405-5062

Director: Cooper  
Faculty: More than 100 members from 13 units.

The Applied Mathematics Program is a graduate program in which the students combine studies in mathematics and application areas. All MAPL courses carry credit in mathematics. An undergraduate program emphasizing applied mathematics is available to majors in mathematics. Appropriate courses carry the MATH and STAT prefix, as well as the MAPL prefix.

Course Code: MAPL

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## ARCHITECTURE

For information, see the School of Architecture entry.

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## ART (ARTT)

College of Arts and Humanities  
1211-E Art/Sociology Building  
Undergraduate Program 405-1445  
Graduate Program 405-7790

Professor and Chair: Pogue  
Assistant Chair: Jacobs

Undergraduate Director: Craig  
 Graduate Director: Richardson  
 Professors: DeMonte, Driskell, Fabiano, Lapinski, Pogue  
 Associate Professors: Craig, Forbes, Gelman, Kehoe, Klank, Niese, Lozner, Richardson, Thorpe  
 Assistant Professors: Humphrey, McCarty, Ruppert, Sham, Sonfist  
 Emerita: Truitt†  
 †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 20th century, Art Department faculties and students embody this fundamental human inclination and attempt to understand, convey, and celebrate it.

## Requirements for Major

The Department of Art is part of the College of Arts and Humanities at the University of Maryland at College Park. We offer students a Bachelor of Arts (B.A.) degree and a Master of Fine Arts (M.F.A.) degree in Art. Along with college and campus-wide general education requirements, the student may choose one of two Major Program Options for the B.A. degree, **Program A** or **Program B**.

**Program A** requires 42 credits in art, art theory, and art history courses. Program A also requires an additional 12 credits in a supporting area not related to art or art history, for a total of 54 required credits. This supporting area allows the student to choose related areas of interest as a secondary concentration.

**Program B** requires 36 credits in art and art theory courses and 12 additional credits of art history courses for a total of 48 required credits. Program B provides more credits in art, art history and art theory courses than Program A and allows for a greater number of electives.

No course with a grade less than C may be used to satisfy Major or Supporting Area requirements.

## Advising

We strongly recommend that the student see his or her advisor each semester. The department has four advisors.

## Fieldwork and Internship Opportunities

Students in the past have worked in a variety of internship 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 areas. Additional information is available in the Art Department office.

## Scholarships and Awards

The Art Department administers eight Creative and Performing Arts Scholarships (CAPAs) that are available to freshman and entering transfer students for the Fall semesters. 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. The James P. Wharton Prize is awarded to the outstanding Art major participating in the December or May graduation exhibition. The Van Crews Scholarship is designated for outstanding Art majors concentrating in design. It is awarded for one year and is renewable.

## Student Art Exhibitions

The West Gallery (1309 Art Sociology Building) is an exhibition space devoted primarily to showing students' art work, 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 AND ARCHEOLOGY (ARTH)

### College of Arts and Humanities

1211B Art/Sociology Building, 405-1479

Professor and Chair: Farquhar

Professors: Denny, Eyo, Hargrove, Miller, Pressly, Wheelock

Associate Professors: Kelly, Kuo, Spiro, Venit, Withers

Assistant Professors: Colantuono, Gerstel, Gill, Promey, Sandler, Sharp

## The Major

A major in the department of Art History and Archeology leads to a Bachelor of Arts degree in art history through the study and scholarly interpretation of existing works of art, from the prehistoric era to the present.

The goal of the Art History and Archeology 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. A 65,000 volume art library and the University's art gallery are located in the art building.

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 teaching, or for any profession in which clear thinking and writing are required.

The requirements for a major in Art History are as follows: three ARTH courses (9 credits) at the 200 level; seven ARTH courses (21 credits) at the 300-400 level; either ARTT 100 or ARTT 110; a supporting area comprised of four courses (12 credits) in coherently related subject matter outside the Art History Department, of which two courses must be at the 300-400 level and in a single department. Thus, there is required a total of 45 credits (30 in ARTH courses, 3 in an ARTT course, and 12 in the supporting area).

No major credit can be received for ARTH 100, 355, 380, 381 or 382. No course with a grade less than C may be used to satisfy major or supporting area requirements. Students are encouraged to explore the diversity of geographical and chronological areas offered in the Art History program.

**Honors Program:** Qualified majors may participate in the department's honors program, which requires the completion of six credits of ARTH 378 and six credits of ARTH 379. Consult a departmental advisor for details.

**Awards:** The Department of Art History and Archeology offers three undergraduate awards each year: the J.K. Reed Fellowship Award to an upper-level major and the George Levitine and Frank DiFederico Book Awards to seniors nearing graduation.

Course Code: ARTH

## ASTRONOMY (ASTR)

### College of Computer, Mathematical and Physical Sciences

1204 Space Sciences Bldg., 405-3001

Chair: Leventhal

Associate Chair: Trasco

Professors: A'Hearn, Bell, Blitz, Earl, Harrington, Kundu, Leventhal, Papadopoulos, Rose, Wilson

Associate Professors: Matthews, Mundy, Vogel

Assistant Professors: Stone, Veilleux, Wang

Adjunct/Part-Time Professors: Hauser, Holt, Trimble



## 78 Biological Resources Engineering

Professors Emeriti: Erickson, Kerr, Wentzel  
Instructors: Deming, Theison  
Associate Research Scientists: Goodrich, Gopalswamy, Lopez, Schmahl, Sharma, White  
Assistant Research Scientists: Arnaud, Aschwanden, Golla, Grossman, S.J. Kim, Tripicco

### 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.

### Requirements for Major

Astronomy majors are required to take a two-semester introductory astrophysics course sequence: ASTR 200, 350 as well as a two-semester sequence on observational astronomy ASTR 310 (Optical Astronomy) and ASTR 410 (Radio Astronomy). Two additional upper-level astronomy courses are also required.

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. Two additional 400-level Physics courses are required. 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 required for the major. 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 Department office.

### Facilities

The Department of Astronomy has joined with two other universities in upgrading and operating an mm wavelength array located at Hat Creek in California. Observations can be made remotely from the College Park campus. Several undergraduate students have been involved in projects associated with this array. The department also operates a small observatory on campus. This is equipped with a CCD camera which is used in the observing class. Results obtained at the observatory can be analyzed using the department's computer network.

### Courses for Non-Science Majors

There are 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 designed especially for the non-science major. ASTR 101 is a general survey course including laboratory work. It briefly covers most of the major topics in astronomy. 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, Cosmology, 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. Honors students work with a faculty advisor on a research project for which academic credit may be earned. Certain graduate courses are open for credit toward the bachelor's degree. Students are accepted into the Honors Program by the Department's Honors Committee on the basis of recommendations from their advisors and other faculty members. 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 Department of Astronomy office at (301) 405-3001.

Course Code: ASTR

## BIOLOGICAL RESOURCES ENGINEERING (ENBE)

College of Agriculture/Engineering  
1457 ANS/ENAG Building, 405-1198

Chair: Wheaton (Acting)  
Professors: Brodie, Johnson, Wheaton  
Associate Professors: Grant, Kangas, Magette, Ross, Shirmohammadi  
Assistant Professor: Cronk  
Instructor: Carr  
Emeriti: Harris, Krewatch, Merrick, Stewart

### The Major

This program is for students who wish to become engineers but who also have serious interest in biological systems and how the physical and biological sciences interrelate. The biological and the engineering aspects of plant, animal, genetic, microbial, medical, food processing and environmental systems are studied. Graduates are prepared to apply engineering, mathematical and computer skills to the design of biological systems and facilities. Graduates find employment in design, management, research, education, sales, consulting or international service.

### Requirements for Major

Emphasis areas include aquacultural engineering, biomedical engineering, plant systems engineering, animal systems engineering, food process engineering, natural resources engineering, and environmental engineering.

### Biological Resources Engineering Curriculum

<b>Freshman Year</b>	
ENES 100—Introduction to Engineering Design .....	3
*MATH 140—Calculus I .....	4
*CHEM 103—General Chemistry I .....	4
*BIOL 105—Principles of Biology I .....	4
or BIOL 106—Principles of Biology II	
Total.....	15
ENES 102—Statics .....	3
*MATH 141—Calculus II .....	4
*CHEM 104—Fundamentals of Organic and Biochemistry .....	4
*PHYS 141—Principles of Physics .....	4
*CORE <sup>1</sup> .....	3
Total.....	18

<b>Sophomore Year</b>	
MATH 241—Calculus III .....	4
*MICB 200—General Microbiology .....	4
ENES 220—Mechanics of Materials .....	3
*PHYS 142—Principles of Physics .....	4
ENGL 101—Introduction to Writing .....	3
Total.....	18
MATH 246—Differential Equations for Scientists and Engineers .....	3
ENES 221—Dynamics .....	3
ENME 217—Thermodynamics .....	3
ENBE 231—Computer Use in Bioresource Engineering .....	3
*ECON 201—Principles of Economics (or substitute approved course).....	3
*CORE <sup>1</sup> .....	3
Total.....	18

**Junior Year<sup>2</sup>**

ENCE 300—Fundamentals of Engineering Materials .....3  
 or ENMA 300—Materials Science and Engineering  
 or ENES 230—Introduction to Materials and Their Applications  
 or ENME 401<sup>3</sup>—The Structure and Properties of Engineering Materials  
 ENME 342—Fluid Mechanics .....3  
 or ENCE 330—Basic Fluid Mechanics  
 ZOOL 211—Cell Biology and Physiology .....4  
 [ENGR SCI: Technical Elective]<sup>4</sup> .....3  
 \*CORE<sup>1</sup> .....3  
 Total.....16

ENEE 300—Principles of Electrical Engineering .....3  
 ENEE 301—Electrical Engineering Laboratory .....1  
 ENBE 454—Biological Process Engineering .....4  
 [BIOL SCI: Technical Elective]<sup>4</sup> .....3  
 [ENGR SCI: Technical Elective]<sup>4</sup> .....3  
 \*CORE<sup>1</sup> .....3  
 Total.....17

**Senior Year**

ENBE 421—Power Systems .....3  
 ENBE 422—Water Resources Engineering .....3  
 [BIOL SCI: Technical Elective]<sup>4</sup> .....3  
 ENGL 393—Technical Writing .....3  
 \*CORE<sup>1</sup> .....3  
 Total.....15

ENBE 481—Creative Design with CAD/CAM .....3  
 ENBE 424—Functional and Environmental Design of Agricultural  
 Structures .....3  
 ENBE 485 Capstone Design .....3  
 [BIOL SCI or ENGR SCI: Technical Elective]<sup>4</sup> .....3  
 \*CORE<sup>1</sup> .....3  
 Total .....132

\*Satisfies General Education 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 56 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.

**Admission/Advising**

All Agricultural Engineering majors must meet admission, progress and retention standards of the Clark School of Engineering, but may enroll through either the College of Agriculture or Engineering.

Advising is mandatory; call 405-1198 to schedule an appointment.

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 Clark School 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**

Join the student branch of ASAE, the society for engineering in agricultural, food, and biological systems. Academic advisors will tell you how to become a participant.

Course Code: ENBE

**BIOLOGICAL SCIENCES PROGRAM**

**College of Life Sciences**  
 1213 Symons, 405-6892

Assistant Director: Presson

**The Major**

The Biological Sciences major is an interdepartmental program sponsored by the Departments of Plant Biology, Entomology, Microbiology, and Zoology. All Biological Sciences majors complete a common sequence of introductory and supporting courses referred to as the Basic Program. In addition, students must complete an Advanced Program within one of the following specialization areas:

- Plant Biology (PLNT)
- Entomology (ENTM)
- Microbiology (MICB)
- Zoology (ZOOL)
- Cell and Molecular Biology and Genetics (CMBG)
- Physiology and Neurobiology (PHNB)
- Marine Biology (MARB)
- Ecology, Evolutionary Biology and Behavior (EEBB)
- General Biology (BGEN)
- Individualized Studies (BGEN)

A complete list of Specialization Area requirements is available from the Biological Sciences Program Office, 405-6892.

The undergraduate curriculum in Biological Sciences at College Park emphasizes active learning through student participation in a variety of quality classroom and laboratory experiences. The well-equipped teaching laboratories incorporate modern research technologies to provide students with the very best learning environment. The program requires supporting course work in chemistry, mathematics and physics, yet still allows time for exploring other academic disciplines and securing a quality general education.

Each participating departments offers research opportunities that may be completed either in a faculty member’s research laboratory or field site or at one of the many nearby research facilities. The National Institutes of Health, the Patuxent Wildlife Refuge, the National Zoo, and the Chesapeake Bay Laboratory are just a few of the many sites utilized by UMCP students.

Many of our graduates pursue advanced degrees in master’s or doctoral programs or by entering medical, dental, or other professional schools. Some elect to seek employment as skilled technical personnel in government or industry research laboratories. Students emphasizing environmental biology find careers in fish and wildlife programs, zoos and museums. Other recent graduates are now science writers, sales representatives for the biotechnology industry, and lawyers specializing in environmental and biotechnology related issues.

**Requirements for Major**

	<b>Semester Credit Hours</b>
CORE Program Requirements .....	30
Basic Program in Biological Sciences	
BIOL 105 Principles of Biology I .....	4
BIOL 106 Principles of Biology II .....	4
BIOL 222 Principles of Genetics .....	4
One course in Organismal Diversity .....	4
Choose from:	
BOTN 207 Plant Diversity	
ENTM 205 Principles of Entomology	
MICB 200 General Microbiology	
ZOOL 210 Animal Diversity	
Supporting courses .....	30-32
MATH 220 or 140—Calculus I	
MATH 221 or 141—Calculus II	
CHEM 103—General Chemistry I	
CHEM 113—General Chemistry II	
CHEM 233—Organic Chemistry I	
CHEM 243—Organic Chemistry II	
PHYS 121 or 141—Physics I	
PHYS 122 or 142—Physics II	

## 80 Business and Management, General

Total Credits in Basic Program .....	42-44
Advanced Program .....	21-24
Requirements vary according to specialization.	
Electives .....	16-19

A grade of C or better is required for BIOL 105, 106, the diversity course, BIOL 222, and all courses in the Advanced Program. A C average is required for the Biological Sciences supporting courses (math, chemistry, and physics). Majors in Biological Sciences cannot use any Life Sciences course to fulfill CORE Advanced Studies requirements, including courses in CHEM or BCHM.

### Advising

Advising is mandatory during each pre-registration period for all Biological Sciences majors. Advising is coordinated with the Biological Sciences Departments according to Specialization Areas. The following persons are Coordinating Advisors for the indicated Specialization Areas. They can be contacted for making appointments with an advisor or for any other information regarding that Specialization Area.

<b>Smith</b> .....	2107 Microbiology Bldg. ....	405-5435.....	CMBG, MICB
<b>Infantino</b> .....	2227 Zoo-Psych Bldg. ....	405-6904.....	ZOOL, PHNB, MARB
<b>Barnett</b> .....	3214 H.J. Patterson Bldg. ....	405-1597.....	PLNT
<b>Armstrong</b> .....	2309 Symons Hall .....	405-3925.....	ENTM
<b>Presson</b> .....	1211 Symons Hall .....	405-6892.....	BGEN, BIVS

### Honors

Outstanding students are encouraged to apply to departmental Honors Programs. Through the Honors Programs students will become actively involved in the scientific research ongoing at College Park. Information about these honors programs may be obtained from the Assistant Director.

Course Code: BIOL

## BUSINESS AND MANAGEMENT, GENERAL

For information, consult the College of Business and Management entry.

## CHEMICAL ENGINEERING (ENCH)

### A. James Clark School of Engineering

2113 Chemical and Nuclear Engineering Bldg., 405-1935

Professor and Chair: Sengers

Associate Chair and Undergraduate Director: Smith

Professors: Choi, Gentry, McAvoy, Regan, Sengers, Smith, Weigand

Associate Professors: Bentley, Calabrese, Gasner, Ranade\*\*, Wang, Zafriou

Emeritus: Beckmann

\*\*Adjunct

### The Major

The Chemical Engineering Department offers a general program in chemical engineering. In addition, study programs in the specialty areas of applied polymer science, biochemical engineering, and process engineering are available. The latter programs are interdisciplinary with other departments at the university. The departmental programs prepare an undergraduate for graduate study or immediate industrial employment following the baccalaureate.

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 manufacturing, metallurgical, polymer, energy conversion, environmental engineering, petro-

leum (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 University's CORE (general education) requirements; (2) a core of mathematics, physics, chemistry, and engineering sciences required of all engineering students; (3) two organic and two physical chemistry courses; (4) the required core of 34 credits of ENCH courses which include ENCH 215, 250, 300, 333, 422, 424, 426, 437, 440, 442, 444 and 446; (5) nine credits of ENCH electives. A sample program follows:

**Freshman Year:** The freshman year is the same for all Engineering departments. Please consult the Clark School of Engineering entry.

	Semester	
	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 .....	4	4
ENES 230—Intro. to Materials and Their Applications .....		3
CHEM 233—Organic Chemistry I .....	4	
CHEM 243—Organic Chemistry II .....		4
ENCH 215—Chem. Engr. Analysis .....	3	
ENCH 250—Computer Methods in Chem. Engr. ....		3
CORE Program Requirements .....	3	
Total .....	18	17

### Junior Year

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 422—Transport Processes I .....		3
ENCH 424—Transport Processes II .....		3
CORE Program Requirements .....	3	6
Total .....	14	18

### Senior Year

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
ENCH 426—Transport Processes III .....	3	
Technical Electives** .....	3	6
CORE Program Requirements .....	3	6
Total .....	15	16

Minimum Degree Credits: 120 credits and fulfillment of all departmental, school, 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

Nine credits of technical electives are required. It is recommended that they be taken during the senior year.

Additional guidelines are as follows:

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

#### Biochemical Engineering

ENCH 482—Biochemical Engineering (3)

ENCH 485—Biochemical Engineering Laboratory (3), recommended only if ENCH 482 is taken.

**Polymers**

ENCH 490—Introduction to Polymer Science (3)  
 ENCH 494—Polymer Technology Laboratory (3). Recommended if ENCH 490 is taken.  
 ENCH 496—Processing of Polymer Materials (3)

**Chemical Processing**

ENCH 450—Chemical Process Development (3)

**Process Analysis and Optimization**

ENCH 452—Advanced Chemical Engineering Analysis (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 Clark School 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 2113 Chemical and Nuclear Engineering Building, 405-1935.

**Co-op Program**

The Chemical Engineering program works within the Clark School of Engineering Cooperative Engineering Education Program. For information on this program consult the Clark School of Engineering entry in this catalog or call 405-3863.

**Financial Assistance**

Financial aid based upon need is available through the Office of Student Financial Aid. A number of scholarships are available through the Clark School 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

**CHEMISTRY AND BIOCHEMISTRY (CHEM, BCHM)****College of Life Sciences**

1320 Chemistry Building, 405-1788  
 Student Information: 1309 Chemistry Building, 405-1791

Professor and Chair: Jarvis  
 Associate Chairs: Ammon, Mignerey  
 Director, Undergraduate Programs: Harwood  
 Professors: Alexander, Ammon, Bellama, DeShong, Dunaway-Mariano, Freeman, Greer, Grim, Hansen, Helz, Huheey, Jarvis†, Khanna, Kozarich, Mariano, P. Mazzocchi, Mignerey†, G. Miller, Moore, Munn, O'Haver, Thirumalai, Tossell, Walters, Weeks, Weiner  
 Associate Professors: Blough, Boyd, DeVoe, Herndon, Julin, Murphy, Ondov, Poli, Ruett-Robey, Rokita, Sampugna  
 Assistant Professors: Davis, Eichhorn, Falvey, Forbes, Kahn, C. Miller, Pilato, Woodson  
 Instructors: Hammond, Harwood, D. Mazzocchi, Rebbert

Emeriti: Castellán, Henery-Logan, Holmlund, Jaquith, Keeney, McNesby, Pratt, Rollinson, Sturtz, Svrbely, 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 or professional school, for career opportunities in chemical and pharmaceutical industries, and for basic research positions in government and academic laboratories.

**Requirements for Chemistry Major**

Majors in Chemistry or Biochemistry should take the CHEM 143-153 sequence, General Chemistry for Majors. Transfer students or students changing to the major after the freshman year will take a three-course sequence: CHEM 103,113,227.

The major in chemistry requires 41 credits in chemistry, of which 18 are lower-level and 23 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 select one laboratory course from their upper-level chemistry electives.

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, including Math 140, 141 and Physics 141, 142, 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.

	<b>Semester Credit Hours</b>
CORE Requirements .....	29
College of Life Sciences Core Requirements .....	20
Departmental Requirements .....	41
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
CHEM 425—Instrumental Analysis .....	3
400-level Chemistry courses .....	6
Electives .....	30
Total .....	120

**Requirements for Biochemistry Major**

The department also offers a major in biochemistry. In addition to the 18 credits of lower-level chemistry, the program requires BCHM 461, 462, and 464; CHEM 481, 482 and 483; MATH 140 and 141; PHYS 141 and 142; and six 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>
CORE Requirements .....	29
College of Life Sciences Core Requirements .....	20
Departmental Requirements .....	45-46
Approved Biological Science Elective .....	4
CHEM 481—Physical Chemistry I .....	3
CHEM 483—Physical Chemistry Laboratory I .....	2
CHEM 482—Physical Chemistry II .....	3
CHEM 425—Instrumental Analysis .....	3
BCHM 461—Biochemistry I .....	3
BCHM 462—Biochemistry II .....	3
BCHM 464—Biochemistry Laboratory II .....	2

## 82 Civil Engineering

Approved Upper-level Biological Science .....	3-4
Electives .....	26
Total .....	120-121

### Advising

Advising is mandatory. Appointments for advising can be made by contacting the secretary in the Office of Undergraduate Studies, 1309 Chemistry Building, 405-1791.

### Financial Assistance

Two scholarships are available for majors: The Isidore and Annie Adler Scholarship of \$500 to an outstanding major with financial need and the Leidy Foundation Scholarship of \$600 to two outstanding junior majors. No application is necessary, as all majors are automatically reviewed by the Awards Committee.

### Honors and Awards

In the 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. Students must have completed one year of CHEM or BCHM 399, Undergraduate Research, to be considered for departmental honors as seniors. Dr. Harwood (1309 Chemistry Building, 405-1791) 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 fraternity which recruits men and women students from Chemistry, Biochemistry, and related science majors during each fall and spring semester. Members must have completed one year of General Chemistry and are expected to complete a minimum of four 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. Dr. Boyd (1206 Chemistry Building, 405-1805) is the faculty moderator.

Course Codes: CHEM, BCHM

## CIVIL ENGINEERING (ENCE)

### A. James Clark School of Engineering

1173D Engineering Classroom Building, 405-1974

Acting Chair: Amde

Professors: Aggour, Albrecht, Amde, Ayyub, Birkner, Carter, Donaldson, Golden (Affiliate), Hao, Maloney, McCuen, Ragan, Schelling, Schonfeld, Sternberg, Vannoy, Witczak

Associate Professors: Austin, L. Chang, P. Chang, Davis, Goodings, Schwartz  
Assistant Professors: Flood, Haghani, Johnson, Kartam, Sircar (Affiliate), Torrents

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 specialization in civil

engineering: construction engineering and management, environmental engineering, geotechnical engineering, structural engineering, transportation engineering, and water resources and remote sensing. A total of 131 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 16 credits of technical electives that may be selected from a combination of the six areas of civil engineering specialization. The curriculum provides a sensible blend of required courses and electives, which permits students to pursue their interests without the risk of overspecialization.

	Semester	
	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 .....	4	
ENES 221—Dynamics .....		3
ENCE 201—Computational Methods in Civil Engineering I .....	3	
ENCE 255—Elementary Structural Analysis .....		3
CORE Program Requirements .....	3	3
Total .....	18	16

### Junior Year

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
CORE Program Requirements .....	3	
Total .....	18	16

### Senior Year

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
CORE Program Requirements .....	6	3
Total .....	16	15

Minimum Degree Requirements: 120 credits and the fulfillment of all departmental, school 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 three courses from one area of specialization A, B, C, D, E or F.
- (2) Two other courses from the entire technical elective list.

Technical Elective Groups:

- 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 420 (3); 423 (4); 425 (3).
- G. Support Courses: ENCE 410 (3); 462 (3); 463 (3); 464 (3); 465 (3); 489 (1-3).

### Admission/Advising

See A. James Clark School of Engineering entrance requirements.

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. Birkner, 405-1948, 1172 Engineering Classroom Building.

## Fieldwork and Internship Opportunities

Several excellent co-op opportunities are available for Civil Engineering students. See the A. James Clark School of Engineering entry in this catalog for a full description of the Engineering co-op program, or contact Heidi Sauber, 405-3863.

## 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 A. James Clark School 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; 7) The ASCE Maryland Section Award; and 8) The Department Chairman's 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

2407 Marie Mount Hall, 405-2014

Professors: Duffy (Chair), Hallett, Leshner  
Associate Professors: Doherty, Lee, Staley, Stehle

### 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 Classical Languages and Literatures 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 12 of which must be at the 400-level or higher, plus nine credits of supporting courses (for example, CLAS 170, HIST 110, 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 12 of which must be at the 400-level or higher, plus nine hours of supporting courses (for example, CLAS 170, HIST 110, and a 300- or 400-level course in Greek history).

#### Option C: Greek and Latin

Thirty credits of either Greek or Latin and 12 hours of the other classical language, plus nine hours of supporting courses (for example, CLAS 170, HIST 110, 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 12-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; 12 credits in Greek or Latin courses; 12 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 18 required hours in CLAS.

Students must take language acquisition courses sequentially, i.e., 101, 102, 201, 202, etc. Once credit has been received in a higher level language acquisition or grammar course, a lower level course may not be taken for credit.

Course Codes: CLAS, GREK, LATN

## COMPARATIVE LITERATURE PROGRAM (CMLT)

### College of Arts and Humanities

2107 South Campus Surge Bldg., 405-2853

#### Core Faculty

Professor and Director: Lanser  
Professors: Berlin, Collins, Condé, Fuegi, Lifton, C. Peterson  
Associate Professors: Hage, Marchetti  
Instructors: E. Robinson

#### Affiliate Faculty

Professors: Agar, Alford, Auchard, E. Beck, R. Brown, Caramello, Caughey, Chambers, Coogan, Cross, Diner, Fink, Gillespie, Hallett, Handelman, Herndon, Holton, Kauffman, Pearson, Robertson, Trousdale, Turner  
Associate Professors: Barry, Bedos-Rezak, Bilik, Bolles, Brami, J. Brown, Cate, Doherty, Donawerth, Fahnestock, Falvo, Fliieger, Grossman, Igel, Kelly, Kerkham, King, Kuo, Leinwand, Leonardi, Mintz, Mossman, Norman, Phaf, Sargent, Smith, Strauch, Zilfi  
Assistant Professors: P. Butler, Cohen, Coustaut, Greene-Gantzberg, Ray, Richardson, Richter, Sherman, Upton, Wang, Yee

### The Major

A pre-structured Individual Studies major is available through Undergraduate Studies. This major requires competence in a second language and may emphasize either literature or media. Undergraduates may also emphasize comparative studies in literature, culture, and/or media as they work toward a degree in another department associated with the Comparative Literature Program.

Course Code: CMLT

## COMPUTER SCIENCE (CMSC)

### College of Computer, Mathematical and Physical Sciences

1103 A. V. Williams Building, 405-2662

#### Professor and Chair: Tripathi

Professors: Agrawala, Basili, Davis, Gannon, Kanal, Miller, Minker, Nau, O'Leary, Reggia, Rosenfeld, Roussopoulos, Samet, Shneiderman, Stewart, Zerkowitz

Associate Professors: Aloimonos, Austing, Elman, Faloutsos, Gasarch, Hendler, Kruskal, Mount, Perlis, Pugh, Purtilo, Ricart\* (Computer Science Center), Saltz, Shankar, Smith, Subrahmanian

Assistant Professors: Dorr, Franklin, Gerber, Hollingsworth, Keleher, Khuller, Porter, Salem

Instructors: Fontana, Kaye, Plane  
Professors Emeriti: Atchison, Chu, Edmundson

\*Jointly with unit indicated.

### 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

## 84 Counseling and Personnel Services

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.

### Requirements for Major

The course of study for a Computer Science major must satisfy all of the following requirements:

1. A grade of C or better in the following courses:
  - a. CMSC 112 or an acceptable score on the Advanced Placement exam or the Department's CMSC 112 exemption exam.
  - b. CMSC 150 or an acceptable score on the Department's CMSC 150 exemption exam.
  - c. CMSC 113
  - 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 CMSC courses:  
Computer Systems: 411; 412;  
Information Processing: 420: one of 421, 424, or 426;  
Software Engineering/Programming Languages: 430; 435;  
Theory of Computation: 451; 452;  
Numerical Analysis: one of 460 or 466; 467.  
**Note:** CMSC 421, 451, and 452 require CMSC 251 as an additional prerequisite. Courses in Numerical Analysis require MATH 240 or 241 as additional prerequisites. Students without either of these prerequisites must choose their 15 credits hours from the remaining courses in the other three areas.
2. MATH 140 and 141 (or Math 250, Math 251). A STAT course which has MATH 141 (or a more advanced mathematics course) as a prerequisite, and one other MATH, STAT, or MAPL course which has MATH 141 (or a more advanced mathematics course) as a prerequisite. A grade of C or better must be earned in each of the courses. 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 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.

### Advising

Computer science majors may obtain advising at room 1103 A.V. Williams. Interested students should call 405-2672 to receive further information about the program.

### Financial Assistance

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 performances.

### Student Organizations

Computer-related extracurricular activities are arranged by our student chapter of the ACM, the professional group for computer scientists by the Minority Computer Science Society and by the Robotics Club. Meetings include technical lectures and career information. Department teams participate in a variety of programming and robot contests.

## COUNSELING AND PERSONNEL SERVICES (EDCP)

### College of Education

3214 Benjamin Building, 405-2858

Professor and Chair: Rosenfield  
Professors: Birk, Byrne (Emeritus), Hershenson, Lent, Magoon (Emeritus), Marx, Power, Pumroy (Emeritus), Schlossberg, Sedlacek (Affiliate)  
Associate Professors: Boyd, Fassinger, Greenberg, Hoffman, Komives, Lawrence, McEwen, Pope-Davis, Scales (Affiliate), Strein, Teglassi, Westbrook (Affiliate)  
Assistant Professors: Bagwell (Affiliate), Clement (Affiliate), Freeman (Affiliate), Gast (Affiliate), Heath, Hrutka (Affiliate), Jacoby (Affiliate), Kandell (Affiliate), Kreiser (Affiliate), Lucas, Mielke (Affiliate), Osteen (Affiliate), Phillips, Rogers, Schmidt (Affiliate), Stewart (Affiliate), Stimpson (Affiliate), Thomas (Affiliate)

The Department of Counseling and Personnel Services offers programs of preparation 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. Additional graduate programs of preparation are provided for college student personnel administrators and school psychologists. The department also offers a joint doctoral program with the Department of Psychology in counseling psychology.

While the department does not have 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. Specific courses in peer counseling, leadership, and diversity are provided.

Course Code: EDCP

## CRIMINOLOGY AND CRIMINAL JUSTICE (CCJS)

### College of Behavioral and Social Sciences

LeFrak Hall, 405-4699

Professor and Chair: Wellford  
Professors: Loftin, McDowall, Nagel, Paternoster<sup>†</sup>, Reuter (Public Affairs), Sherman, Smith  
Associate Professors: Gottfredson, Mackenzie, Simpson, Wish  
Assistant Professor: Russell  
Lecturers: Brooks, Mauriello  
Professor Emeritus: Lejins\* (Sociology)  
<sup>†</sup>Distinguished Scholar-Teacher.  
\*Joint Appointment with unit indicated.

The purpose of the Department of Criminology and Criminal Justice 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 department 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 department sponsors the annual Alden Miller Lecture, the Criminal Justice Student Association, Alpha Phi Sigma, and an annual job fair. The department comprises as its component parts:

1. The Criminology and Criminal Justice Program leading to a Bachelor of Arts degree.
2. Graduate Program offering M.A. and Ph.D. degrees in Criminology and Criminal Justice.

### The Criminology and Criminal Justice Major

The major in criminology and criminal justice comprises 30 hours of coursework in Criminology and Criminal Justice. Eighteen (18) hours of supporting sequence selected from a list of social and behavioral science courses (list is available in the Institute) are required. No grade lower than a C may be used toward the major. An average of C is required in the supporting sequence. Nine hours of the supporting sequence must be at

the 300/400 level. In addition an approved course in social statistics must be completed with a grade of C or better.

<b>Major Requirements</b>	<b>Semester Credit Hours</b>
CCJS100: Introduction to Criminal Justice .....	3
CCJS105: Criminology.....	3
CCJS230: Criminal Law in Action .....	3
CCJS300: Criminological and Criminal Justice Research Methods .....	3
CCJS340: Concepts of Law Enforcement Administration .....	3
CCJS350: Juvenile Delinquency.....	3
CCJS 451, 452, or 454 .....	3
CCJS Electives (3) .....	9
Total.....	30

<b>Supporting Sequence</b>	<b>Credit Hours</b>
18 hours (9 hours at 300/400).....	18
Social Science Statistics.....	3

**Total for Major and Supporting .....51**

Electives for CCJS Majors (all courses are 3 credits):

CCJS234, CCJS320, CCJS330, CCJS331, CCJS352, CCJS357, CCJS359, CCJS360, CCJS398, CCJS399, CCJS400, CCJS432, CCJS444, CCJS450, CCJS451, CCJS452, CCJS453, CCJS454, CCJS455, CCJS456, CCJS457, CCJS461, CCJS462, and CCJS498.

## Internships

Internships are available through CCJS398 and CCJS359 in a variety of federal, state, local, and private agencies.

## Honors

Each semester the Department selects the outstanding graduating senior for the Peter P. Lejins award.

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 (12-credit hour) sequence that a student begins in the spring semester, three or four semesters prior to graduation. CCJS388H, 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, at least three each semester) or an honors thesis (one semester, six credits) followed by a graduate seminar in the institute (one semester, three credits). Honors students may count their Honors courses toward satisfaction of the basic 30-hour requirement. 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 and criminal justice course, and evidence of satisfactory writing ability.

## Advising

All majors are strongly encouraged to see an advisor at least once each semester. Call 405-4699.

Course Code: CCJS

# CURRICULUM AND INSTRUCTION (EDCI)

## College of Education

2311 Benjamin Building, 405-3324

Professor and Chair: Johnson

Professors: Davey, Dreher, Fein, Fey\* (Mathematics), Folstrom\* (Music), Gambrell, Holliday, Howe, Jantz, Layman\* (Physics), Roderick, Saracho  
Associate Professors: Afflerbach, Amershek, Beatty, P. Campbell, Cirrincione\* (History/Geography), Craig, Davidson, DeLorenzo, Graeber, Heidelberg, Killen, Klein, McCaleb\* (Theatre), McWhinnie, Slater, Sullivan, Valli

Assistant Professors: Comas, Gentzler, Grant, McGinnis, O'Flahaven, Owens\* (Physical Education), Van Sledright, Wong  
Emeriti: Blough, Carr, Duffey, Eley, Leeper, Lockard, Risinger, Schindler, Stant, Weaver, Wilson

\*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 pre-school, 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.

Graduates of the Early Childhood, Elementary or Secondary Education programs meet the requirements for certification in the District of Columbia, Maryland and most other states.

## Requirements for Major Including Program Options

All Teacher Education Programs have designated pre-professional courses and a specified sequence of professional courses. Before students may 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 the Teacher Education Professional Program must be made early in the semester prior to beginning professional courses. Admission procedures and criteria are explained in "Entrance Requirements" in the College of Education entry in this catalog.

## Advising

Advising is mandatory for all students desiring acceptance into the Teacher Education Program. 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. Walk-in advising hours are also posted each semester. Check in the department office, Room 2311 Benjamin.

## Honors and Awards

Early Childhood Education majors are eligible for the Ordwein Scholarship. Information is available in the Dean's office (Room 3119).

## 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.

## Required courses

The following courses are required in the program of studies for Early Childhood and may also satisfy the University's general education requirements (CORE and USP). See departmental worksheets and advisors and the Schedule of Classes.

PSYC 100 (3)

\*Social Science or History Courses: ANTH, GEOG, GVPT, ECON, SOCY (6)

HIST 156 (3)

Biological Science with Lab: BIOL, BOTN, MICRO (4)

Physical Science/Lab: ASTR, CHEM, GEOL, PHYS (4)

### Other Pre-Professional Requirements

SPCH (100, 125, or HESP 202 recommended) (3)

MATH 210, 211 (4, 4)

MUSC 155 (3)

Creative Arts: One of the following: KNES 181, 183, 421: THET 120, 311, ARTT 100 (3)

Education Electives: One of the following: FMCD 332, SOCY 343, NUTR 100, EDCI 416 (3)

EDCI 280 School Service Semester (3)



## 86 Curriculum and Instruction

### 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 with a minimum grade of C before beginning the Early Childhood Professional Blocks. All pre-professional and professional courses must be completed with a minimum grade of C prior to student teaching.

EDPA 301 Foundations of Education (3) Normally completed after Professional Block II. See advisor for program planning.

#### Professional Block I:

EDCI 313 Creative Activities and Materials for the Young Child (3)  
EDCI 443A Literature for Children and Youth (3)  
EDHD 419A Human Development and Learning in School Settings (3)  
EDCI 312 Professional Development Seminar (3)  
EDCI 488E Field Problem Analysis (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 314 Teaching Language, Reading, Drama and Literature (3)  
EDHD 419B Human Development and Learning in School Settings (3)

#### Professional Block III:

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. Students admitted to Elementary Education must complete the following program which includes an area of concentration.

**Required Courses:** Courses which may satisfy the university's general education requirements (CORE OR USP) and which are required in the Elementary Education program of studies are as follows:

HIST 156 (3).  
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 (4), 211 (4)  
Speech Requirement (3) Any speech course or HESP 202.  
Biological Science/Lab or Physical Science/Lab (4) Area B  
EDCI 301 or ARTT 100 or ARTT 110 (3)  
EDCI 443 (3)  
MUSC 155 (3)  
EDCI 280 (3)

Course work 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. All pre-professional coursework must be completed with a C or better prior to entering professional courses.

#### Professional Courses:

All professional courses must be completed with a grade of C or better. All pre-professional and professional coursework must be completed with a C or better prior to student teaching.

Professional Coursework to be taken prior to Professional Semester 2

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)  
EDPA 301—Foundations of Education (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)

### 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, mathematics, 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.

All pre-professional and professional courses must be completed with a grade of C or better prior to student teaching.

### 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 (12 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 12 semester hours of English.

### English Education

A major in English Education requires 45 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. Changes in major requirements are under review. Students should check with a departmental advisor for updated information.

#### Pre-Professional/Subject Area Course Work

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 401 (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 404 (3)  
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 and 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, K-12****Pre-Professional/Subject Area Course Work**

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 200—Art of the Western World I (3)  
 ARTH 201—Art of the Western World II (3)  
 ARTT 320—Elements of Painting  
 EDCI 273—Practicum in Ceramics (3)  
 ARTT 330, or 331, or 332, or 333, or 334—Elements of Sculpture (3)  
 ARTT 428—Painting II (3)  
 EDCI 406—Practicum in Art Education: Two Dimensional (3) [Fall Only]  
 EDCI 403—Teaching of Art Criticism in Public Schools (3) [Spring Only]  
 EDCI 407—Practicum in Art Education: Three Dimensional (3) (Spring Only)  
 ARTT 340 or 341, or 342, or 343—Elements of Printmaking: Intaglio

**Professional Courses**

EDHD 300S—Human Development and Learning (6)  
 EDCI 390—Principles and Methods of Secondary Education (3)  
 EDCI 410—The Child and the Curriculum Elementary (3)  
 EDPA 301—Foundations of Education (3)  
 EDCI 300—Curriculum and Instruction in Art Education (3) [Fall Only]  
 EDCI 401—Student Teaching in Elementary Schools Art (4-8)  
 EDCI 402—Student Teaching in Secondary Schools Art (2-8)

**Foreign Language Education**

The Foreign Language (FL) Education curriculum is designed for prospective foreign language teachers in middle through senior high schools who have been admitted to the EDCI Teacher Education Program. Currently, admission is open to qualified students seeking teacher certification in **Spanish, French, Russian, and German only**.

A minimum of six hours of intermediate level language course work in the student's major language must precede the required 300-400 level courses. The latter are comprised of a minimum of 30 hours of prescribed course work which includes the areas of grammar and composition, conversation, literature, civilization and culture, and linguistics. Students must also take a minimum of nine hours (three courses) of electives in a **related** area. Students are strongly advised to utilize these nine hours to begin or continue the study of another language as soon as possible after entering the university. The second area of concentration must be approved by a FLED advisor and may be in any foreign language regardless of whether or not it is a Maryland State Department of Education approved FL certification program.

The following requirements must be met with the FL Education program:

**Pre-Professional/Subject Area Course Work**

SPCH 100, 125, or 220—Basic Principles of Speech Communication (3)  
 Primary FL Area—Intermediate (200 level) (3,3)  
 Primary FL Area—Grammar and Composition (300-400 levels) (3,3)  
 Primary FL Area—Survey of Literature (300-400 levels) (3,3)  
 Primary FL Area—Conversation (300-400 levels) (3,3)  
 Primary FL Area—Literature (400-above levels) (3,3)  
 Primary FL Area—Culture and Civilization (3)  
 Applied Linguistics (**In the Primary FL Area** if available; otherwise, **LING 200** or ANTH 371)—FL Phonetics **does not** satisfy this requirement). (3)

Electives in FL-Related Courses (9 hours—Minimum of three courses). It is **strongly recommended** that these hours be utilized to begin or continue the study of another foreign language as soon as possible.

**All Primary FL Area courses must have been completed prior to the Student Teaching semester. Any substitutions for the above must be pre-approved by a FL Education advisor.**

**Professional Courses**

EDHD 300S—Human Development and Learning (3)  
 EDPA 301—Foundations of Education (3)  
 EDCI 390—Principles and Methods of Secondary Education (3)  
 EDCI 400—Level FL Education Elective only in consultation with FL Education. Advisor (3)  
 EDCI 330—Curriculum and Instruction in Secondary Education: Foreign Language (3) **Pre-requisites EDCI 300S, All Primary FL Area course work**  
 EDCI 430—Seminar in Student Teaching (3) (Taken **concurrently** with EDCI 431. only) **Pre-requisite EDCI 330**.  
 EDCI 431—Student Teaching in the Secondary Schools (12) (Taken **concurrently** with EDCI 430 only) **Pre-requisites EDCI 330 and 301**.

**Mathematics Education**

Students completing an undergraduate major in astronomy, physics, physical sciences, or in mathematics, or who may be enrolled in the College of Education, may prepare to teach astronomy, physics, physical science, or mathematics. 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.

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 or 403; 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, 101, 110 or 111). Also CMSC 110 or 120 is required.

**Pre-Professional/Subject Area Course Work**

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**

EDHD 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, K-12**

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 options 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 Course Work

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)  
 MUED 472—Choral Techniques and Repertoire (2)  
 MUSC 330, 331—History of Music (3,3)  
 MUSP 409—Applied Music (Principal Instrument) (2)  
 MUSC 229—Ensemble (7)

### 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 484/494—Student Teaching: Music (4) (4)

## General Music/Choral

### Pre-Professional/Subject Area Course Work

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)  
 MUSC 110, 111—Class Strings (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—Choral Techniques and Repertoire (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)  
 MUSP 410—Applied Music (Principal Instrument) (2)  
 MUSC 329—Major Ensemble (7)

### 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 (4) (4)  
 \*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 particulars 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 60 semester hours' study in the academic sciences and mathematics.

The following courses are required for all science education majors: BIOL 105; 106; 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; and six semester hours of mathematics. Science education majors must achieve a minimum of grade C in all required mathematics, science, and education course work.

An area of specialization planned with the approval of the student's advisor, must be completed in biology, chemistry, earth science and physics as noted below.

## Biology Education

### Pre-Professional/Subject Area Course Work

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 207—Plant Diversity 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 107, 125 or HESP 202 (3)  
 BIOL 222—Principles of Genetics (4)  
 BOTN 441—Plant Physiology (4)  
 ZOOL 480 (4), BOTN 212 (4), and ENTM 205  
 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 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 371—Computers in the Science Classroom and Laboratory (2)  
 EDCI 470—Student Teaching Seminar in Secondary Education: Science (1)

## Chemistry Education

### Pre-Professional/Subject Area Course Work

BIOL 105—Principles of Biology I (4)  
 BIOL 106—Principles of Biology II (4)  
 CHEM 103—General Chemistry I or 105 (4)  
 CHEM 113—General Chemistry II or 104 (4)  
 MATH 140, 141—Calculus I and II (4, 4)  
 SPCH 107, 125 or HESP 202 (3)  
 CHEM 233, 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 371—Computers in the Science Classroom and Laboratory (2)  
 EDCI 470—Student Teaching Seminar in Secondary Education: Science (1)

## Earth Science Education

### Pre-Professional/Subject Area Course Work

GEOL 100, 110—Physical Geology, Lab (4)  
 GEOL 102—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 107 or 125 or HESP 202 (3)  
 GEOL 322—Mineralogy (4)  
 GEOL 340—Geomorphology (4)  
 GEOL 341—Structural Geology (4)  
 CHEM 103, 113—General Chemistry I and II (4,4)  
 ASTR 101—General Astronomy (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 371—Computers in the Science Classroom and Laboratory (2)  
 EDCI 470—Student Teaching Seminar in Secondary Education: Science (1)

### Physics Education

#### Pre-Professional/Subject Area Course Work

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) or  
 Engineering or Physics Majors Sequence  
 SPCH 107, 110, or HESP 202 (3)  
 BIOL 105—Principles of Biology I (4)  
 BIOL 106—Principles of Biology II (4)  
 PHYS 275—Experimental Physics I (1)  
 PHYS 276—Experimental Physics II (2)  
 PHYS 375—Experimental Physics III (2)  
 ASTR 101—General Astronomy (4)  
 MATH 240—Linear Algebra (4)  
 PHYS 410—Intermediate Theoretical Physics (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 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 (3)  
 EDCI 471—Student Teaching in Secondary Schools: Science (12)  
 EDCI 470—Student Teaching Seminar in Secondary Education: Science (1)  
 EDCI 371—Computers in the Science Classroom and Laboratory (2)

### Social Studies Education

Option I HISTORY: Requires 54 semester hours of which at least 27 must be in history, usually at least six hours in American history; three hours of non-American history; three hours of non-Western history; three hours in Pro-Seminar in Historical Writing; and 12 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 Course Work

SPCH 100, 125 or 110 (3)  
 HIST 156, 157 (U.S.) (6)  
 HIST (non-U.S. with one course non-Western) (6)  
 SOCY 100 or ANTH 101 (3)  
 GEOG 100—Introduction to Geography (3)  
 GEOG 201, 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 54 semester hours of which 27 hours must be in geography. GEOG 201, 211, 202, 203 are required. The remaining 18 hours in geography must be upper level courses with one course in regional geography included. One course in Ethnic and Minority Studies, and one course in non-Western history must be included.

#### Pre-Professional/Subject Area Course Work

SPCH 100, 125 or 110 (3)  
 GEOG 201—Geography of Environmental Systems (3)  
 GEOG 211—Geography of Environmental Systems Laboratory (1)  
 GEOG 202—The World in Cultural Perspective (3)  
 GEOG 203—Economic Geography (3)  
 GEOG Electives (18) HIST (U.S.) 156 or 157 (3)  
 HIST (non-Western) (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.

In addition, intermediate mastery of a modern or classical language is required for a B.A.

#### Pre-Professional/Subject Area Course Work

Speech Area (6): SPCH 100—Foundations of Speech Communication or  
 SPCH 107—Speech Communication, SPCH 110—Voice and Diction,  
 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 and Methods of Secondary Education (3)

## 90 Dance

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.

In addition, intermediate mastery of a modern or classical language is required for a B.A.

#### Pre-Professional/Subject Area Course Work

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—Foundations of Speech Communication 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 or Technical Writing (3)  
EDCI 463—Teaching of Reading (3)  
EDCI 467—Teaching Writing (3)  
EDCI 466—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

Dance Building, 405-3180

Professor and Chair: Wiltz  
Professors: Madden (Emerita), Rosen, A. Warren, L. Warren  
Associate Professor: Dunn  
Instructor: Mayes  
Lecturers: Druker, Fleitell, Jackson  
Accompanists: Freivogel, Johnson

### The Major

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 of experience at the lower 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, 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.

### Requirements for Major

Students must complete 57 semester hours of dance credits. Of these, 18 hours of modern technique and four hours of ballet technique are required. Majors may not use more than 72 DANC credits toward the total of 120 needed for graduation. In addition to the 22 technique credits required, students must distribute the remaining 35 credits as follows:

DANC 208, 308, 388—Choreography I, II, III .....	9
DANC 102—Rhythmic Training .....	2
DANC 109—Improvisation .....	2
DANC 365—Dance Notation .....	3
DANC 200—Introduction to Dance .....	3
DANC 305—Principles of Teaching .....	3
DANC 483—Dance History II .....	3
DANC 370—Kinesiology for Dancers .....	4
DANC 210—Dance Production .....	3
DANC 485—Seminar in 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.

### Dance Concentration

The Department of Dance offers a Concentration in Dance of 22-24 credits. Students take 14-15 hours of specified core courses and 8-9 hours of courses in an emphasis of the student's choice.

Course Code: DANC

## DECISION AND INFORMATION SCIENCES

For information, consult the College of Business and Management entry.

## ECONOMICS (ECON)

### College of Behavioral and Social Sciences

Undergraduate Studies: 3105 Tydings, 405-3505  
Undergraduate Advisor: 3127A Tydings, 405-3503

Professor and Chair: Straszheim  
Professors: Abraham, Almon, Ausubel, Baily, Betancourt, Brechling, Calvo, Clague, Cropper, Dardis, Dorsey, Drazen, Haltiwanger, Hulten, Kelejian, Montgomery, Mueller, Murrell, Oates, Olson, Panagariya, Prucha, Schelling\* (Public Affairs), Schwab  
Associate Professors: Bennett, Coughlin, Crampton, Evans, Lyon, Meyer, Wallis, Weinstein  
Assistant Professors: Fikkert, Hoff, Kranton, Sakellaris, Sen, Swamy  
Instructor: Zeck  
Emeriti: Bergmann, Cumberland, Harris, McGuire, O'Connell, Polakoff, Ulmer, Wonnacott

\*Joint appointment with unit indicated

## The Major

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, 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 upper-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).

## Requirements for Major

In addition to the university's general education (CORE) 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 Calculus (MATH 220 or 140), with a grade of C or better in each course. All majors must complete 12 hours of core requirements. The core requirements include ECON 201, ECON 203, ECON 305 and ECON 306.

Students must also complete 21 hours in upper level Economics courses:

- three hours in statistics; ECON 321 or BMGT 230 or BMGT 231 or STAT 400;
- three hours in economic history or comparative systems; ECON 310, ECON 311, ECON 315, ECON 380, or ECON 410;
- 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 407, ECON 416, ECON 417, ECON 422, ECON 423, ECON 425, ECON 431, ECON 441, ECON 454, ECON 456, ECON 460, ECON 470, and ECON 476;
- six other hours in any upper-division Economics except ECON 386.

### (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 and the University's CORE requirements. Upper division courses include all courses with a 300 number and above except the Junior English writing class. Additional mathematics

courses beyond the required mathematics course (MATH 220 or 140), 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 except ECON 386, which can only 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 140 or 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 attend graduate school. Admission is granted by the department's 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 consider the advanced theory courses (ECON 407 and ECON 417) and the econometrics 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 academic advisors 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 12-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 five courses: ECON 407, 417, 422, 423, 425. Students must complete these 12 hours with a GPA of 3.5. ECON 396 is offered only in the fall term.

To be eligible for admission, a student must have completed 15 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 \$1,000, is awarded to the outstanding Economics junior and senior with a broad liberal arts program.

## 92 Education Policy, Planning, and Administration

### Student Organizations

Omicron Delta Epsilon, the economics honorary society, meets regularly to discuss graduate study in economics and other fields, employment opportunities, and recent economic trends. Please see the Undergraduate Economics Secretary, 3105 Tydings, for membership information.

Course Code: ECON

### EDUCATION POLICY, PLANNING, AND ADMINISTRATION (EDPA)

#### College of Education

2110 Benjamin Building, 405-3574

Acting Chair: Weible

Professors: Andrews, Berdahl, Birnbaum, Chait, Clague, Dubel, Finkelstein, Malen, McLoone, Selden

Associate Professors: Conley, Goldman, Herschbach, Hopkins, Huden, Hultgren, Schmidlein, Splaine

Assistant Professors: Collinson, Enomoto, Fries-Britt, Garcia-Padilla

Affiliate Assistant Professors: Edelstein, Presley

Emeriti: Berman, Carbone, Dudley, Newell, Male, Stephens

The Department of Education Policy, Planning and Administration offers several courses at the undergraduate level. These include Foundations of Education (EDPA 301), Education in Contemporary American Society (EDPA 201), Historical and Philosophical Perspectives on Education (EDPA 210), Technology, Social Change, and Education (EDPA 401), and Future of the Human Community (EDPA 400). Some courses may also satisfy general education (CORE) requirements; check the current Schedule of Classes.

Master's and doctoral programs are offered in school administration and supervision, curriculum theory and development, social foundations of education and education policy, and higher education administration.

Course Code: EDPA

### ELECTRICAL ENGINEERING (ENEE)

#### A. James Clark School of Engineering

2429 A.V. Williams Building, 405-3683

Chair: Farvardin

Associate Chairs: Blankenship (External Relations), Davist (Facilities and Services); Emad (Graduate Program); Pugsley (Undergraduate Program)

Professors: Abed, Antonsen, Baras, Barbe, Blankenship, Chellappa, Dagenais, Davis, DeClariss, Destler, Emad, Ephremides, Farvardin, Frey, Geraniotis, Gligor, Goldhar, Granatstein, Harger, Ho, Ja'Ja', Krisnaprasad, Langenberg, Lee, Levine, Makowski, Marcus, Mayergoz, Melngailis, Nakajima, Narayan, Newcomb, Orloff, Ott, Peckerar (part-time), Rabin, Reiser, Rhee, Striffler, Taylor, Tits, Venkatesan, Vishkin, Zaki

Associate Professors: Dayawansa, Fuja, Goldsman, Iliadis, Lawson, Milchberg, Oruc, Papamarcou, Pugsley, Shamma, Shayman, Silio, Tretter, Yang

Assistant Professors: Greenberg, Liu, Milor, Stewart

Emeriti: Davisson, Hochuli, Ligomenides, Lin, Wagner

†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 that 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 Engineering is shown below. (See A. James Clark School of Engineering section for suggested Freshman Year program.)

	Semester	
	I	II
<b>Sophomore Year</b>		
CORE .....	3	3
Math 246—Differential Equations .....	3	
Math 241—Analysis III .....		4
PHYS 262, 263—General Physics .....	4	4
ENEE 240—Engineering Computation .....	3	
ENEE 221—Dynamics .....	3	
ENEE 204—Basic Circuit Theory .....		3
ENEE 244—Digital Logic Design .....		3
Total .....	16	17
<b>Junior Year</b>		
Math xxx (Elect. Advanced Math <sup>2</sup> ) .....	3	
ENEE 302—Analog Electronics .....	3	
ENEE 305—Fundamental Laboratory .....	2	
ENEE 312—Digital Electronics .....		3
ENEE 322—Signal & System Theory .....	3	
ENEE 324—Engineering Probability .....		3
ENEE 350—Computer Organization .....		3
ENEE 380—Electromagnetic Theory .....	3	
ENEE 381—Elect. Wave Propagation .....		3
ENEE xxx—Advanced Elective Lab. <sup>2</sup> .....		2
CORE .....	3	3
Total .....	17	17
<b>Senior Year</b>		
Electives <sup>2</sup> .....	6	12
Advanced Elective Lab <sup>2</sup> .....	2	
CORE .....	6	3
Total .....	14	15

<sup>1</sup>See details of CORE in Chapter 5.

<sup>2</sup>The 25 credits of electives must satisfy the following conditions:

(1) 13 credits must be 400-level ENEE courses, including at least four credits of advanced laboratory courses, and at least one capstone design course.

(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.

#### Admission

Admission requirements are the same as those of other departments. (See A. James Clark School 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 (2429 A.V. Williams Building, 405-3685) 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, 2429 A.V. Williams Building, 405-3685, or the A. James Clark School of Engineering Student Affairs Office, 1131 Engineering Classroom Building, 405-3860

### 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 A. James Clark School of Engineering entry in this catalog for further information.

### Department Honors Program

The Electrical Engineering Honors Program is intended to provide a more challenging and rewarding undergraduate experience for the best students pursuing the baccalaureate in Electrical Engineering. Honors sections are offered in almost all technical courses in the freshmen, sophomore, and junior years, and a capstone honors design project is taken during the senior year. Students completing the program with at least a 3.0 average on a 4.0 scale will have their participation in the program indicated on their B.S. diploma. For further information contact Dr. James Pugsley in the Electrical Engineering Undergraduate Office (AVW 2429).

### 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 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

A. James Clark School of Engineering  
1131 Engineering Classroom Building, 405-3855

### 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 50 earned credits towards any engineering degree, and at least one semester prior to the time the student expects to receive the baccalaureate. As soon as the student elects to seek an undesignated baccalaureate 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. 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 A. James Clark School 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 school 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 and the school requirement of 2.0 GPA 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 preparation 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 a 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, systems and control engineering, and manufacturing engineering, or for preparatory entry into a variety of newer or interdisciplinary areas of graduate study. For example, a student contemplating 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 66 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 ample time for decision-making. 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

Option:	Semester Hours	
	Engineering	Applied Science
CORE .....	15	15
Mathematics Physical Sci. <sup>2</sup> .....	3	3
Engineering Sciences <sup>1,2</sup> .....	6	6
Primary Field <sup>3,6</sup> .....	(Engr.)24	(Engr.)18
Secondary Field <sup>2,5</sup> .....	(Engr.)12	(Sci.)12
Approved Electives <sup>2</sup> .....	(Tech.)6	9 or 10
Sr. Research/Project <sup>4</sup> .....		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.



## 94 English Language and Literature

<sup>1</sup>Engineering sciences, for the purpose of this degree, are those courses in the A. James Clark School 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 50 percent of the course work 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 (36 semester hours in the engineering option and 30 in the applied science option) must be at the 300 course number level or above. In addition, three courses with laboratory experience should be incorporated into the program.

<sup>4</sup>For the applied science option each student is required, unless specifically excused; and if excused, 15 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

3101 S. Campus Surge Bldg., 405-3809

Undergraduate Advisors: 2115 SCP, 405-3825

Freshman English Office: 3119 SCP, 405-3771

Professional Writing Program: 3119 SCP, 405-3762

Chair: Coletti

Professors: Auchard, Berlin, Bryer, Caramello, Carretta, Coletti, Collins, Coogan, Cross, Fraistat, Freedman (Emeritus), Fry, D. Hamilton, Handelman<sup>†</sup>, Holton, Hovey (Emeritus), Howard, Isaacs, Jellema (Emeritus), Kauffman, Kolker, Kornblatt, Lanser<sup>†</sup>, Lawson, Lutwack (Emeritus), McKnight, Miller (Emerita), Myers (Emeritus), Panichas (Emeritus), Pearson, C. Peterson, W. Peterson, Plumly, Salamanca (Emeritus), Schoenbaum (Emeritus), Trousdale, Turner, Vitzthum, Washington, Whittemore (Emeritus), Winton, Wyatt

Associate Professors: Auerbach, Barry, Cartwright, Cate, Coleman, Collier, Dobin, Donawerth, Fahnestock, Flieger, Grossman, G. Hamilton, Hammond, Kleine, Leinwand, Leonardi, Levine, Loizeaux, Mack, Marcuse, Moser, Norman, Robinson, Smith, Van Egmond

Assistant Professors: Cohen, King, Levin, Lindemann, Logan, McDowell, Ray, Richardson, Rutherford, Schilb, Sherman, Upton, Wang

Instructors: Miller, Ryan, Shapiro, Terchek

<sup>†</sup>Distinguished Scholar-Teacher

### The Major

The English major was designed with three purposes in mind: 1) to give students a sense of the variety of literature written in English over the centuries; 2) to help English majors develop their abilities to think carefully and to express themselves well; and 3) to introduce students to the debates about literature that shape our intellectual lives. 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 and communication skills.

### Requirements for Major

The English major requires 39 credits in English beyond the two required University writing courses.

The English major has three parts. The Core Requirements assure that students read widely and become aware of the questions an inquiring reader might ask of a text. The Concentration offers students the

opportunity to read more deeply in an area of special interest. The Electives allow students to explore other areas of interest.

### Core Requirements (18 credits)

All to be taken at the 300- or 400-level

1. English 301: Critical Methods in the Study of Literature. M a j o r s must take 301 before they take other 300- or 400- level English courses. We recommend it be taken during the sophomore year.
2. A course in British Literature emphasizing literature written before 1670.
3. A second course in British Literature emphasizing literature before 1900.
4. A course in American Literature.
5. A course in the literature of a) African-Americans, b) peoples of color, or c) women.
6. A senior seminar, to be taken in the senior year.

### Concentrations (12 credits)

(Four courses beyond the Core Requirements)

Students choose one of the following:

1. British and American Literature
2. American Literature
3. Language, Writing, and Rhetoric
4. Creative Writing
5. Literature of the African Diaspora
6. Mythology and Folklore
7. Literature by Women
8. International Literature (special permission required)
9. Cultural Studies (special permission required)
10. Student Specified Concentration (special permission required)

**Electives** (9 credits): Chosen in consultation with an advisor.

Only two 200-level courses may be counted toward the major. No course with a grade less than C may be used to satisfy the major or supporting area requirements. For further details on requirements, contact the English Department's Office of Undergraduate Studies (2115 SCP, 405-3825).

## English Education

In conjunction with the College of Education, the English Department offers a special 83-credit program for students wishing to major in English and earn a certificate to teach English at the secondary level. For a list of requirements, contact the Office of Undergraduate Studies (2115 SCP, 405-3825).

## 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

The Writing Center, 2105 SCP, 405-3785, provides free tutorial assistance to students with writing assignments. English 101 students generally work with student tutors. English 391/2/3/4/5 students usually work with tutors who are retired professionals. Appointments are recommended, but walk-ins are welcome based on availability of tutors. Students, faculty, and staff with questions about punctuation, sentence structure, word choice, or documentation can call the Writing Center's Grammar Hotline at 405-3787.

Course Code: ENGL

## ENTOMOLOGY (ENTM)

### College of Life Sciences

1302 Symons Hall, 405-3911

Professor and Chair: Raupp

Professors: Barbosa, Bickley (Emeritus), Bottrell, Davidson (Emeritus), Denno, Harrison (Emeritus), Hellman, Jones (Emeritus), Ma, Menzer (Emeritus), Messersmith (Emeritus), Raupp, Scott, Steinhauer (Emeritus), Wood (Emeritus)

Associate Professors: Armstrong, Dively, Lamp, Linduska, Mitter, Nelson,

Regier  
Assistant Professors: Shultz, Thorne  
Assistant Research Scientist: Sina

## The Major

This specialization area 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.

## Requirements for Specialization

See Biological Sciences in this catalog and Entomology advisor for specific program requirements.

Course Code: ENTM

## FAMILY STUDIES (FMST)

### College of Health and Human Performance

1204 Marie Mount Hall, 405-3672

Professor and Chair: Billingsley  
Professors: Epstein, Gaylin, Koblinsky  
Associate Professors: Anderson, Leslie, Myricks, Rubin, Wallen  
Assistant Professors: Mokhtari, Randolph  
Lecturer: Millstein  
Instructors: Werlinich

## The Major

The major in Family Studies emphasizes an understanding of the family as the primary social institution linking individuals to their world. The program has three interrelated foci: 1) the family as a unique and dynamic social unit, 2) the development and functioning of the individuals within the family, and 3) the relationship of the family to its larger socio-cultural, historical and economic context. The course of study stresses a working knowledge of the development of individuals throughout the family life span, interpersonal relations, and resource use. Education about family life issues such as family life enrichment, intergenerational relations, family crises, legal problems, and changing family forms and lifestyles are studied. Intervention strategies alleviating and preventing family problems and an understanding of the reciprocal relationships between families and the policies, practices, and management of institutions and organizations are offered. The curriculum prepares students to be educators and have careers in direct service roles and mid-level management and policy positions emphasizing family. Opportunities exist in public, private and non-profit agencies and institutions working with family members, entire family units or family issues. Graduates also will be prepared for graduate study in the family sciences, human services administration, and other social and behavioral science disciplines and professions.

## Curriculum

### (a) Major subject area: A grade of C or better is required in these courses.

FMST 302—Research Methods (3)  
FMST 330—Family Theories and Patterns (3)  
FMST 332—Children in Families (3)  
FMST 347—Internship and Analysis (3)  
FMST 381—Poverty, Affluence, and Families (3)  
FMST 383—Delivery of Human Services to Families (3)  
FMST 432—Intergenerational Aspects of Family Living (3)  
FMST 487—Legal Aspects of Family Problems (3)  
ECON 201 or ECON 203—Principles of Economics I/II

### (b) Six additional departmental credits must be selected from any other FMST courses, with the exception of independent study (FMST 399) and field work (FMST 386, FMST 387). Must receive a grade of C or better.

### (c) Additional Core Courses. Required of all majors. All students must earn a grade of C or better in all courses applied toward satisfaction of the major.

EDMS 451—Introduction to Educational Statistics (3) OR  
STAT 100—Elementary Statistics and Probability (3)  
SOCY 100—Introduction to Sociology (3) OR  
SOCY 105—Introduction to Contemporary Social Problems  
PSYC 100—Introduction to Psychology (3)  
SPCH 100—Foundations of Speech Communication (3)  
OR SPCH 107—Speech Communication: Principles and Practices (3)  
OR SPCH 125—Introduction to Interpersonal Communication (3)

Course Code: FMST

## FINANCE

For information, consult the College of Business and Management entry.

## FIRE PROTECTION ENGINEERING (ENFP)

### A. James Clark School of Engineering

0151 Engineering Classroom Building, 405-3992

Professor and Chair: Spivak  
Professors: Brannigan, Quintiere, Spivak  
Associate Professor: Mowrer  
Assistant Professor: Milke  
Lecturers (part-time): Bathurst, Birky, Gagnon, Nelson  
Emeritus: Bryan

## The Major

Fire Protection Engineering is concerned with the applications of scientific and technical principles to the growth, mitigation, and suppression of fire. This includes the effects of fire on people, on structures, on commodities, and on operations. The identification of fire hazards and their risk, relative to the cost of protection, is an important aspect of fire safety design.

The practice of fire protection engineering has developed from the implementation and interpretation of codes and standards directed at fire safety. These safety codes contain technical information and prescriptions derived from experience and research. Research has also led to quantitative methods to assess aspects of fire and fire safety. Thus, fire protection engineers need to be versed in the current technical requirements for fire safety and in the scientific principles that underlie fire and its interactions.

The fire protection engineering student receives a fundamental engineering education involving the subjects of mathematics, physics, and chemistry. The program builds on other core engineering subjects of materials, fluid mechanics, thermodynamics and heat transfer with emphasis on principles and phenomena related to fire. Fluid mechanics includes applications to sprinkler design, suppression systems, and smoke movement. Heat transfer introduces the student to principles of evaporation for liquid fuels. The subject of combustion is introduced involving premixed and diffusion flames, ignition and flame spread, and burning processes. Laboratory experience is gained by being exposed to standard fire tests and measurements. Design procedures are emphasized for systems involving suppression, detection, alarm, and building safety requirements. The background and application of codes and standards are studied to prepare the student for practice in the field. System concepts of fire safety and methods of analysis are presented. A senior design or research project is required which gives the student an opportunity to explore issues beyond the normal classroom environment.

In general, the curriculum is designed to give the student a grounding in the science and practice of fire safety. The field touches on many disciplines and its scientific basis is expanding. It is an engineering discipline that is still growing, and offers a variety of excellent career opportunities, covering a wide spectrum involving safety assessment reviews to hazards analysis and research.

## Requirements for Major

The freshman curriculum is the same for all engineering students. Consult the A. James Clark School of Engineering section for details.

## 96 Food Science Program

	Semester	
	I	II
<b>Sophomore Year</b>		
CORE 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 .....	4	
ENFP 251—Introduction to Fire Protection Engineering .....	3	
ENFP 290—Fire Protection Fluids .....	3	
Total .....	18	16
<b>Junior Year</b>		
CORE Program Requirements .....	3	3
CMSC 104—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
<b>Senior Year</b>		
CORE 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	
Total .....	15	15

Minimum Degree Credits: 120 credits and fulfillment of all department, school, and University requirements.

\*Three credits of technical electives must be in ENFP.

### Admission

Admission requirements are identical to those set by the A. James Clark School of Engineering. (See A. James Clark School 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, 0151 Engineering Classroom Building, 405-3992.

### Fieldwork and Internship Opportunities

Part-time and summer professional experience opportunities and paid internship information is available in the Department Office, 0151 Engineering Classroom Building. Coordinator: S.M. Spivak, 405-6651.

### 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, 0151 Engineering Classroom Building.

### Honors and Awards

Academic achievement awards are sponsored by the department and the

### French and International Business Option (27 credits)

In addition to core: FREN 302, 303, 306, 311, 312; 401 or 402; 406, 473, 474.

### Honors

A student may choose to do a departmental Honors version of either the French Language and Literature Option or the French Language and Culture Option. The requirements are the same except that at least three of the upper-level courses, beginning with FREN 351, must be taken in the "H" version, and that, in addition to those courses regularly taken for the major, the Honors student will take FREN 495H (Honors Thesis), for a total of 39 hours in French. For further information, consult the coordinator of the French Honors Program.

### The Italian Major

The undergraduate major in Italian consists of 36 hours of Italian courses above ITAL 203. To satisfy the major requirements, students must take the following courses: the language sequence: ITAL 204, 211, 301, and either 302 or 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 as 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.

Students must take language acquisition courses sequentially, i.e., 203, 204, 301, etc. Once credit has been received in a higher-level language acquisition or grammar course, a lower-level course may not be taken for credit.

### 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, 405-4050

Chair: Townshend

Professors: Goward, Leatherman, Mitchell, Prince, Townshend

Associate Professors: Brodsky, Christian, Cirrincione\* (Curriculum and Instruction), Groves, Kearney, Thompson

Assistant Professors: Boberg, Ceores, Dubayah

Lecturers (part-time): Broome, Eney, Ernst, Frieswyk, Olsen

Professor Emeritus: Harper, Wiedel

\*Joint Appointment with unit indicated.

Adjunct Faculty: Cebrian, Williams

### 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

## 98 Geology

Geography Upper-Level Elective .....	3
Electives .....	12

### Senior Year

Geography Upper-Level Electives .....	12
(Including CORE Capstone courses)	
Electives .....	18
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.

### Related Programs

#### Geography/Cartography Program

The Geography Department offers an area of specialization in Cartography for students with special interests in map design, compilations, and reproduction. Course offerings exist in thematic mapping, cartographic history and theory, map evaluation, map-photo-image interpretation, computer-assisted cartography, spatial statistics, and geographic information systems. Students concentrating in Cartography must take the Geography core courses, totalling eight hours; elective systematic geography courses, totalling nine hours; and Cartography/Geographic technique courses, totalling 15 hours. Supporting area courses must be taken from a list provided by the department. All math programs should be approved by a departmental advisor.

#### Geography Minor and Secondary Education Geography Specialization

Secondary Education majors with a concentration in geography are required to take 27 hours in the content field, GEOG 201, 202, 203, 211, or another upper-level course reflecting this interest. The remaining 18 hours of the program consist of three hours of regional geography and 15 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, 203, and 211 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 Cirrincione, 1125 Lefrak Hall (405-4053).

### 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 Dubayah, 1161 Lefrak Hall, 405-4069.

Course Code: GEOG

## GEOLOGY (GEOL)

### College of Computer, Mathematical and Physical Sciences

1117 Geology Building, 405-4365

Professor and Chair: Brown

Professors: Candela, Chang, Wylie

Associate Professors: McLellan, Prestegard, Ridky, Segovia, Stifel, Walker

Assistant Professor: Krogstad

### 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 through the application of the principles of physics, chemistry, biology and mathematics 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 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 use planning 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 the direction of a faculty member.

### Requirements for Major

The Geology curriculum is designed to meet the requirements of industry, graduate school and government. It offers a choice in emphasis areas: general geology and environmental geology; further, students may select, as their option, geology electives that are designed for particular interest.

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. Some courses require field trips for which students are expected to pay for room (if required), board, and part of the transportation costs. Field camp is taken during the summer at institutions other than UMCP offering camps approved by the Department.

#### Semester Credit Hours

CORE Program Requirements* .....	30
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#### Geology Courses

One of the following: .....	4
GEOLOG 100/110 – Physical Geology & Lab	
GEOLOG 103 – Water, Earth & Humans	
GEOLOG 105 – Geology of Maryland	
GEOLOG 107 – Natural Hazards	
GEOLOG 102 – Historical Geology .....	4
GEOLOG 322 – Mineralogy .....	4
GEOLOG 331 – Invertebrate Paleontology .....	4
GEOLOG 340 – Geomorphology .....	4
GEOLOG 341 – Structural Geology .....	4
GEOLOG 342 – Sedimentation & Stratigraphy .....	4
GEOLOG 393 – Technical Writing (First Senior Semester) .....	3
GEOLOG 394 – Research Problems in Geology .....	3
GEOLOG 423 – Optical Mineralogy (Second Senior Semester) .....	3
GEOLOG 443 – Petrology .....	4
GEOLOG 490 – Field Camp .....	

**Supporting Requirements**

CHEM 103.....4  
 CHEM 113.....4  
 PHYS 141.....4  
 PHYS 142.....4  
 MATH 140.....4  
 MATH 141.....4  
 24

Courses in bold face are common to the Environmental Geology emphasis

**Geology Electives**

GEOL 104—Dinosaurs.....3  
 GEOL 120—Environmental Geology.....3  
 GEOL 210—Gems and Gemstones.....3  
 GEOL 212—Planetary Geology.....3  
 GEOL 301—Evolution in Geology.....3  
 GEOL 375—General Oceanography.....3  
 GEOL 410—Industrial Minerals and Rocks.....3  
 GEOL 432—Biostratigraphy.....3  
 GEOL 434—Micropaleontology.....3  
 GEOL 445—Principles of Geochemistry.....3  
 GEOL 446—Geophysics.....3  
 GEOL 451—Groundwater Geology.....3  
 GEOL 452—Watershed and Wetland Hydrology.....3  
 GEOL 453—Economic Geology.....3  
 GEOL 456—Engineering Geology.....3  
 GEOL 462—Geologic Remote Sensing.....3  
 GEOL 471—Geochemical Methods of Analysis.....3  
 GEOL 472—Tectonics.....3  
 GEOL 499—Special Problems in Geology.....1-3

**EMPHASIS IN ENVIRONMENTAL GEOLOGY**

**Semester  
 Credit Hours**

CORE PROGRAM REQUIREMENTS\* .....30

**Geology Courses**

One of the following:.....4  
 GEOL 100/110—Physical Geology & Lab  
 GEOL 103—Water, Earth & Humans  
 GEOL 105—Geology of Maryland  
 GEOL 107—Natural Hazards  
 GEOL 102—Historical Geology.....4  
 GEOL 322—Mineralogy.....4  
 GEOL 340—Geomorphology.....4  
 GEOL 341—Structural Geology.....4  
 GEOL 342—Sedimentation & Stratigraphy.....4  
 GEOL 393—Technical Writing (First Senior Semester).....3  
 GEOL 394—Research Problems in Geology.....3  
 GEOL 445—Geochemistry.....3  
 GEOL 451—Groundwater.....3  
 GEOL 452—Watershed and Wetland.....3  
 GEOL 456—Engineering Geology.....3  
 One of the following:  
 GEOL 491—Environmental Geology Field Camp.....3-6  
 GEOL 490—Geology Field Camp.....6  
 Elective(s) approved by department.....6-3  
 51

3 credits of approved electives and a 6-credit field camp or  
 6 credits of approved electives and a 3-credit field camp.

**Courses in bold face are common to the General Geology emphasis**

**Geology Electives for Environmental Geology Curriculum**

GEOL 104—Dinosaurs.....3  
 GEOL 120—Environmental Geology.....3  
 GEOL 210—Gems and Gemstones.....3  
 GEOL 212—Planetary Geology.....3  
 GEOL 301—Evolution in Geology.....3  
 GEOL 331—Invertebrate Paleontology.....3  
 GEOL 375—General Oceanography.....3  
 GEOL 410—Industrial Minerals and Rocks.....3  
 GEOL 423—Optical Mineralogy.....3  
 GEOL 432—Biostratigraphy.....3  
 GEOL 434—Micropaleontology.....3  
 GEOL 443—Petrology.....4  
 GEOL 446—Geophysics.....3  
 GEOL 453—Economic Geology.....3  
 GEOL 456—Engineering Geology.....3

GEOL 462—Geologic Remote Sensing.....3  
 GEOL 471—Geochemical Methods of Analysis.....3  
 GEOL 472—Tectonics.....3  
 GEOL 499—Special Problems in Geology.....1-3  
 47

**Supporting Requirements**

CHEM 103.....4  
 CHEM 113.....4  
 PHYS 141.....4  
 MATH 140.....4  
 MATH 141.....4  
 20

\*Of the normal CORE requirements (43 credit hours), at least 13 credits are met by the major requirements in mathematics, chemistry, geology or physics (mathematics and the sciences area).

**Combined B.S./M.S. Program in Geology**

Normally, the minimum requirements for acceptance into this program are:

1. A GPA of at least 3.5.
2. No more than 15 credits of required Geology courses and 4 credits of supporting requirements in mathematics, chemistry, and physics remaining for the B.S. Degree.
3. No more than 6 credits of CORE requirements remaining for the B.S. degree.
4. At least three letters of recommendation.
5. An essay or statement of purpose.
6. An interview with the Graduate Director.

**Advising**

The director of the Undergraduate Program serves as the advisor for the geology majors, 3115 Geology Building, 405-4078.

**Honors**

A Geology Honors Program is offered for students of exceptional ability and interest in Geology. Qualified majors are invited to participate by the departmental Honors Committee. The program follows the University Honors Program Track I which is the thesis option and 15-credit minimum. Students take an honors seminar course, graduate level courses and complete a six-credit senior thesis under the supervision of a faculty member.

Details are available from the Director of the Honors Program or the Departmental Office.

**Honors and Awards**

Bengt Svenonius Memorial Scholarship 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, RUSS, SLAV)**

**College of Arts and Humanities**

3215 Jimenez Hall, 405-4091

Professor and Chair: Walker  
 Professors: Beicken, Best, Brecht, Oster, Pfister, and Frederiksen†  
 Associate Professors: Fleck, Lekic, Hitchcock, Strauch

# 100 Government and Politics

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Assistant Professors: Greene-Gantzberg, Martin, Richter  
Emeriti: Herin, Jones  
†Distinguished Scholar-Teacher

## Germanic Language and Literature (GERM)

### The Major

The undergraduate major in Germanic Language and Literature consists of 36 hours beyond the basic language acquisition sequence (GERM 101-201). 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 of four German language courses (401, 403, 405, 419P); two 400-level German literature 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.

Also available is a German Business Option, an International Business-German Business Option, and an Engineering-German dual degree. Students should contact a departmental advisor for more information.

Students must take language acquisition courses sequentially, i.e., 101, 102, 201, 202, etc. Once credit has been received in a higher-level language acquisition or grammar course, a lower-level course may not be taken for credit.

## Russian Language and Literature (RUSS, SLAV)

### The Major

The undergraduate major in Russian Language and Literature consists of

the performance review by the time they have completed 45 credits at the University. Students who do not meet this standard will be required to select another major.

**Transfer Majors.** New transfer students to the University as well as on-campus students changing majors to Government and Politics will be required to meet the performance review (as identified above) by the time they have completed 30 hours after transferring to the department.

In order to be admitted to Government and Politics, transfer students will be required to meet the following set of gateway requirements: (1) completion of GVPT 100, GVPT 170, and ECON 201 or 205 (only one, ECON 201 or 205, may be attempted) with a minimum average of 2.6; and (2) attainment of a minimum cumulative GPA for all college-level work attempted. The required GPA is set each year and may vary from year to year depending upon available space.

**Appeals.** Students who anticipate that they will be or who actually are unsuccessful in passing their performance review on time may appeal to the Director of Undergraduate Studies for a postponement or second review. Such appeals for postponement or second review will require documentation of unusual, extenuating, or special circumstances. The student will be notified in writing of the appeal decision.

### Requirements for Major

Government and Politics majors must complete 36 semester hours of GVPT courses with a minimum grade of C in each course. At least 18 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 241, 441 or GVPT 442.

In addition, all majors must complete ECON 201, an approved skills option (a foreign language or three quantitative courses from a select list), and a secondary area of concentration (a minor) in another department or approved interdisciplinary area. All courses used to satisfy these requirements must be completed with a minimum grade of C.

### Honors Program

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 a variety of internship experiences. Only nine hours of GVPT internship credit will apply to the 36 hours needed in the major. In no case may more than 12 internship credits be counted towards the 120 credits needed to graduate. Internships are generally open only to GVPT majors with junior standing and a 3.0 GPA.

### Advising

Academic advising is available daily on a walk-in or appointment basis in the Undergraduate Advising Office, 3140K Tydings Hall.

Course Code: GVPT

## HEALTH EDUCATION (HLTH)

**College of Health and Human Performance**  
2387 HLHP Building, 405-2463

Professor and Chair: Gilbert  
Associate Chair: Clearwater  
Professors: Burt, Feldman, Gold, Greenberg, Leviton, Wilson  
Associate Professors: Beck, Clearwater, Meiners  
Assistant Professors: Desmond, Jackson, Sawyer, Schulken, Spalding  
Instructors: Hyde, Schiraldi  
Faculty Research Assistants: Baker, Chu, May, Higley, Swartzlander  
Lecturers: Reynolds, Pinciario

### 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 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.

### Requirements for Major

Students must earn a grade of C or better in courses applied toward the major.

### Health Education Major

The Freshman and Sophomore curricula for both the School Health Option and the Community Health Option are the same:

	<b>Semester Credit Hours</b>
<b>Freshman Year</b>	
CORE Requirement .....	6
ENGL 101—Introduction to Writing .....	3
MATH 110 OR MATH 102 AND 103 AND 105 OR 115: Mathematics .....	3
HLTH 140—Personal and Community Health .....	3
CHEM 121—Chemistry in Modern Life .....	3
BIOL 105—Principles of Biology I .....	4
HLTH 371—Communicating Health and Safety .....	3
PSYC 100—Introduction to Psychology .....	3
SOCY 100—Introduction to Sociology .....	3
HLTH 150—First Aid and Emergency Medical Services .....	2
<b>Sophomore Year</b>	
HLTH 230—Introduction to Health Behavior .....	6
PHIL 140—Contemporary Moral Issues .....	3
ZOOL 201, 202—Human Anatomy and Physiology I and II .....	4,4
Required Health Electives .....	6
PSYC 221—Social Psychology .....	3
HLTH 105—Science and Theory of Health .....	2
CORE Requirement .....	9

### School Health

<b>Junior Year</b>	
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
CORE Requirement .....	3

<b>Senior Year</b>	
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
CORE Requirement .....	6

### Community Health

<b>Junior Year</b>	
ENGL 391 or 393—Advanced Composition or Technical Writing .....	3
MICB 100—Basic 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
HLTH 437—Consumer Behavior .....	3
HLTH 430—Health Education in the Workplace .....	3
EDCP 417—Group Dynamics and Leadership .....	3
CORE Requirement .....	3



# 102 Hearing and Speech Sciences

## 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 498I—Internship .....	3
HLTH 498J—Internship .....	3

## Advising

Advising is mandatory. Undergraduate Health Education Advisor: David H. Hyde, 2374 HLHP Building, 405-2523 or 405-2463.

## 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

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## HEARING AND SPEECH SCIENCES (HESP)

### College of Behavioral and Social Sciences

0100 LeFrak Hall, 405-4214

Associate Professor and Chair: Ratner

Professors: McCall, Yeni-Komshian

Associate Professors: Dingwall, Gordon-Salant, Ratner, Roth

Instructors: Brigham, Daniel, Hart-Litz, McCabe, Mele-McCarthy, Perloth, Worthington

Lecturer: Balfour

## The Major

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 obtain the M.A. degree in order to meet national certification requirements, and most state licensure laws.

The hearing and speech sciences curriculum is designed in part to provide supporting course work 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 30 semester hours of required courses (HESP 202, HESP 300, HESP 305, HESP 311, HESP 400, HESP 402, HESP 403, HESP 404, HESP 407, and HESP 411) 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.

A guide to the major is available through the department office in room 0100, LeFrak.

## Advising

Information on advising for hearing and speech sciences may be obtained by calling the department office, 405-4214.

## Special Opportunities

The department operates a Hearing and Speech Clinic, 405-4218, that serves the campus and surrounding area, and provides an in-house opportunity for the clinical training of students. Department facilities also include several well-equipped research laboratories and a language preschool.

## 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

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## HEBREW AND EAST ASIAN LANGUAGES AND LITERATURES (CHIN, EALL, HEBR, JAPN, KORA)

### College of Arts and Humanities

2106 Jimenez Hall, 405-4239

Professor and Chair: Unger

Professors: Ramsey, Unger

Adjunct Professor: Li

Associate Professors: Chin, Kerkham, Sargent, Walton

Assistant Professors: Konomi, McGinnis, Yee

Instructors: Levy, Miura, Shen, Yaginuma

## Chinese Language and Literature

The Chinese major 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 Chinese language and literature and another discipline, such as business, international relations, economics, or journalism.

After completing the prerequisite of one year of language: 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), students must complete 36 credits for the major course requirements (18 language, six civilization/history, 12 elective). No grade lower than C may be used toward the major.

## Chinese Course Requirements

Language:

CHIN 201—Intermediate Spoken Chinese I (3)

CHIN 202—Intermediate Written Chinese I (3)

CHIN 203—Intermediate Spoken Chinese II (3)

CHIN 204—Intermediate Written Chinese II (3)

CHIN 301—Advanced Chinese I (3)

CHIN 302—Advanced Chinese II (3)

Civilization/History:

Option I:

HIST 284—East Asian Civilization I (3)

AND

HIST 481—A History of Modern China (3)

OR

HIST 485—History of Chinese Communism (3)

Option II:

HIST 285—East Asian Civilization II (3)

AND

HIST 480—History of Traditional China (3)

Electives (300-level or above; 12 credits)

Note: Electives must be in Chinese language, literature, linguistics, or other East Asian subjects (one must be in the area of Chinese linguistics and one in the area of Chinese literature), and are subject to approval by the student's advisor.

## Japanese Language and Literature

The Japanese major 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 Japanese language and literature and another discipline, such as business, international relations, economics, or journalism.

After completing the prerequisite of one year of language: JAPN 101 (Elementary Japanese I; six hours per week, fall); and JAPN 102 (Elementary Japanese II; six hours per week spring), students must complete 36 credits for the major course requirements (18 language, six civilization/history, 12 elective). No grade lower than C may be used toward the major.

### Japanese Course Requirements

Language:

JAPN 201—Intermediate Japanese I (6)

JAPN 202—Intermediate Japanese II (6)

JAPN 305—Advanced Japanese I (6)

JAPN 306—Advanced Japanese II (6)

Civilization/History:

Option I:

HIST 284—East Asian Civilization I (3)

AND

HIST 483—History of Japan Since 1800 (3)

Option II:

HIST 285—East Asian Civilization II (3)

AND

HIST 482—History of Japan to 1800 (3)

Electives (300-level or above; 12 credits)

Note: Electives must be in Japanese language, literature, linguistics, or other East Asian subjects (one must be in the area of Japanese linguistics and one in the area of Japanese literature), and are subject to approval by 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.

## 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 communication 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 Jewish Studies office for requirements.

Students must take language acquisition courses sequentially, i.e., 101, 102, 201, 202, etc. Once credit has been received in a higher-level language acquisition or grammar course, a lower-level course may not be taken for credit.

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 B'nai 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.

## 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.

## Korean

At present, the department offers two courses in Korean, designed for students who have a speaking knowledge of the language, but who need to learn reading, composition, and aspects of Korean culture related to educated language use.

Course Codes: CHIN, EALL, HEBR, JAPN, KORA

## HISTORY (HIST)

### College of Arts and Humanities

2115 Francis Scott Key Hall, 405-4265

Professor and Chair: Harris

Professors: Begos-Rezak, Belz, Berlin<sup>†</sup>, Brush<sup>†</sup>, Callcott<sup>†</sup> (Emeritus), Cockburn, Cole<sup>†</sup> (Emeritus), Duffy (Emeritus), Eckstein, Evans, Foust, Friedel, Gilbert<sup>†</sup>, Gordon (Emeritus), Griffith, Harlan<sup>†</sup> (Emeritus), Henretta<sup>†</sup>, Kaufman, Jashemski<sup>†</sup> (Emerita), Kent (Emeritus), Lampe, Merrill (Emeritus), A. Olson<sup>†</sup>, K. Olson, Price, E.B. Smith (Emeritus), Sutherland, Warren (Emeritus), Wright, Yaney (Emeritus)

Associate Professors: Breslow, Cooperman, Darden, Flack, Grimsted, Gullickson, Holum, Majeska, Matossian, Mayo, Moss, Muncy, Perinbam, Ridgway, Rozenblit, Stowasser (Emeritus), Sumida, Zilfi

Assistant Professors: Bradbury, Bravman, David-Fox, Lapin, Nicklason, Rowland, Sicilia, Wetzell, W. Williams, Zhang

Adjunct: Carr, Papenfuse

Affiliate: Moses, Struna

Instructor: D. Williams

<sup>†</sup>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, library work, National Park Service, civil service, military, museum work, archival and library work, diplomacy, seminary, business school, 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. We recommend that students meet with an assigned advisor once every semester or sign a waiver during registration.

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 39 hours of course work distributed as follows: 12 hours in 100-200 level survey sources selected from at least two general geographical fields of history (United States, European, and outside Europe and United States); 15 hours, including HIST 309 in one major area of concentration (see below); 12 hours of history in at least two major areas other than the area of concentration. Without regard to area, 15 hours of the 39 total hours

# 104 Horticulture and Landscape Architecture

must be at the junior-senior (300-400) level. NOTE: All majors must take HIST 309.

Students are required to take at least one course (three credits), at the upper or lower-level, from an approved list of courses on regions outside both Europe and U.S. The list may be obtained from the History Undergraduate Advisor's Office from the main office of the History Department, or from a history faculty advisor.

## I. Survey Courses

1. The requirement is twelve hours at the 100-200 level taken in at least two geographical fields.
2. 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.
3. In considering courses that will fulfill this requirement, students are encouraged to:
  - a. select at least two courses in a sequence
  - b. select at least one course before 1500 and one course after 1500.
  - c. 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

1. The requirement is fifteen hours, including HIST 309, in a major area of concentration.
2. Students may choose an area of concentration either geographically, chronologically, or thematically. Areas include:
  - a. Geographic regions: Latin America, Middle East, Europe, the United States, East Asia, Africa, Eastern Europe, Russia, Britain;
  - b. Chronological eras: Ancient World, Medieval Europe, Early Modern Europe;
  - c. Themes: History and Philosophy of Science, Intellectual, Economic, Religious, Diplomatic, Social, Women's, African American, Jewish, Legal and Constitutional, Military History.
3. Students may select both lower and Upper-level courses.
4. The proseminar, HIST 309, should normally be taken in the major area of concentration in the senior year after completing two or three Upper-level courses in the area of concentration.

## III. Twelve Hours of History in at Least Two Areas Outside the Area of Concentration

1. Students may select either lower or Upper-level courses.
2. Students are encouraged to consider regional diversity.
3. 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. Supporting courses should study some aspect of culture and society as taught by other disciplines in the student's area of concentration.

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.

History courses that meet university general education requirements (CORE) are listed in the Schedule of Classes each semester.

## Honors

Students who major 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; they must defend their theses to a departmental committee. 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 University Honors Program, subject only

to the instructor's approval.

Course Code: HIST

# HORTICULTURE (HORT) AND LANDSCAPE ARCHITECTURE (LARC)

## College of Agriculture

Undergraduate Program: 2102 Holzapfel Hall, 405-4335

Professor and Chair: Gouin (Acting)

Professors: Ng, Oliver, Quebedeaux, Schlimme, Solomos, Walsh, Wiley

Associate Professors: Beste, Bouwkamp, Deitzer, McClurg, Pihlak, Schales, Swartz

Assistant Professors: Hill, Hilsenrath, Sullivan

Lecturers: Mityga, Nola

Adjunct Associate Professors: Wallace

Professors Emeritus: Link, Scott, Shanks, Stark, Thompson, Twigg

The Department of Horticulture and Landscape Architecture offers two undergraduate majors, one leading to a Bachelor of Science (BS) degree in Horticulture and one leading to a Bachelor of Landscape Architecture (BLA) degree. Horticulture majors may choose from three options in Horticultural Production, Horticultural Science and Landscape Management. Each major prepares students for either graduate study or entry into horticultural and landscape related industries or businesses. Advanced studies leading to a Master of Science (M.S.) and Doctor of Philosophy (Ph.D) degree are available to qualified students interested in research, teaching and/or agricultural extension.

Students majoring in Horticulture are required to study fundamental science as a basis for solving problems of world food supply and environmental concerns. Horticulture is a very diverse profession that has programs ranging from fruit, vegetable, floral and nursery crop production to urban forest and landscape management. It requires a broad knowledge of plant diversity, physiology, biochemistry, molecular biology and environmental ecology. Horticulture graduates are in high demand worldwide in traditional agricultural production as well as the growing fields of biotechnology, bioremediation and natural resource management.

The landscape architecture (BLA) curriculum addresses environmentally and socially responsible planning and design. The curriculum focuses on regional, local and site-specific land use issues that are influenced by the rapid urbanization of the Baltimore-Washington metropolitan area and that impact the ecosystems of the Chesapeake Bay watershed. Throughout the four-year program students learn to design creatively and appropriately for places in both built and natural environments. Students take a series of lecture and studio design courses that are organized within four categories: design and graphic communication, plants and environmental resources, site engineering and professional practice, and design history and theory. Due to the sequential nature of the program, students are encouraged to enroll in their first year, but transfer students may also apply. The BLA program is a limited enrollment program (see the Admissions section in this catalog for general Limited Enrollment Program (LEP) admissions policies. For further information, contact the College of Agriculture at 314-8375).

## Curriculum in Landscape Architecture (BLA)

### Landscape Architecture Major

	Semester Credit Hours
HORT 100 Introduction to Horticulture.....	4
MATH 115 Precalculus.....	3
LARC 150 Graphic Communication I.....	3
LARC 160 Introduction to Landscape Architecture.....	3
LARC 161 Design Fundamentals.....	3
LARC 200 Surveying.....	2
HORT 253 Woody Plant Materials.....	3
HORT 254 Woody Plant Materials.....	3
LARC 260 Graphic Communications II.....	3
LARC 261 Electronic Design Studio.....	3
AGRO 302 Fundamentals of Soil Science.....	4
GEOG 340 Geomorphology or	
GEOG 372 Remote Sensing.....	3
LARC 361 Principles of Landscape Design.....	3
LARC 364 Landscape Construction.....	3
LARC 370 History of Land Arch.....	2

ARCH 460 Site Analysis and Design .....	3
LARC 462 Urban Design.....	4
LARC 465 Structures & Materials.....	3
LARC 466 Advanced Design.....	3
LARC 467 Professional Practice.....	3
LARC 470 Project in Landscape Architecture I.....	3
LARC 471 Project in Landscape Architecture II.....	3
Major Requirements .....	67
CORE Program requirements (over and above what is included in Departmental and Program requirements).....	27
Electives.....	26

## Curriculum in Horticulture (BS)

### Horticulture Major

Requirements—All Options	Semester Credit Hours
HORT 100 Introduction to Horticulture.....	4
CHEM 103 General Chemistry I.....	4
MATH 115 Precalculus.....	3
ENTM 205 Principles of Entomology.....	4
HORT 202 Management of Horticultural Crop Production.....	4
HORT 271 Plant Propagation.....	3
AGRO 202 Fundamentals of Soil Science.....	4
BOTN 321 Introductory Plant Pathology.....	4
HORT 398 Seminar.....	1
Total Requirements .....	31

### Horticultural Production Option

Production Requirements	
CHEM 104 Fundamentals of Organic and Biochemistry.....	4
AREC 250 Elements of Agricultural and Resource Economics.....	3
HORT 385 Horticultural Internship.....	3
AREC 306 Farm Management or	
AREC 414 Agricultural Business Management .....	3
AGRO 411 Principles of Soil Fertility.....	3
AGRO 453 Weed Science.....	3
BOTN 441 Plant Physiology.....	4
HORT 201 Environmental Factors in Horticultural Crop Production.....	4
HORT 474 Physiology of Maturation and Storage of Horticultural Crops.....	3
Total Production Requirements.....	30

### Advanced Production Electives

Select four of the following:	
AGRO 305 Introduction to Turf Management.....	3
ENTM 453 Insect Pests of Ornamentals and Turf.....	3
HORT 432 Greenhouse Crop Production.....	3
HORT 433 Technology of Fruit and Vegetable Crop Production.....	4
HORT 452 Principles of Landscape Establishment and Maintenance.....	3
HORT 456 Nursery Crop Production.....	3
HORT 472 Advanced Plant Production.....	2

Total Horticulture Production Option Requirements.....	73
CORE Program requirements (over and above what are included in the Departmental and Option requirements).....	27
Electives.....	20

### Horticultural Science Option

Science Requirements	
BIOL 105 Principles of Biology.....	14
CHEM 113 General Chemistry II.....	4
PHYS 121 Fundamentals of Physics I.....	4
HORT 201 Environmental Factors in Horticultural Crop Production or	
BOTN 207 Plant Diversity.....	4
MATH 220 Elementary Calculus I.....	3
BIOL 222 Principles of Genetics.....	4
CHEM 233 Organic Chemistry I.....	4
HORT 399 Special Problems.....	2
BOTN 441 Plant Physiology.....	4
HORT 472 Advanced Plant Propagation.....	2
HORT 474 Physiology of Maturation and Storage of Horticultural Crops.....	3
Total Science Requirements.....	38

### Advanced Horticulture Electives (Select one of the following:)

HORT 432 Greenhouse Crop Production.....	3
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HORT 433 Technology of Fruit and Vegetable Crop Production.....	4
HORT 452 Principles of Landscape Establishment and Maintenance.....	3
HORT 456 Nursery Crop Production.....	3

### Advanced Science Electives (Select one of the following:)

AGRO 403 Crop Breeding.....	3
AGRO 411 Principles of Soil Fertility.....	3
AGRO 417 Soil Physics.....	3
AGRO 421 Soil Chemistry.....	4
BCHM 261 Elements of Biochemistry.....	3
BOTN 484 Plant Biochemistry.....	4
PHYS 122 Fundamentals of Physics II.....	3

Total Horticulture Science Requirements.....	75-77
CORE Program requirements (over and above what are included in the Departmental and Option requirements).....	27

Electives.....	16-18
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### Landscape Management Option

#### Landscape Management Requirements

CHEM 104 Fundamentals of Organic and Biochemistry.....	4
LARC 150 Graphic Fundamentals.....	3
LARC 160 Introduction to Landscape Architecture.....	3
LARC 200 Surveying the Land.....	2
AREC 250 Elements of Agricultural & Resource Economics.....	3
HORT 201 Environmental Factors and Horticulture Crop Production.....	4
HORT 253 Woody Plant Material I.....	3
HORT 254 Woody Plant Material II.....	3
HORT 255 Landscape Design and Implementation.....	4
AGRO 305 Introduction to Turf Management, or	
AGRO 411 Principles of Soil Fertility.....	3
AREC 306 Farm Management, or	
BMGT 353 Retail Management.....	3
BMGT 220 Principles of Accounting.....	3
BMGT 350 Marketing Principles and Organization.....	3
HORT 364 Principles of Site Engineering.....	4
HORT 452 Principles of Landscape Establishment and Maintenance.....	3
HORT 465 Landscape Structures and Materials.....	3
Total Requirements.....	49

Total Landscape Management Option Requirements.....	81
CORE Program requirements (over and above what are included in the Departmental and Option requirements).....	21

Electives.....	18
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## HUMAN DEVELOPMENT (Institute for Child Study) (EDHD)

### College of Education

3304 Benjamin Building, 405-2827

Professor and Director: Hardy

Professors: Eliot, Fox, Porges, Seefeld<sup>†</sup>, Torney-Purta

Associate Professors: Bennett, Byrnes, Flatter, Gardner, Huebner, Marcus, Nettles, Robertson-Tchabo, Wigfield

Assistant Professors: Green, Metsala, Smith, Wentzel

Emeriti: Bowie, Dittman<sup>†</sup>, Goering, Hatfield, Huebner, Morgan<sup>†</sup>, Tyler

Lecturer: Jones

<sup>†</sup>Distinguished Scholar-Teacher

The Department of Human Development offers: (1) undergraduate courses in human development at the 200-, 300-, and 400-levels; (2) graduate programs leading to the M.A., M.Ed., Ed.D., and Ph.D. degrees and the A.G.S. certificate; and (3) field experiences and internships to develop competence in applying theory to practice in schools and other settings. Areas of concentration in human development include infancy, early childhood, adolescence, adulthood, and aging. A specialization in educational psychology is available at the doctoral level. 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

## 106 Human Nutrition and Food Systems

in such areas as (1) infancy, (2) early childhood, (3) adolescence, (4) aging, and (5) educational psychology. Major purposes of undergraduate offerings in human development are (1) preparing people for vocations and programs which seek to improve the quality of human life, and (2) providing experiences which facilitate the personal growth of the individual.

Through the Institute for Child Study, the faculty provides consultant services and staff development programs for pre-school programs, parent groups, court systems, mental health agencies, and other organizations involved with helping relationships. Undergraduate students may participate in these programs through course work and internships. If interested, contact the Department/Institute.

Course Code: EDHD

## HUMAN NUTRITION AND FOOD SYSTEMS

For information, consult the Nutrition and Food Science entry.

## HUMAN RESOURCE MANAGEMENT

For information, consult the College of Business and Management entry.

## JEWISH STUDIES PROGRAM

### College of Arts and Humanities

0113 Woods Hall, 405-4975

Director: Cooperman

Professors: Beck, Berlin, Diner, Handelman

Associate Professors: Bilik, Cooperman, Manekin, Rozenblit

Assistant Professor: Lapin

Instructor: Levy

### 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 48 semester hours (27 hours minimum at 300-400 level) consisting of courses in the Department of Hebrew and East Asian Languages and Literatures, the History Department, and in other departments as appropriate.

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; JWST 234, 235, and 309; 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. (21 credit hours.)
3. Electives: 15 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 (405-4975) offers scholarships for study in Israel. Applications for scholarships are accepted in early March.

See Hebrew departmental entry and East Asian Studies certificate. Students may also pursue a Jewish History concentration through the Department of History.

## JOURNALISM (JOUR)

For information, consult the College of Journalism entry.

## KINESIOLOGY (KNES)

College of Health and Human Performance  
2351 HLHP Building, 405-2450

Chair: Clarke

Associate Chair: Wrenn

Professors: Clark, Clarke, Dotson, Hult, Iso-Ahola, Steel, Vaccaro

Associate Professors: Bond, Ennis, Hatfield, Hurley, Phillips, Rogers, Santa Maria, Struna, Wrenn

Assistant Professors: Frazer, Jeka, Ryder, Vander Velden

Lecturers: Drum, Owens, Wenhold

Instructors: Brown, Scott

Emeriti: Eyler, Humphrey, Husman

### The Major

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.

### Physical Education Major

The Physical Education degree program is designed to lead to K-12 teacher certification in Maryland. Maryland teaching certificates are reciprocal with most other states. While this program is designed to provide preparation for individuals to teach in public school settings, it also provides an excellent preparation for those wishing to pursue other professional opportunities in sport, exercise or physical activity. Also, due to the strong scientific foundation of the degree program, an appropriate background is established for future graduate work for those who desire to continue their studies in any area involving human movement and sport. Many courses require proper sequencing and prerequisites. Early advisement with the program coordinator is urged to all interested students.

### Physical Education Degree Requirements

CORE Requirements—Effective Fall 1990

#### Fundamental Studies

ENGL 101 or equivalent .....	3
MATH 110 or equivalent .....	3
ENGL 391/393 or equivalent .....	3

#### Distributive Studies

Humanities and the Arts .....	9
Mathematics and the Sciences (PHYS/CHEM, BIOL 105, ZOO 201) .....	10
Social Science .....	9
Advanced Studies .....	6
KNES 180—Foundations of Physical Education .....	2
KNES 182—Rhythmic Activities .....	2
KNES 183—Movement Content for Elementary School Children .....	3
KNES 200—Gymnastics Skills Laboratory .....	2
KNES 202—Badminton Skills Laboratory .....	1
KNES 204—Basketball Skills Laboratory .....	1
KNES 210—Field Games Skills Laboratory .....	1
KNES 217—Tennis Skills Laboratory .....	1
KNES 220—Track and Field Skills Laboratory .....	2
KNES 221—Volleyball Skills Laboratory .....	1
KNES 223—Weight Training and Aerobic Skills Laboratory .....	2
KNES 262—Philosophy of Sport .....	3
KNES 287—Sport and American Society .....	3
KNES 293—History of Sport in America .....	3
KNES 300—Biomechanics of Human Motion .....	4
KNES 314—Methods in Physical Education .....	3
KNES 333—Physical Activity for the Handicapped .....	3
KNES 350—The Psychology of Sports .....	3
KNES 360—Physiology of Exercise .....	3
KNES 370—Motor Development .....	3
KNES 371—Elementary School Physical Education: A Movement Approach .....	3
KNES 381—Prevention and Care of Athletic Injuries .....	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—The Curriculum in Physical Education .....	3
ZOOL 201—Human Anatomy and Physiology I .....	4
ZOOL 202—Human Anatomy and Physiology II .....	4
EDHD 300S—Human Development and Learning .....	6
EDPA 301—Foundations of Education .....	3
EDCI 390—Principles and Methods of Secondary Education .....	3
EDCI 485—Student Teaching in Elementary School: Physical Education .....	6
EDCI 495—Student Teaching in Secondary Schools: Physical Education...	6

The Physical Education Program requires a grade of C or better in all required course work

## Admission

Admission to the College of Education is required upon completion of 45 applicable credits. Students must take the California Achievement Test and have a 2.5 GPA after 45 credits to gain admission. Additional information is available from the College of Education.

## 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* .....	4
Electives .....	3
<b>Sophomore Year</b>	
ZOOL 201, 202—Human Anatomy and Physiology .....	8
KNES 262—Philosophy of Sport .....	3
KNES 370—Motor Development .....	3
KNES 385—Motor Learning and Skilled Performance .....	3
KNES 262—Philosophy of Sport .....	3
Activity Courses* .....	4
Related Studies* .....	6
<b>Junior Year</b>	
KNES 300—Biomechanics of Human Motion .....	4
KNES 350—Psychology of Sports .....	3
KNES 360—Physiology of Exercise .....	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 CORE Program. Minimum number of semester hours for degree is 120.

The Kinesiological Sciences program requires a grade of C or better in all but general education and free elective courses.

## 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—Mrs. Lynn Owens, 405-2495 and Kinesiological Sciences—Dr. Marvin Scott, 405-2480.

## Honors

The aim of the Honors Program is to provide an opportunity for students to engage in challenging educational experiences related to the study of human movement, sport, and exercise. Students with strong intellectual interests and the ability to pursue those interests at a high level are eligible. The program is designed to encourage junior and senior students to engage in scholarly independent study and discussions. The program consists of 18 credits of Honors course work and thesis writing. To qualify for admission to the program the applicant must meet a set of criteria administered through the Departmental Honors Committee which takes into account work experience, leadership, motivation and maturity. Specifically, the applicant must have obtained an overall GPA of 3.5 on a minimum of 45 credits. Students who are close to achieving a 3.5 GPA may submit additional materials to the Honors Committee for consideration.

Applicants must also have a 3.5 GPA in courses taken within the Department of Kinesiology, to include at least nine credits from the following KNES Core courses: 262, 287, 293, 300, 350, 360, 370, 385

## Program Requirements

At least 12 credits must be completed in Honors or Honors equivalent courses. An additional six credits of research and thesis writing under the direction of a faculty member are required.

Students must maintain an overall 3.5 GPA to remain in the program and to graduate with Honors.

Students may graduate with departmental "High Honors" by completing a thesis rated "Outstanding" and earning a cumulative GPA of 3.7.

Course Code: KNES

## LINGUISTICS (LING)

### College of Arts and Humanities

1401 Marie Mount Hall, 405-7002

Professor and Chair: Crain

Professor: Hornstein, Lightfoot

Associate Professor: Weinberg, Uriagereka

Assistant Professors: Lombardi, Thornton

Affiliate: Anderson, Berndt, Burzio, Dorr, Zanuttini

## The Major

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 30 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.

## 108 Management and Organization

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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 a 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 18 hours from selected courses in HESP, PHIL and PSYC, or 18 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 18 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 27 credits in Linguistics, which normally include the LING courses for one of the two specializations.

Course Code: LING

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## MANAGEMENT AND ORGANIZATION

For information, consult the College of Business and Management entry.

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## MANAGEMENT SCIENCE AND STATISTICS

For information, consult the College of Business and Management entry.

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## MARKETING

Technical Electives .....	3
Total .....	15.....18

Minimum Degree Credits: 120 credits and the fulfillment of all department, school, 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 A. James Clark School 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 chair of the department or the director of the materials engineering faculty prior to their sophomore year. Call 405-5211 to talk to the director or to schedule an appointment.

**Co-op Program**

The materials engineering program works within the A. James Clark School of Engineering Cooperative Engineering Education Program. For details, see the A. James Clark School 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 A. James Clark School 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 years will guide them towards 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. Students typically join the Materials Research Society and the American Society for Materials.

Course Code: ENMA

**Nuclear Engineering Program (ENNU)**

2309 Chemical and Nuclear Engineering Building, 405-5227

Chair: Christou  
 Acting Director: Pertmer  
 Professors: Almenas, Christou, Hsu, Modarres<sup>†</sup>, Munno, Roush  
 Associate Professors: Mosleh, Pertmer  
 Lecturers: Lee, Speis  
 Emeriti: Duffy, Silverman  
<sup>†</sup>Distinguished Scholar-Teacher

**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. The nuclear engineer is also concerned with the effects of electronics and materials exposed to a radiation environment and the utilization of ionizing radiation in

manufacturing. Probabilistic risk assessment techniques are also introduced at the undergraduate level. 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, including areas of materials, manufacturing, and reliability. 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 University general education (CORE) requirements; (2) a core of mathematics, physics, chemistry, and engineering sciences required of all engineering students; (3) 15 credits of courses selected within a secondary field; (4) 27 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 engineering 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 A. James Clark School of Engineering entry.

	Semester I	II
<b>Sophomore Year</b>		
CORE Program Requirements .....	3	3
MATH 241—Calculus III .....	4	
MATH 246—Differential Equations.....		3
PHYS 262, 263—General Physics .....	4	4
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>		
CORE 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	
ENNU 460—Nuclear Heat Transport .....	3	
ENMA 464—Environmental Effects on Engineering Materials .....		3
Total .....	15	18

<b>Senior Year</b>		
CORE Program Requirements .....	3	3
ENNU Elective .....	3	
ENNU 465—Nuclear Reactor Systems Analysis .....	3	
Secondary Field Courses.....	3	3
Technical Electives .....	3	3
ENNU 480—Reactor Core Design .....	3	
ENNU 490—Nuclear Fuel and Power Management .....	3	
Engineering Elective.....	3	
Total .....	15	18

Minimum Degree Credits: 120 credits and fulfillment of all department, school, and University requirements.  
 \*Qualified students may elect to take CHEM 105 and 115 (four 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 A. James Clark School of Engineering.

**Co-op Program**

The nuclear engineering program works within the A. James Clark School of Engineering Cooperative Engineering Education Program. For information on this program, see the A. James Clark School of Engineering entry in this catalog, or call the department office at 405-5208.



# 110 Mathematics

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## 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 405-5227 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 A. James Clark School 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, school 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. 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

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## MATHEMATICS (MATH)

**College of Computer, Mathematical and Physical Sciences**  
1117 Mathematics Building

Undergraduate Office, 405-5053

Professor and Chair: Johnson

including the use of the computer. They are MAPL 460, 466, 467, 477, and MATH 450, 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.

## 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 three-hour written comprehensive examination. Six credits of graduate work are also required. A precise statement of the requirements may be found in the Math Undergraduate Office.

The department also offers a special mathematics department honors analysis 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 lower-level mathematics courses (MATH 140H, 141H, 240H, 241H, 246H).

The mathematics departmental honors calculus sequence and the University 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:** A monetary award is made to an outstanding junior math major in the spring.

**Carol Karp Award:** A monetary award is made to a senior math major for an outstanding achievement in Logic.

**Milton Abromowitz Award:** A monetary award 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 course work. 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.

## Mathematics Education

Students completing an undergraduate major in mathematics and planning to be certified to teach should contact the College of Education.

Course Codes: MATH,STAT,MAPL

## MEASUREMENT, STATISTICS, AND EVALUATION (EDMS)

### College of Education

1230 Benjamin Building, 405-3624

Professor and Chair: Lissitz  
 Professors: Dayton, Macready  
 Associate Professors: DeAyala, Johnson, Schafer  
 Assistant Professor: Tam  
 Emeritus: Stunkard

## 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 levels 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 master's 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)

### A. James Clark School of Engineering

2181 Engineering Classroom Building, 405-2410

Chair: Anand  
 Associate Chairs: Wallace, Walston  
 Professors: Anand, Armstrong, Barker, Berger, Bernard, Cunniff, Dally, Fournay, Gupta, Holloway, Irwin (PT), Kirk, Magrab, Pecht, Sanford, Talaat, Tsai, Wallace, Yang  
 Associate Professors: Azarm, Bigio, Dasgupta, diMarzo, Duncan, Herold, Joshi, Ohadi, Piomelli, Radermacher, Shih, Sirkis, Walston, G. Zhang  
 Assistant Professors: Balachandran, Dimas, Haslach, Kashangaki, Marasli, Mead, Minis, Natisshan, Tsui, G. Zhang  
 Senior Lecturer: Russell  
 Research Associate: X. Zhang  
 Instructor: Pavlin  
 Lecturers: Ainane, Etheridge  
 Emeriti: Allen, Buckley, Dieter, Jackson, Marks, Sayre, Shreeve, Weske

## The Major

The primary function of the mechanical engineer is to create devices,

# 112 Meteorology

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 basic 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, 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, product design, manufacturing, 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 A. James Clark School of Engineering entry.

	Semester Credit Hours	
	I	II
<b>Sophomore Year</b>		
CORE Program Requirements .....	3	3
MATH 241—Calculus III .....		4
MATH 246—Differential Equations .....	3	
PHYS 262, PHYS 263—Physics .....	4	4
ENES 220—Mechanics of Materials .....	3	
ENES 221—Dynamics .....	3	
ENME 201—M E Project .....	1	
ENME 205—Numerical Methods in Mechanical Engineering .....		3
ENME 217—Thermodynamics .....		3
Total .....	17	17
<b>Junior Year</b>		
CORE Program 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—Mechanical Vibration .....	3	
ENME 381—Meas. Lab .....		3
Total .....	17	16
<b>Senior Year</b>		
CORE Program Requirements .....	3	3
ENME 401—Matl. Sci. ....	3	
ENME 403—Auto. Controls .....	3	
ENME 404—M.E. Sys. Des .....	3	
ENME 480—Engr. Exp. ....	3	
Technical Electives ** .....	6	6
Total .....	15	15

\*\*At least three of the four technical electives must be design.

**Sample Topics:** Kinematic Systems of Mechanisms, Computer Aided Design, Packaging of Electronic Systems, Environmental Engineering, Finite Element Analysis, Reliability and Maintainability, Product Design, Robotics, Solar Energy, Fluid Machinery, Manufacturing

## Admission

Admission requirements are identical to those set by the A. James Clark School of Engineering (see A. James Clark School 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, 405-2409.

## Financial Assistance

A 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 A. James Clark School 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 Society Heating, Refrigeration, Air Conditioning Engineers. 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, 405-5392

Professor and Chair: Hudson  
 Professors: Baer, Dickerson, Ellingson, Thompson, Vernekar  
 Associate Professors: Carton, Pinker, Robock  
 Adjunct Professor: Sellers

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

## MICROBIOLOGY (MICB)

College of Life Sciences  
Microbiology Building, 405-5435

Acting Chair: Ades  
Professors: Colwell, Joseph, Roberson, Weiner, Yuan  
Associate Professors: Benson, Stein  
Assistant Professors: DeStefano, Pontzer, Stewart  
Instructors: Gdovin, Smith  
Professors Emeriti: Cook, Doetsch, Faber, Hetrick†, Pelczar  
†Distinguished Scholar-Teacher

### Specialization

Microbiology is the branch of biology dealing with microscopic life-forms such as bacteria, viruses, molds, and yeasts. Microbiologists are concerned with the genetics, physiology, ecology, and pathogenicity of these organisms. Studies in microbiology provide the cornerstone to modern molecular biology. Basic principles of microbiology are applied to solve current global problems in disease control and prevention, in food production, and in the development of new techniques of biotechnology.

### Requirements for Specialization

See Biological Sciences in this catalog and Microbiology advisor for specific program requirements.

### Advising

Advising is mandatory. Students are assigned to a faculty member for mandatory advising and career counseling. Information can be obtained from the department office (1117 Microbiology Building, 405-5435) or from the advising coordinator (2107 Microbiology Building, 405-5435).

### 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, 405-5435, 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 Chair, Dr. S. Benson, 3136 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 are encouraged to join the University of Maryland student chapter of the American Society for Microbiology, the professional scientific society for microbiologists. Information on this organization may be obtained in the department office.

Course Code: MICB

## MUSIC (MUSC)

### College of Arts and Humanities

Tawes Fine Arts Building, 405-5549

Professor and Chair: Major (Acting)  
Associate Chair: Cooper, Gibson  
Executive Director (Acting): Boone  
Professors: Cohen, Cossa, Fischbach, Folstrom, Guarneri String Quartet (Dalley, Soyer, Steinhardt, Tree), Head, Heifetz, Herndon, Hudson, Koscielny, Mabbs, McDonald, Montgomery, Moss, Page, Robertson, Schumacher, Travert  
Associate Professors: Balthrop, Barnett, Davis, Delio, Elliston, Elsing, Fanos, Gibson, Gowen, McCoy, Rodriguez, Sparks, Wakefield, Wexler, Wilson

Assistant Professors: McCarthy, Payerle, Taylor, Vadala  
Lecturers: Beicken, Siolas  
Instructors: Tate, Walters  
†Distinguished Scholar-Teacher

### The Major

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
CORE Program.....	12
Total.....	30
<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
CORE Program.....	9
Total.....	32
<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
CORE Program.....	10
Total.....	31
<b>Senior Year</b>	
MUSP 419/420—Applied Music.....	8
MUSC 492—Keyboard Music I.....	3
Musc 467—Piano Pedagogy I.....	3
Elective.....	4
CORE Program.....	9
Total.....	27

### 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.

# 114 Natural Resources Management Program

## 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 CORE Requirements	18
Total	30
<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 CORE Requirements	16
Total	30
<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 CORE Requirements	18
Total	30
<b>Senior Year</b>	
Music Electives	10
Electives, College and CORE Requirements	20
Total	120

## 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 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

1457 Animal Sciences/Ag. Eng. Building, 405-1198

Associate Professor and Coordinator: Kangas  
 Assistant Professor: Cronk  
 Instructor: Adams

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, environmental 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 academic 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.

## Curriculum Requirements

	Semester Credit Hours
CORE 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
One of the following:	4
GEOL 100, 110—Introductory Physical Geology AND Physical Geology Laboratory* OR GEOG 201, 211—Geography of Environmental Systems And Geography of Environmental Systems Laboratory*	
AGRO 302—General Soils*	4
AREC 240—Introduction to Economics and the Environment*	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
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 CORE requirement.

## Option Areas (23 hours)

### Plant and Wildlife Resource Management

Science Area	10
Management Area	10
Related Course Work or Internship	3

### Land and Water Resource Management

Science Area	10
Management Area	10
Related Course Work or Internship	3

### Environmental Education and Park Management

Science Area	10
Management and Education Area	10
Related Course Work or Internship	3

## Advising

Advising is mandatory. See the Coordinator, 1457 Animal Sciences/Agricultural Engineering Building, 405-1198.

## 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 1457 Animal Sciences/Agricultural Engineering Building.

Course Code: NRMT

## NUTRITION AND FOOD SCIENCE (NFSC)

(formerly Human Nutrition and Food Systems)

Departmental programs are under review. Please contact the department office for the most current information.

### College of Agriculture

3304 Marie Mount Hall, 405-4521

Professor and Chair: Brannon

Professors: Ahrens, Bean, Castonguay, Moser-Veillon, Prather, Schlimme, Sims

Associate Professor: Jackson

Assistant Professors: Blake, Boyle

Lecturer: Curtis

Emeritus: Wiley

The department offers three areas of emphasis: dietetics, food science, 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, dietetics management, clinical nutritional care, nutrition education and community nutrition. The Dietetics program is approved by the American Dietetic Association, and qualifies students, after completion of a post-baccalaureate internship, to sit for the exam to become a Registered Dietitian.

The **Food Science** major is concerned with the application of the fundamental principles of the physical, biological, and behavioral sciences and engineering to understand the complex and heterogeneous materials recognized as food. The food science program is accredited by the Institute of Food Technologists and prepares students for careers in food industry and food safety.

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 university (e.g., those specified in the CORE Program) and the requirements of the College of Agriculture.

Many courses in these majors are sequential, and some are offered only once per year. Contact a departmental advisor for help with scheduling.

**Grades.** All students are required to earn a C grade or better in courses applied toward satisfaction of the major. This includes all required courses with a prefix of NFSC, 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

This program is under revision. Students should consult with a department advisor for updated information.

#### I. Dietetics

a. Major Subject Courses	
NFSC 200—Nutrition for Health Services	3
NFSC 330—Nutritional Biochemistry	3
NFSC 440—Advanced Human Nutrition I	4
NFSC 450—Advanced Human Nutrition II	4
NFSC 460—Therapeutic Human Nutrition	4
NFSC 470—Community Nutrition	3
NFSC 475—Dynamics of Community Nutrition	3
NFSC 240—Science of Food I	3
NFSC 250—Science of Food II	3
NFSC 300—Foodservice Organization and Management	3
NFSC 350—Foodservice Operations I	5
NFSC 440—Foodservice Personnel Administration	2
Subtotal	40

b. Supporting Courses	
MATH 110—Elementary Mathematical Models or	
MATH 115: Pre-Calculus	3
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 107—Speech Communication: Principles and Practices	3
SOCY 100—Introduction to Sociology	3
PSYC 100—Introduction to Psychology	3
ECON 201—Principles of Economics	3
EDMS 451—Introduction to Educational Statistics or	
BIOM 301—Introduction to Biometrics	3
ENGL 101—Introduction to Writing	3
ENGL 391—Advanced Composition or	
ENGL 393—Technical Writing	3
Additional CORE Program Courses	21
Electives	11
Subtotal	80
Total Credits	120

#### II. Food Science

a. Major Subject Courses	
NFSC 111—Contemporary Food Industry and Consumerism	3
NFSC 398—Seminar	1
NFSC 412—Principles of Food Processing I	3
NFSC 413—Principles of Food Processing II	3
NFSC 421—Food Chemistry	3
NFSC 422—Food Product Research and Development	3
NFSC 423—Food Chemistry Laboratory	2
NFSC 430—Food Microbiology	2
NFSC 431—Food Quality Control	4
NFSC 434—Food Microbiology Laboratory	2
Two of the following:	3,3
NFSC 442, 451, 461, 471, 482—Horticulture, Dairy, Poultry, Meat and Seafood Products Processing	
Subtotal	32
b. Supporting Course Work	
MATH 115—Precalculus	3
CHEM 103—General Chemistry I	4
CHEM 104 OR CHEM 233—Organic Chemistry	4
CHEM 113—General Chemistry II	4
BCHM 261—Elements of Biochemistry	3
BIOL 105—Principles of Biology I	4
ENAG 414—Mechanics of Food Processing	4
MICB 200—General Microbiology	4
NFSC 100—Elements of Nutrition	3
PHYS 121—Fundamentals of Physics	4
ENGL 101—Introduction to Writing	3
ENGL 393—Technical Writing	3
Additional CORE Program requirements	27
Electives	18
Subtotal	88
Total Credits	120

#### III. Human Nutrition and Foods

a. Major Subject Courses	
NFSC 200—Nutrition for Health Services	3
NFSC 440—Advanced Human Nutrition I	4
NFSC 450—Advanced Human Nutrition II	4
NFSC 240—Science of Food I	3
NFSC 250—Science of Food II	3
NFSC 440—Advanced Food Science I	3
NFSC 445—Advanced Food Science Laboratory	1
Subtotal	21
b. Supporting Courses	
MATH 115—Precalculus	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

## 116 Physical Sciences Program

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 107—Speech Communication: Principles and Practices .....	3
ECON 201—Principles of Economics .....	3
Additional CORE Program Courses .....	21
Electives .....	11
Subtotal .....	99
Total .....	120

### Advising

Department advising is mandatory. Students should consult the Undergraduate Catalog for the year they entered the program and also see an appropriate departmental advisor when planning their course of study. Information on advising may be obtained by calling the department office, 405-2139.

### Student Organizations

The NFSC Department has an active undergraduate Food and Nutrition (FAN) club which does a number of outreach activities, sponsors speakers on career-related topics, and participates in a variety of social activities. Call 405-4521 for more information.

Course Codes: NFSC

## PHILOSOPHY (PHIL)

### College of Arts and Humanities

1124 Skinner Building, 405-5689/90

Professor and Chair: Slote

Professors: Bub, Cherniak, Darden, Devitt, Greenspan, Leshner, Levinson, Martin, Pasch, Schlaretzki (Emeritus), Suppe, Svenonius, Wallace (part-time)

Associate Professors: J. Brown, Celarier, Harty, Lichtenberg, Odell, Rey, Stairs

Assistant Professor: Morreau

Affiliate Professors: Brush, Hornstein

Adjunct Professors: Fullinwider, Luban, Sagoff

Adjunct Associate Professor: Wachbroit

Adjunct Assistant Professors: Li, Levine, Strudler, Wasserman

Research Associate: Gottlieb

### 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 students who are preparing for careers outside of philosophy, as well as the interests of those who are preparing for graduate study in philosophy. The department also offers a wide range of courses in the philosophy of various disciplines for non-majors.

### Requirements for Major

#### For students matriculating before June 1, 1991:

- (1) a total of at least 30 hours in philosophy, not including PHIL 100 or PHIL 386
- (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 Lounge, Skinner Building, room 1119.

#### For students matriculating after June 1, 1991:

- (1) a total of at least 36 hours in philosophy; not including PHIL 386
- (2) PHIL 310, 320, 326, either 271 or 273, either 250 or 360 or 380 or 462 or 464, either 341 or 346, and at least two courses numbered 400 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 Lounge, Skinner Building, room 1119.

Course Code: PHIL

## PHYSICAL EDUCATION

See Kinesiology.

## PHYSICAL SCIENCES PROGRAM

### College of Computer, Mathematical and Physical Sciences

3400 A.V. Williams Building, 405-2677

Chair: Williams

Astronomy: Matthews

Chemistry: Harwood

Computer Science: Kaye

Geology: Stifel

Engineering: Walston

Mathematics: Wolfe

Meteorology: Robock

Physics: Kim

### 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; those who are interested in problems such as air pollution, energy usage, ozone depletion, global climate, groundwater pollution or nuclear energy; students whose interests are in the environmental, earth and atmospheric sciences; pre-professional 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 161, 262, 263 (11 credits); or PHYS 171, 272, 273, 275, 276, 375 (14 credits); CMSC 104 (4 credits) or CMSC 105 (3 credits) or CMSC 106 (4 credits) or CMSC 112/113 (8 credits) or ENES 240 (3 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 24 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 Sciences 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 fewer 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, i.e., all must be ENAE courses, or a student may use a combination of courses in ENCH, ENNU, and ENMA, which are offered by the Department of Chemical Engineering and the Department of Materials 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.

## 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 Sciences**  
1120 Physics Building, 405-5979

Professor and Acting Chair: Wallace  
 Professors and Associate Chairs: Bardasis, Chant  
 Professors Emeriti: Falk, Ferrell, Glover, Griem, Holmgren, Hornyak, Snowt, Weber, Zorn  
 Chancellor Emeritus: Toll  
 Professors: Alley, Anderson, Antonsen, Banerjee, Bhagat, Boyd, Brill, C.C. Chang, C.Y. Chang, Chen, Currie, Das Sarma, DeSilva, Dorfman†, Dragtt, Drake, Drew, Einstein, Fisher, Gates, Glick, Gloeckler, Gluckstern, Goldenbaum, Goodman, Greenberg, Greene, Griffin, Hu, Kim, Kirkpatrick, Korenman, Layman, Lee, Lobb, Lynn, MacDonald, Mason, Misner, Mohapatra, Ott, Paik, Papadopoulos, Park, Patit, Prange, Redish, Richard, Roos, Sagdeev, Skuja, Suchert, Venkatesan, Wallace, Webb, Williams, Woo  
 Professor (part-time): Z. Slawsky  
 Visiting Professor: Franklin  
 Adjunct Professors: Boldt, Mather, Phillips, Ramaty, Ripin  
 Associate Professors: Cohen, Ellis, Fivel, Hadley, Hamilton, Hassam, Jacobson, Jawahery, Kacser, Kelly, Skiff, Wang  
 Assistant Professors: Anlage, Baden, Beise, Eno, Jakovenko, Wellstood  
 Lecturers: Nossal, Rapport, Restorff, M. Slawsky, Solow, Stern  
 †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.

## 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

A grade of C or better is required in all Mathematics and Physics courses required for the major.

## Honors

The Physics Honors Program offers to students of good ability and strong interest in physics a greater flexibility in their academic programs. 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

## PLANT BIOLOGY (BOTN, PBIO)

**College of Life Sciences**  
H.J. Patterson Hall, 405-1597

Professor and Acting Chair: Gantt  
 Distinguished Professor: Diener  
 Professors: Bean, Krusberg, Lockard, Patterson, Reveal, Steiner, Sze  
 Associate Professors: Barnett, Bottino, Cooke, Forseth, Grybauskas, Hutcheson, Motta, Racusen, Wolniak  
 Assistant Professors: Chang, Dudash, Fenster, Straney  
 Instructors: Browning, Koines  
 Emeriti: Brown, Kantzes, Lockard, Sisler, Sorokin

This specialization area (PLNT) is designed with a diverse range of career possibilities for students in plant biology and plant protection. The department offers instruction in the fields of physiology, molecular biology, pathology, ecology, taxonomy, genetics, mycology, nematology, virology, and evolutionary plant biology. See Biological Sciences in this catalog and Plant Biology advisor for specific program requirements.

## Advising

Academic advising is mandatory. Contact the Plant Biology Coordinating Advisor, Dr. Neal Barnett, 3214 H.J. Patterson, 405-1597.

## Honors

The Plant Biology 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, PBIO



### PRODUCTION MANAGEMENT

For information, consult the College of Business and Management entry.

### PSYCHOLOGY (PSYC)

#### College of Behavioral and Social Sciences

1107 Zoology-Psychology Building, 405-5866

Professor and Chair: William S. Hall

Professor and Associate Chair: C. Hill

Professors: Anderson, Brauth, Campbell\*, Carter-Porges, Dies, Dooling, Fein\*, Fox\*, Gelso, Goldstein, Gollub (Emeritus), Guzzo, Helms, Hill, Hodos†, Horton, Kruglanski, Lightfoot\*, Lissitz\*, Locke\*, Lorion, Magoon (Emeritus), Martin, J. Mills, Nelson, Penner, Porges\*, Rosenfeld\*, Schneider, Scholnick, Sigall, Smith, Steinman, Sternheim, Suomi\*\*, Torney-Purta\*, Trickett, Tyler (Emeritus), Waldrop (Emeritus), Yeni-Komshian\*

Associate Professors: R. Brown, Coursey, Freeman\*, Hanges, K. Klein, Larkin, Leone\*, Norman, O'Grady, Plude, Schneiderman\*, Stangor, Steele  
Assistant Professors: Alexander, Aspinwall, J. Carter\*\*, Castles\*\*, K. Dies\*\*, L. Goodman, Johnson, Marx\*\*, Miller\*\*, Moss, Pompilo\*\*, Reibsame\*, Sprei\*\*, Thompson\*\*, Wine\*\*, Yager, Zamostny\*

\*affiliate

\*\*adjunct

†Distinguished Scholar-Teacher

#### The Major

Psychology can be classified as a biological science (Bachelor of Science degree) and a social science (Bachelor of Arts degree) and the department 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 to 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.

#### Requirements for Major

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 401, 410, 420, 440, and 450. In order to assure breadth of coverage, Psychology courses 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, 415;

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, 361, 450, 451, 452, 460, 462, 463, 464, 465, 466

In addition, all students must complete (a) either MATH 111, or MATH 140 or MATH 220; (b) one of the following laboratory courses: BIOL 105\*, CHEM 103, 104, 105, 113, 115, KNES 360, PHYS 121, 141, 142, 171, 262, 263, ZOOL 201, 202, 210; and (c) ENGL 101 or an English literature course from a prescribed department list.

\*Note BIOL 101/102 does not satisfy the Lab Science requirement for Psychology. BIOL 101/102 is considered a duplication of credit with BIOL 105.

Students pursuing 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 nine credits at the advanced level. The 15 credits must be completed with at least a 2.0 average. 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 and completion of the Math-English-Science supporting course sequence. 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.

#### Admission to the Department of Psychology

Consult the undergraduate office in Psychology for current information about admission and review policies.

#### Advising

Advising and information about the Psychology program are available weekdays from 9 a.m. to 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 405-5866. Contact Dr. Rick Guzzo, Director of the Undergraduate Program, 3147B Zoology-Psychology Building, 405-5928, for more information.

#### Student Organizations

The Psychology Honorary Society, Psi Chi, 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 PSYC 386. Dr. Robert Coursey, 405-5904, 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 (1147A Zoology-Psychology Building, 405-5788). 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.

Course Code: PSYC

### ROMANCE LANGUAGES PROGRAM

#### College of Arts and Humanities

3106 Jimenez Hall, 405-4024

Advisory Committee: Falvo (Italian), Little, (Spanish), MacBain (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 45 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 45 credits, 21 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.

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## RUSSIAN AREA STUDIES PROGRAM

### College of Arts and Humanities

2115 Francis Scott Key Hall, 405-4307

Professors: Brecht (Germanic and Slavic), Dawisha (Government and Politics), Foust, Lampe (History), Murrell (Economics), Robinson (Sociology)  
Associate Professors: Berry, Hitchcock and Lelic (Germanic and Slavic), Kaminski and Tismaneanu (Government and Politics), Majeska (History)  
Assistant Professors: David-Fox (History), Martin, Ogorodnikova (Germanic and Slavic), Sharp (Art History and Archaeology)

### The Major

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 element 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: Germanic and Slavic Languages and Literatures, 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.

Students in the program must meet the general degree requirements of the university and college from which they graduate. They must complete 24 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 24 hours in Russian area courses at the 300-level or above. These 24 hours must be taken in at least five different departments, if appropriate courses are available, and may include language-literature courses beyond the required 24 hours.

It is recommended but not required that the student who plans on doing graduate work complete at least 18 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 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.

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## SOCIOLOGY (SOCY)

### College of Behavioral and Social Sciences

2108 Art-Sociology Building, 405-6389

Professor and Chair: Falk

Professors: Bianchi, Billingsley\* (Family and Community Development), Brown, Dager (Emeritus), Finsterbusch, Hage<sup>†</sup>, Hamilton, Kammeyer, Lejins (Emeritus), Meeker, H. Presser, S. Presser, Ritzer, Robinson, D. Segal<sup>†</sup>, M. Segal<sup>†</sup>

Associate Professors: Favero\* (AES), J. Hunt, L. Hunt, Kahn, Landry, Lengermann, Neustadt, Pease, Vanneman

Assistant Professors: Desai, Harper, Korzeniewicz, Malhotra

Lecturer: Moghadam

<sup>†</sup>Distinguished Scholar-Teacher

\*Joint appointment with unit indicated.

### The Major

Sociology is the scientific study of societies, institutions, organizations, groups, and individuals. Sociological studies range from the social factors that affect individuals, to group processes, and societal change. The

## 120 Spanish and Portuguese Languages

student's major substantive\*\*\* or research interests. These courses need not come from the same department, but at least six hours must be taken at the 400-level. 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

	<b>Semester Credit Hours</b>
CORE/USP Program Requirements.....	40/43
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
SOCY 441—Stratification and Inequality .....	3
1 additional methodology course** .....	3
2 Sociology courses at any level .....	6
4 Sociology courses at 400 level .....	12
4 supporting courses*** .....	12
Internship (recommended, not required)**** .....	6
USP/CORE Electives**** .....	24—30/21—27
Total.....	120

\*Three hours of mathematics (MATH 111 or its equivalent, or higher) are required as prerequisite.

\*\*The second required methods course and all supporting courses must be selected from approved lists.

\*\*\*Courses complementing Sociology specialization must be selected from an approved list and must include at least two courses at the 400 level.

\*\*\*\*Students choosing to take internships will reduce their elective credit total by six credits.

### Advising

Further information on course work, internships, the departmental honors program, careers, and other topics may be obtained from the Sociology Undergraduate Advisor, 2108 Art/Sociology Building, 405-6389.

### Fieldwork and Internship Opportunities

Although internships are not a requirement for a major, students may wish 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 a SOCY 386 when an internship/volunteer position is combined with an academic project. A prerequisite of 12 credits in Sociology course work is required.

### Honors

The Sociology Honors Program seeks 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 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 nine 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 whether 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, open to all Sociology majors, is organized by a group of interested undergraduates to fill student needs within the Sociology community. The Collective provides information about topics of interest, including department activities, career planning, and relevant changes with the university, and strives to enhance the sense of community within the department. Representatives of the Collective participate on faculty committees within the department and thereby provide the undergraduate perspective on policy issues.

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 may apply after they have completed 18 credits in Sociology course work. This organization's activities focus on providing tutoring services for undergraduates in the core courses.

### Survey Research Center

1103 Art-Sociology Building, 314-7831

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 supports undergraduate and graduate education by providing both technical training and practical experience to students. The center also 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: SOCY

## SPANISH AND PORTUGUESE LANGUAGES AND LITERATURES (SPAN)

### College of Arts and Humanities

2215 Jimenez Hall, 405-6441

Professor and Chair: Sosnowski

Professor Emerita: Nemes

Professors: Aguilar-Mora, Cypess, Harrison, Pacheco

Associate Professors: Benito-Vessels, Igel, Lavine, Naharro-Calderon, Phaf

Assistant Professors: Butler, Christian

Instructors: Little, Roman

### The Majors

credits. Suggested areas: art, comparative literature, government and politics, history, philosophy, and Portuguese.

### Business Option\*

Courses: SPAN 207; 211; 301—302; 311 or 312; 315 and 415; 316 and 317; 325—326 or 346—347; 422, for a total of 36 credits. Twelve credits of supporting courses, six of which must be on the 300 or 400 level in a single area other than Spanish. Suggested areas: business and management, economics, government and politics, history and geography.

Students interested in majoring in a combination of two Romance languages should see the description of the Romance Languages Program, above.

\*A double major program (IBFL) exists combining International Business and Spanish.

### Honors

The department Honors Program offers qualified students the possibility of working in close contact with a mentor on an original thesis. Honors seminars are primarily for students who have been accepted to the Program, but are open to others with the approval of the Honors Director. Honors students must take six credits of Honor Thesis (SPAN 479). Interested students should see the Director of the Spanish Honors Program.

**Elementary Honors.** SPAN 102H is limited to specially approved candidates who have passed SPAN 101 with high grades, and will allow them to enter 201. SPAN 201H is limited to students who have received high grades in 102, 102H, or 103 or the equivalent. Upon completion of 201H, with the recommendation of the instructor, a student may skip 202.

### Lower Division Courses

The elementary and intermediate courses in Spanish and Portuguese consist of three semesters of four credits each (101, 102, 201). The language requirement for the B.A. degree in the College of Arts and Humanities is satisfied by passing 201 or equivalent. Students who wish to enroll in Spanish 101, 102, and 201 must present their high school transcript for proper placement. See the Schedule of Classes for further information. Students may not receive credits for both Spanish 102 and Spanish 103.

Transfer students with college credit have the option of continuing at the next level of study.

Students must take language acquisition courses sequentially, i.e., 101, 102, 201, 202, etc. Once credit has been received in a higher-level language acquisition or grammar course, a lower-level course may not be taken for credit.

Course Codes: SPAN, PORT

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## SPECIAL EDUCATION (EDSP)

### College of Education

1308 Benjamin Building, 405-6515/4

Professor and Chair: Burke

Professors: Beckman, Egel, Graham, Harris, Hebel (Emeritus)

Associate Professors: Cooper, Kohl, Leone, Lieber, Moon, Neubert, Speece

Assistant Professors: Anderson, Harry, Nole

Associate Research Scholar: McLaughlin

Research Associates: Florian, Gruber, Kelly, Li, Page-Voth, Warren

Instructors: Aiello, Hudak, Long, Simon, Waranch

Faculty Research Assistants: Arllen, Barnwell, Fader, Frank, Krishnaswami, Lane, Newcomb, Samels, Schofield, Stepanek

The Special Education Department offers an innovative and rigorous undergraduate program which prepares teachers of infants, children, or young adults with disabilities. 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 28 other states. Students considering a special education

major enroll in courses which meet university and college requirements while they take supporting course work 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 individuals with disabilities; diagnostic and educational assessment procedures; instructional procedures and materials; curriculum development; classroom and behavior management; effective communication with the parents and families of children with disabilities; community resource planning; and local, state, and federal laws concerning children and youth with disabilities. Graduates of the program are expected to master specific skills in each of these areas.

### Requirements for Major

**Students interested in majoring in Special Education must consult a departmental advisor as early as possible after matriculation at the university** since the curriculum requires an extensive and sequenced program of studies. 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 children with disabilities across a wide range of ages. During Semester VI, students select one of the following four areas of specialization:

1. Severe Disabilities (SD)
2. Early Childhood Special Education (EC)
3. 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. Course work in each of these four areas is designed to develop expertise with a specific special education population. Students work directly with children or youth with disabilities during each semester, leading up to student teaching during the last semester. Specialty area programs include 12 to 15 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 course work 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 45 semester hours of requirements, students apply for formal admission to the professional program of the Department of Special Education by submitting an application with a statement of intent specifying their professional goals. 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 course work indicated below with an asterisk.
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.
4. Submission of three letters of recommendation.

Admittance will be based on the completion of the required courses, the grade point average, the applicant's experience with persons with disabilities, and the appropriateness and clarity of the professional goal statement. An appeals process has been established for students who do

## 122 Special Education

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 consult an advisor each semester. Students are urged to use the Special Education Advising 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 extracurricular activities within and outside of the University. Opportunities within the department include the Council for Exceptional Children, and the Student Advisory Board. For more information, stop by the Special Education Advising Center, 1235 Benjamin Building.

### Required Courses

All preprofessional and professional course work must be completed with a grade of C or better prior to student teaching. CORE Liberal Arts and Science Studies Program Requirements to include the following courses which are departmental requirements: (Consult with a departmental advisor with regard to USP requirements.)

- \*HIST 156 or HIST 157 (3)
- \*STAT 100 (3)
- \*Lab Science (4)
- \*ENGL Literature (3)
- \*PSYC 100 (3)
- \*SOCY 100 or 105 (3)

#### Other Academic Support Courses

- \*HESP 202 (3)
- HESP 400 (3)
- MATH 210 (4)
- \*EDHD 411 or PSYC 355 (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 Severe Disabilities Option

- EDSP 400—Assessment, Curriculum and Instructional Methods for Students with Severe Disabilities (3)
- EDSP 402—Field Placement: Severe Disabilities I (4)
- EDSP 403—Physical and Communication Adaptations for Students with Severe Disabilities (3)
- EDSP 404—Education of Students with Autism (3)
- EDSP 405—Field Placement: Severe Disabilities II (4)
- EDSP 410—Community Functioning Skills for Students with Severe Disabilities (3)
- EDSP 330—Families and the Education of Handicapped Children (3)
- EDSP 480—Microcomputers in Special Education (3)
- EDSP 420—Developmental and Behavioral Characteristics of

- Nonhandicapped and Handicapped Infants and Young Children **OR**
- EDSP 460—Introduction to Secondary/Transitional Special Education (3)
- EDSP 411—Field Placement: Severe Disabilities III (4)
- EDSP 412—Vocational and Transitional Instruction for Students with Severe Disabilities (3)
- EDSP 417—Student Teaching: Severe Disabilities (11)
- EDSP 418—Seminar: Issues and Research Related to the Instruction of Students with Severe Disabilities (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 480—Microcomputers in Special Education (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—Introduction to Secondary/Transitional Special Education (3)

#### The Secondary and Transition Special Education Option

- EDSP 330—Families and the Education of Handicapped Children (3)
- EDSP 460—Introduction to Secondary/Transitional Special Education (3)
- EDSP 461—Field Placement: Secondary/Transition I (3)
- EDSP 462—Vocational Assessment and Instruction in Special Education (3)
- EDSP 463—Field Placement: Secondary/Transition II (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: Secondary/Transition III (3)
- EDSP 467—Student Teaching: Secondary/Transition (11)
- EDSP 468—Special Topics Seminar in Secondary/Transition Special Education (3)
- EDSP 464—Secondary and Transition Methods in Special Education (3)
- EDSP 446—Instructional Design for the Educationally Handicapped: Functional Living Skills (3)
- EDSP 480—Microcomputers in Special Education (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)
- EDSP 480—Microcomputers in Special Education (3)

Course Code: EDSP

## SPEECH COMMUNICATION (SPCH)

### College of Arts and Humanities

2130 Skinner Building, 405-6519

Acting Chair: Klumpp

Professors: Fink<sup>†</sup>, Freimuth, Solomon, Wolvin

Associate Professors: Falcione, Gaines, Klumpp, McCaleb

Lecturer: Niles (p.t.)

<sup>†</sup>Distinguished Scholar Teacher

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 organizational communication, political communication, health communication, cognition and persuasion, rhetorical theory, history of rhetoric, and criticism of public discourse. New majors should seek advising in the department.

### The Major

Major requirements include completion of 30 semester hours in Speech Communication and 18 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 or 230, 250, 400, 401, and 402. Fifteen semester hours in SPCH courses, at least 12 of which must be 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. (Selection of cognate courses must be in accordance with guidelines available in the departmental office.) 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 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 may also be used to satisfy CORE requirements.

Speech Communication offers special opportunities for majors. Superior students may participate in an Honors Program. Contact the Honors Director. The department sponsors a chapter of Lambda Pi Eta Honorary Society. An internship program is also available to students doing work related to the major (contact the Internship Coordinator).

Course Code: SPCH

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## THEATRE (THET)

### College of Arts and Humanities

0202 Taves Fine Arts Building, 405-6676

Chair: Meersman

Professors: Gillespie, Meersman

Associate Professors: Hébert, O'Leary, Patterson

Assistant Professors: Anderson, Conway, Coustant, Huang, Reese, Schuler

Instructors: Kriebs, Krostyne, Wagner

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 curricula are 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.

### The Major

Major Requirements are forty-two hours of course work 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, 481, plus additional courses in theatre to make the minimum.

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 Design and Performing Emphases include one from each of the following: ENGL 403, 404, or 405; ENGL 434 or 454; any DANC; any MUSC; 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. 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 Theatre Patrons Scholarships. Other scholarships and workshops are awarded yearly to continuing students. For further information, contact the Coordinator of the Scholarship Program.

The department presents a number of University Theatre productions each year. Students also comprise the Administering Council in Theater (ACT).

Course Code: THET

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## TRANSPORTATION, BUSINESS, AND PUBLIC POLICY

For information, consult the College of Business and Management entry.

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## WOMEN'S STUDIES PROGRAM (WMST)

### College of Arts and Humanities

2101 Woods Hall, 405-6877

Professor and Director: Moses

Professors: Beck, Dill, Rosenfelt

Associate Professors: Bolles, King

Assistant Professors: Kim, Matthes

Affiliate Faculty: Harley, Williams (Afro-American Studies); Diner, Paoletti, Parks, Sies (American Studies); Gips (Art); Sharp, Withers (Art History); Greer (Chemistry); Doherty, Hallett, Stehle (Classics); Lanser, Marchetti, Peterson (Comparative Literature); Fassinger (Counseling and Personnel Services); Heidelberg (Curriculum and Instruction); Kerkham (East Asian Languages and Literature); Donawerth, Kauffman, Kornblatt, Leonardi, Lindemann, Ray, Smith, Upton, Washington (English); Leslie (Family

## 124 Zoology

Studies); Hage, Mossman (French and Italian); Frederiksen, Oster, Strauch (German and Slavic languages); McCarrick (Government and Politics); Gullickson, Munch (History); Beasley, Grunig (Journalism); Hult (Kinesiology); Herndon, Robertson (Music); Fullinwider (Philosophy and Public Policy); Alexander, Goodman, Scholnick (Psychology); Desai, Hunt, Kahn, Presser, Segal (Sociology); Cypess (Spanish and Portuguese Languages and Literature); Watson (Speech Communication); Coustaut, Gillespie, Schuler (Theatre); Palmer (Zoology)

### The Major

The Women's Studies major offers students a coherent but flexible program of study examining scholarship and theory on the history, status, contributions, and experiences of women in diverse cultural communities, and on the significance of gender as a social construct and as an analytical category. Drawing from approximately 50 courses, many of which are crosslisted with other academic units, students will have the opportunity to design an emphasis within the major relevant to their special interests. Students will earn a minimum of 39 credit hours, distributed as indicated below. A number of courses may count in more than one category. At least 30 credits must be at or above the 300-level. No course with a grade less than C may be used to satisfy the requirements of the major. Students are required to design their programs in consultation with a Women's Studies advisor.

#### 1. Foundation Courses (18 credit hours)

WMST 200: Introduction to Women's Studies: Women and Society...	(3)
OR	
WMST 250: Introduction to Women's Studies:	
Women, Art & Culture .....	(3)
WMST 300: Feminist Reconceptualizations .....	(3)
WMST 350/WMST 351 Feminist Education Practicum and Analysis..	(6)
OR	
WMST 386: Women's Studies Field Work and Analysis .....	(6)
WMST 400: Theories of Feminism .....	(3)
WMST 488: Senior Seminar	

#### 2. Distributive Courses (9 credit hours)

##### Area I: Arts and Literature

WMST 241: Women of French Expression in Translation (X-listed as FREN 241) .....	(3)
WMST 250: Introduction to Women's Studies:	
Women, Art, and Culture .....	(3)
WMST 255 Women in Literature (X-listed as ENGL 255) .....	(3)
WMST 275: World Literature by Women (X-listed as CMLT 275) .....	(3)
WMST 281: Women in German Literature and Society (X-listed as GERM 281) .....	(3)
WMST 348: Literary Works by Women (X-listed as ENGL 348) .....	(3)
WMST 408: Special Topics in Literature by Women Before 1800 (X-listed as ENGL 408) .....	(3)
WMST 444: Feminist Theory and Literature (X-listed as ENGL 444) ..	(3)
WMST 448: Literature by Women of Color* (X-listed as ENGL 448) ..	(3)
WMST 458: Special Topics in Literature by Women After 1800 (X-listed as ENGL 458) .....	(3)
WMST 466 Feminist Perspectives on Women in Art (X-listed as ARTH 466) .....	(3)
WMST 496: African American Women Filmmakers* (X-listed as THET 496)	

##### Area II: Historical Perspectives

WMST 210: American Women to 1880 (X-listed as HIST 210) .....	(3)
WMST 211: American Women Since 1880 (X-listed as HIST 211) ....	(3)
WMST 212: Women in Western Europe, 1750-present (X-listed as HIST 212) .....	(3)
WMST 320: Women in Classical Antiquity (X-listed as CLAS 320)	
WMST 468: Selected Topics in Women's History (X-listed as HIST 458) .....	(3)
WMST 492: History of the Sportswoman in American Institutions (X-listed as KNES 492) .....	(3)
AASP 498W: Special Topics in Black Culture:	
Black Women in America * .....	(3)
AMST 418J: Cultural Themes in America:	
Women and Family in American Life .....	(3)
HIST 301: Women and Industrial Development .....	(3)

##### Area III: Social and Natural Sciences

WMST 200: Introduction to Women's Studies: Women and Society...	(3)
WMST 298: Special Topics: Caribbean Women .....	(3)
WMST 313: Women and Science (X-listed as ZOO 313) .....	(3)
WMST 325: Sociology of Gender (X-listed as SOCY 325) .....	(3)

WMST 326: Biology of Reproduction (X-listed as ZOO 326)	
WMST 336: Psychology of Women (X-listed as ZOO 326 .....	(3)
WMST 439: Gender Role Development in the Family (X-listed as FMST 430) .....	(3)
WMST 436: Legal Status of Women (X-listed as GVPT 436) .....	(3)
WMST 452: Women and the Media (X-listed as JOUR 452) .....	(3)
WMST 471: Women's Health (X-listed as HLTH 471) .....	(3)
WMST 498: Advanced Special Topics in Women's Studies:	
Asian Women* .....	(3)
WMST 498: Advanced Special Topics in Women's Studies:	
Asian American Women* .....	(3)
WMST 498: Advanced Special Topics in Women's Studies:	
Women in the African Diaspora* .....	(3)
AASP 498F: Special Topics in Black Culture: Women and Work* .....	(3)
SOCY 425: Gender Roles and Social Institutions .....	(3)
SOCY 498W: Special Topics in Sociology: Women in the Military.....	(3)
SPCH 324: Communication and Gender .....	(3)

\* Fulfills Women's Studies Multi-Cultural Requirement

#### 3. Courses in Cultural Diversity (6)

Students will select two courses for a minimum of 6 semester credit hours. Approved courses are noted with an asterisk in section 2, above. Courses in this category may overlap with other requirements.

#### 4. Student-developed Emphasis

Each student, with the help of a Women's Studies advisor, will design an emphasis consisting of at least three courses or nine semester credit hours. Courses in this category may overlap with other requirements. Courses will ordinarily be drawn from those approved for the major. In some instances, students may secure permission from the Women's Studies advisor to include other courses.

#### 5. Electives

Students should select their electives from the full list of courses for the major. The number of credit hours will vary depending on the individual student's program, but should bring the total number of semester credit hours to at least 39.

#### Advising

Undergraduates in good academic standing may enroll in the Women's Studies Program or obtain more information about available options and services by contacting the Undergraduate Academic Advisor, 405-6877, or writing to Women's Studies Program, 2101 Woods Hall, University of Maryland, College Park, Md. 20742-7415.

Course Code: WMST

## ZOOLOGY (ZOO)

### College of Life Sciences

2227 Zoology-Psychology Building, 405-6904

Professor and Chair: Popper

Professors: Borgia, Costanza, Carter-Porges, Colombini, Gill, Highton, Pierce, Reaka-Kudla, Sebens

Associate Professors: Ades, Barnett, Chao, Cohen, Goode, Higgins, Imberski, Inouye, Mount, Palmer, Payne, Small, Wilkinson

Assistant Professors: Carr, Dietz, Rivas, Stephan, Tandra

Instructors: Dragolovich, Infantino, Kent, Opoku-Edusei

Adjunct Professors: Kleiman, Manning, Morton, Potter, Smith-Gill

Adjunct Associate Professors: Brietburg, Hines, Platt, Wemmer

Adjunct Assistant Professors: Braun, Brennan

Professors Emeriti: Anastos, Brown, Clark, Corliss, Haley

Director Undergraduate Office: Infantino

Zoology is an Advanced Program Specialization Area for Biological Sciences Majors. The Zoology specialization is designed to give each student an appreciation of the diversity of programs studied by zoologists and an appreciation of the nature of observation and experimentation appropriate to investigations within these fields.

## Requirements for Specialization

See Biological Sciences in this catalog and Zoology advisor for specific program requirements.

## Advising

Advising is mandatory. The Zoology department coordinates advising in the following Biological Sciences Specialization Areas: Zoology (ZOO); Physiology and Neurobiology (PHNB); and Marine Biology (MARB). Appointments for advising in the Specialization Areas can be scheduled through the undergraduate office, 405-6904. For advising in the Biological Sciences Specialization areas, see the Biological Sciences listing in this catalog for the appropriate coordinating advisor.

## Honors

The Department of Zoology Honors Program, directed by Dr. Margaret Palmer, 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, 405-6904.

Course Code: ZOO

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## CAMPUS-WIDE PROGRAMS

### Air Force Aerospace Studies Program (ROTC)

2126 Cole Student Activities Bldg., 314-3242

Director: Rensler

Assistant Professors: Hammond, Overbey, Russo

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. To enter the AFROTC program, students should inform their advisor, and register for classes in the same manner as for other courses.

### 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) concentrate on the development of leadership skills and the study of United States defense policy. Students must compete for acceptance into the POC. Students enrolled in the last two years of the program receive approximately \$4,000 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 their sophomore year of college.

### 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 and students receive the same benefits (approximately \$4,000 annually). During the summer preceding entry into the program, all candidates must attend six weeks of field training at a designated Air Force base. Students should start the application process as soon as possible—not later than the start of the Spring semester.

## THE CURRICULUM

### General Military Course (GMC)

**Freshman year**—ARSC 100 (Fall) and ARSC 101 (Spring). These courses introduce the student to the roles of the Department of Defense and the U.S. Air Force in the contemporary world. Each one-credit course consists

of one hour of academic class and two hours of Leadership Laboratory each week.

**Sophomore year**—ARSC 200 (Fall) and ARSC 201 (Spring). These courses provide 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 two hours of Leadership Laboratory each week.

### Professional Officers Course (POC)

**Junior year**—ARSC 310 (Fall) and ARSC 311 (Spring). 3 credits per semester. Course introduces students to management and leadership theory and application. Leadership laboratory participation is required for AFROTC cadets.

**Senior year**—ARSC 320 (Fall) and ARSC 321 (Spring). 3 credits per semester. Course reviews history of American defense/foreign policy. Second semester concentrates on ethics, military justice, officership and related issues. Leadership laboratory participation is required for AFROTC cadets.

All Aerospace courses are open to any university student for credit whether or not he or she is in the AFROTC Program. Students who are not in the AFROTC Program do not attend the Leadership Laboratory.

## General Requirements for Acceptance into the POC

The student must complete the General Military Course and the field training session, pass the Air Force Officer Qualifying Test, be physically qualified, be in good academic standing, meet age requirements and be a U.S. citizen. Successful completion of the Professional Officer Course and a bachelor's degree or 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, 314-3242.

## Scholarships

AFROTC scholarship programs provide eight, six, and four semester scholarships to students on a competitive basis. Scholarships are available in many fields and are based on merit. Those selected receive tuition, lab expenses, incidental fees, and book allowance plus a non-taxable monthly allowance of \$150.

Any student accepted by the University of Maryland may apply for these scholarships. AFROTC membership is required to receive an AFROTC scholarship.

## AFROTC Awards

AFROTC cadets are eligible for numerous local, regional, and national awards. Many of these awards include monetary assistance for school.

Course Code: ARSC

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## STUDY ABROAD PROGRAMS

3125 Mitchell Bldg., 314-7746

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. All students can use study abroad to enrich their programs and fulfill CORE requirements and electives.



## 126 Undergraduate Studies

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### Maryland Study Abroad Semester/Year Programs

**Denmark's International Study Program:** Maryland acts as a coordinator for DIS in Copenhagen, which offers liberal arts and business subjects taught in English.

**Semester in Israel:** From January through May students learn Hebrew and take courses in Jewish and Israeli studies taught in English by faculty members at Tel Aviv University.

**Study in London:** The curriculum consists of courses in the humanities, business, and the social sciences, which focus on Britain. Students are housed with families, in dorms, or in flats to increase their immersion in British life.

**German-Engineering:** Two month intensive technical German language study followed by four months paid internship in Germany.

**Study in Brazil:** Offers a summer and fall semester at the Catholic University of Rio de Janeiro to take regular university courses offered in Portuguese.

**Maryland in Mexico City:** Offers Spanish language and Latin American studies courses.

**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.

**Performing Arts in Ghana:** The Dance Department offers a program exploring aspects of Ghanaian dance as they relate to the society at large. Students are housed in dorms at the University of Ghana.

**Summer in Kassel:** The Department of Germanic and Slavic Languages and Literature sponsors a five-week intensive language and culture program in Kassel, Germany.

**Summer in Madrid:** The Department of Spanish and Portuguese sponsors a five-week intensive language and culture program in Madrid, Spain.

**Summer in Maastricht:** Offers a three-week program focusing on multicultural education. The program includes visits to schools and cities in the Netherlands, Belgium and Germany.

**Regional Coordination in the Middle East:** The Center for International Development and Conflict Management (CIDCM) and the College Park Scholars in International Studies sponsor a six-week program near Jerusalem that emphasized proactive, experiential learning with students from the Middle East.

### 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 chemistry and philosophy majors; University of Surrey for sociology majors and University of Liverpool for history majors. In Japan, Keio University in intensive Japanese. In Germany, the University of Bremen, the Free University of Berlin, and the Gesamthochschule Kassel. In Austria, the University of Vienna. In Sweden, Uppsala University.

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## UNDERGRADUATE STUDIES

### University Honors Program

Anne Arundel Hall, 405-6771/3

Director: Mack

The University Honors Programs offer the university's most academically-talented students special educational and cultural resources. Students combine Honors course work with studies in their major to enhance their total educational experience. First- and second-year undergraduates broaden their intellectual horizons in Honors seminars and Honors versions of regular courses in the arts and sciences, most of which fulfill general education requirements. Juniors and seniors may apply to one of more than 30 departmental or college Honors programs that give them the opportunity to work with faculty mentors on independent research projects. Students who prefer to propose their own individually-designed research programs may do so.

The Honors Program offers challenging academic experiences characterized by small classes, active student participation, and an Honors faculty who encourage critical thinking and discussion. Individually guided research, field experience, and independent study are also important aspects of Honors work.

Anne Arundel Hall, the Honors Living-Learning Center, is the center of the Honors Program, housing 100 students, the Honors Program staff, scholar-in-residence, computer lab, the Portz Library, seminar rooms, and lounges. Other Honors students live and study together on designated floors in various residence halls.

Students may apply for admission to the UHP either as entering first-year students or as transfer students with fewer than 30 credits (excluding AP credits). Students with more than 30 credits transferring from an Honors Program in their previous school should contact the University Honors Program for information about campus Honors opportunities. Admission to the University Honors Program is by invitation. Most departmental and college Honors programs begin in the junior year. Please contact the appropriate department for admission requirements.

For more information, write the Director, University Honors Program, University of Maryland, College Park, Md. 20742, or call 405-6771.

### College Park Scholars

1125 Cumberland Hall 314-CPSP (2777)

Director: Shapiro

College Park Scholars is an innovative two year living/learning program for academically talented students. Upon admission to the program, College Park Scholars choose one of the multidisciplinary academic programs as a focus, and have an opportunity to live together with other students in that program in a specially designated Scholars' residence hall. For Fall 1996, seven programs are available:

**Advocates for Children**  
**College Park Artists**  
**Environmental Studies**  
**International Studies**  
**Life Sciences**  
**Public Leadership**  
**Science, Technology and Society**

Students in each program attend weekly, faculty-led colloquia focused on thematic topics related to their Scholars' program. The colloquia are interactive, engaging students in discussion and debate with prominent experts in various fields. Students also have an opportunity to enroll in specially designed sections of the first-year writing courses. The various College Park Scholars curricula allow students to fulfill their General Education (CORE) requirements by choosing clusters of courses with their theme in mind. Qualified students may also apply for internships and mentored research opportunities.

The College Park Scholars' residence hall is a collaborative living/learning community where students meet faculty in their offices, form study groups on their floors, and join guest speakers for dinner in the dining hall. A diverse student population enriches all the Scholars' experiences, and directors encourage students with different experiences and backgrounds to take leadership roles in both the curricular and extracurricular programs. In addition, students in all the programs are offered opportunities to participate in faculty-led study abroad experiences between semesters or

during the summer.

College Park Scholars are encouraged to take advantage of global access to information through the Internet and World Wide Web connections available in the residence halls. Students use electronic mail to communicate with their faculty directors, other students, and pen pals across the country and around the world.

At the successful completion of the Scholars curriculum, students receive a College Park Scholars citation on their transcript. Then, in their junior year, College Park Scholars have an opportunity to apply to their departmental or college honors programs.

For more information on any of the programs identified above, please write to Director, College Park Scholars, 1125 Cumberland Hall, University of Maryland, College Park, Md. 20742-9331, or call 314-2777.

### Individual Studies Program (IVSP)

Division of Letters and Sciences  
1117 Hornbake Library, (314-9403)

Assistant Dean for Undergraduate Studies: Beckley

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;
- 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; and
- 3) have at least a 2.0 GPA and earn a minimum grade of C in designated major courses.

Most IVSP majors are either a form of "area study" utilizing offerings from many departments, or a clear combination of two or more 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 317, a one-credit progress report graded Satisfactory/Fail; IVSP 318, 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 a total of nine credits towards the degree); and IVSP 420, Senior Paper/Project, required for all students during the final semester. The project is evaluated by three faculty members.

More information on requirements and procedures is available from Dolores Mulligan, IVSP Coordinator, 1115 Hornbake Library, 314-9403

Course Code: IVSP

## PRE-PROFESSIONAL PROGRAMS

Advising for Law and the Health Professions  
Division of Letters and Sciences  
1117 Hornbake Library, 405-2793 or 314-8418  
Advisors: Health professions: Bradley, Hohenhaus Law: Crawford

### 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 and research technology,

pre-nursing, pre-pharmacy, and pre-physical therapy.

In contrast, seven programs, for which a bachelor's degree IS a normal prerequisite, are advisory ONLY and except in certain limited circumstances, as described herein, these cannot be declared as the official undergraduate academic major. These include pre-dentistry, pre-law, pre-medicine, pre-optometry, pre-osteopathy, and pre-podiatry. 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 on admissions tests, 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.

All students are welcome to use the Letters and Sciences Resource Room in 0110 Hornbake for information on careers and on professional schools across the country.

### Pre-Dental Hygiene

The Pre-Dental Hygiene program is designed to prepare students for entrance into the UMAB Dental Hygiene Program. THIS IS NOT INTENDED AS A PRE-DENTAL PROGRAM.

The Dental School of the University of Maryland, located in Baltimore (UMAB), offers a baccalaureate 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 bachelor's degree. Completion of this two-year pre-professional curriculum is required before admission to UMAB for the two professional years.

#### Pre-Professional curriculum for UMCP students:

	Semester Credit Hours
<b>Freshman Year</b>	
ENGL 101—Introduction to Writing .....	3
BIOL 105—Principles of Biology I .....	4
CHEM 103—General Chemistry I .....	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
SPCH 100 or 107—Basic Principles of Speech Communication or Technical Speech Communication .....	3
Elective .....	3

#### Sophomore Year

ZOOL 201 and 202—Human Anatomy & Physiology I, II .....	4,4
MICB 200—General Microbiology .....	4
NFSC 200—Nutrition for Health Services .....	3
ENGL 291 (or 391 for juniors) .....	3
Social Sciences .....	6
Humanities .....	3
Statistics .....	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 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 advising office. Enrollment as a pre-dental hygiene student or as a registered dental hygienist does not guarantee admission to the Dental Hygiene Program on the Baltimore City campus (UMAB).

# 128 Pre-Professional Programs

## Further Information

At College Park contact the Dental Hygiene Advisor, 1117 Hornbake Library, The University of Maryland, College Park, Md. 20742, 405-2793. In Baltimore, contact the Office of Recruitment and Admissions, University of Maryland School of Dentistry, 666 W. Baltimore Street, Baltimore, Md.. 21201, (410) 706-7472.

## Pre-Dentistry

Advisor: Bradley

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 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, 1117 Hornbake Library, University of Maryland, College Park, Md. 20742, 405-2793.

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. 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 area requirements, general education 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:

	<b>Semester Credit Hours</b>
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
Biology, minimum* .....	8

\*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. PBIO 100, BIOL 101 and 124, and MICB 100 should not be taken to meet this requirement.

## Three Year Arts-Dentistry Degree Program

At the beginning of their third year, students whose performance during the first two years is exceptional may consider applying to the University of Maryland School of Dentistry after three years of college work rather than the usual four, under the combined arts-dentistry program. By the end of the third year at College Park, the student must have earned 90 academic credits, the last 30 of which must have been earned in residence. Within the 90 credits, the student must have completed all the general education requirements. In addition, because there are certain basic admission requirements which also prepare the student for the Dental Admissions Test, the 90 credits would include the following:

## Semester Credit Hours

CHEM 103,113—General Chemistry I, II .....	4,4
(or CHEM 143, 153—General and Analytical Chemistry I, II) .....	5,5
CHEM 233, 243—Organic Chemistry I, II .....	4,4
PHYS 121, 122—Fundamentals of Physics I, II .....	4,4
(or PHYS 141, 142—Principles of Physics I, II) .....	4,4
*Biological Science (minimum) .....	8

\*Although the minimum biology requirement is eight credits, the successful applicant will likely have more, including advanced training in biological sciences at the 300-400 level. BOTN 104 and 105, BIOL 101 and 102, and MICB 100 may not be taken to meet this requirement. It should also be noted that many other schools of dentistry require mathematics (Calculus). Additional courses in biological sciences are suggested.

Incoming students interested in this three-year combined degree 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 receive the B.S. degree (Arts-Dentistry) after satisfactory completion of the first year at the University of Maryland School of Dentistry upon the recommendation of the Dean of the School of Dentistry and approval of the University of Maryland at College Park. The Bachelor of Arts degree is awarded by the University of Maryland at College Park in August following the first year of dental school. The courses of the first year of dental school constitute the major; the courses listed above constitute the supporting area.

Participation in the first three years of the combined degree program at College Park in no way guarantees admission to the University of Maryland School of Dentistry. Three-year students compete with four-year students for admission. It is therefore desirable to ensure that the work of the first three years be selected in such a way that the requirements of one of the normal College Park majors can be completed during a fourth year at College Park.

## Pre-Law

1117 Hornbake Library, 314-8418  
Advisor: Mary Crawford, J.D.

Most law schools prefer applicants with a B.A. or B.S. degree; however, in some cases law schools will consider truly outstanding applicants with only three years 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. Law schools require that the applicant take the Law School Admission Test (LSAT), preferably in July, October, or December of the academic year preceding entry into professional school.

## Four-Year Baccalaureate Program

No particular undergraduate major or special undergraduate courses are prerequisites for admission into law school. Students are encouraged to select a major in which they have a strong interest and expect to perform well. Course selections should be guided by the need to develop skill which are essential in preparing to perform well in law school, on the Law School Admissions Test (LSAT), and ultimately as a lawyer. These skill include imaginative and coherent thinking, critical reasoning, accurate and perceptive reading, and a strong command of the spoken and written language, including grammar. A broad liberal arts background, with evidence of high quality of work, will provide a strong foundation for law school.

## Three-Year Arts-Law Degree Program

Students with exceptional records may apply to the School of Law of the University of Maryland under the Arts-Law program. Upon recommendation by the Dean of the University of Maryland Law School and approval by College Park, students admitted to the program may be awarded a B.A. degree (Arts-Law) following the completion of at least 30 credits of the law program. Minimum requirements for approval from College Park are completion of at least 90 credits (at least 30 from College Park) including the following: all university and general education requirements; at least 18 credits limited to one department that are applicable to a recognized UMCP major with at least six credits at the 300-400 level; a minimum grade of C in the major courses. Participation in the three-year program is very competitive and in no way guarantees admission to the University of Maryland School of Law. Three-year students compete with four-year students for admission.

Incoming students interested in this three-year combined-degree program are strongly urged to consult the pre-law advisor before registering for the first semester at College Park.

For additional information, contact the Pre-law Advisor, 1117 Hornbake Library, 314-8418.

### Pre-Medical and Research Technology

The Pre-Medical and Research Technology program is designed to prepare students for entrance into the UMAB Medical and Research Technology Program. THIS IS NOT INTENDED AS A PRE-MED PROGRAM.

A Bachelor of Science degree in Medical and Research Technology is offered through the Medical and Research Technology Department of the University of Maryland Medical School, located in Baltimore (UMAB). Two tracks are available: the long established Medical Technology track and a new track in Biomedical Science Research (Biotechnology). Completion of this two-year pre-professional curriculum is required before admission to UMAB for the two professional years. Part-time study is possible.

### Application and Admission

High school students who wish to enroll in this curriculum at College Park must meet this institution's admission requirements. While in high school students are encouraged to enroll in a college preparatory curriculum emphasizing biology, chemistry, and college preparatory mathematics.

Pre-Medical and Research Technology students should begin the application process for professional school in fall of the sophomore year. UMAB applications and instructions are available in the advising office. Enrollment as a pre-professional student does not guarantee admission to UMAB.

### Pre-Professional curriculum for UMCP students choosing Medical Technology:

	Semester Credit Hours
CHEM 103, 113—Gen. Chem I, II.....	4, 4
CHEM 104 or CHEM 233 (organic chemistry).....	4
BIOL 105—Prin. of Biology I.....	4
ZOOL 201 or 202, Anatomy and Physiology I or II.....	4
MICB 200—Gen. Microbiology.....	4
MATH 110, or 115.....	3
Statistics.....	3
ENGL 101—Intro. to Writing.....	3
Literature.....	3
SPCH 107 or SPCH 100 (speech).....	3
Humanities (History, literature, philosophy, appreciation of Art, Music, Drama, Dance).....	6
Behavioral and Social Sciences (Anthropology, Economics, Government & Politics, Geography, Psychology, Sociology).....	9
Electives*.....	6
Total Semester Hours.....	60

\*May not include health or physical education.

### Pre-Professional curriculum for UMCP students choosing Biotechnology:

The curriculum is similar to that for Medical Technology but includes genetics, computer applications, a full year of organic chemistry (see advisor).

### Further Information

At College Park, contact the Medical and Research Technology Advisor, University of Maryland, 1117 Hornbake Library, College Park, Md. 20742, 405-2793. In Baltimore, contact the Medical and Research Technology Program, University of Maryland, Allied Health Professions Building, 100 S. Penn Street, Baltimore, Md. 21201, (410) 706-7664.

### Pre-Medicine

Advisor: Bradley

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 is prepared to assist students in setting career objectives,

selecting undergraduate course work 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 or the following summer. 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, 1117 Hornbake Library, The University of Maryland, College Park, Md. 20742, 405-2793.

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. 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, general education 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:

	Semester Credit Hours
ENGL 101 AND 391, 393, or 395—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 all 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. PBIOL 100, BIOL 101 and 124, and MICB 100 should not be taken to meet this requirement.

### Three-Year Arts-Medicine Degree Program

At the beginning of their third year, students whose performance during the first two years is exceptional may consider applying to the University of Maryland School of Medicine after three years of college work rather than the usual four, under the combined arts-medicine program. By the end of the third year at College Park, the student must have earned 90 academic credits, the last 30 of which must have been earned in residence. Within the 90 credits, the student must have completed all the general education requirements. In addition, because there are certain basic admission requirements which also prepare the student for the Medical College Admissions Test (MCAT), the 90 credits would include the following:

	Semester Credit Hours
CHEM 103, 113—General Chemistry I, II.....	4, 4
(or CHEM 143, 153—General and Analytical Chemistry I, II).....	5, 5
CHEM 233, 243—Organic Chemistry I, II.....	4, 4
PHYS 121, 122—Fundamentals of Physics I, II.....	4, 4
(or PHYS 141, 142—Principles of Physics I, II).....	4, 4
MATH 220, 221 or 140, 141—Calculus.....	4, 4
*Biological Science (minimum).....	8

## 130 Pre-Professional Programs

\*Although the minimum biology requirement is eight credits, the successful applicant will likely have more, including advanced training in biological sciences at the 300-400 level. PBIOL 104 and 105, BIOL 101 and 102, and MICB 100 may not be taken to meet this requirement. It should also be noted that the best preparation for the MCATs and for admission to most schools would include additional courses in biology.

Incoming students interested in this three-year combined degree 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 receive the B.S. degree (Arts-Medicine) after satisfactory completion of the first year at the University of Maryland School of Medicine upon the recommendation of the Dean of the School of Medicine and approval of the University of Maryland at College Park. The Bachelor of Arts degree is awarded by the University of Maryland at College Park in August following the first year of medical school. The courses of the first year of medical school constitute the major; the courses listed above constitute the supporting area.

Participation in the first three years of the combined degree program at College Park in no way guarantees admission to the University of Maryland School of Medicine. Three-year students compete with four-year students for admission. It is therefore desirable to ensure that the work of the first three years be selected in such a way that the requirements of one of the normal College Park majors can be completed during a fourth year at College Park.

### Pre-Nursing

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 advising office, room 1117 Hornbake Library.

The School of Nursing, located in Baltimore (UMAB), offers a four-year program leading to the Bachelor of Science degree in nursing. Completion of a two-year pre-professional curriculum is required before admission to UMAB for the two professional years. A second-degree option is also offered.

### 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 at least 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 advising office. Enrollment as a pre-nursing student does not guarantee admission to the nursing program at UMAB.

### Pre-Professional curriculum for UMCP students:

	Semester Credit Hours
CHEM 103, 104—General Chemistry I, Fundamentals of Organic and Biochemistry.....	4, 4
ENGL 101—Introduction to Writing .....	3
ENGL 291 or ENGL 391—Intermediate Writing or Advanced Composition.....	3
BIOL 105 .....	4
MATH 110—Elementary Mathematical Models (or higher).....	3
Humanities* (literature, history, philosophy, math, fine arts, language, speech) .....	9
PSYC 100—Introduction to Psychology.....	3
SOCY 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) .....	3
ZOOL 201, 202—Human Anatomy & Physiology I,II.....	4, 4
MICB 200—General Microbiology .....	4
NFSC 200—Nutrition for Health Services .....	3
Elective.....	2-3
	59-60

### Further information

At College Park contact the Nursing Advisor, 1117 Hornbake Library, College Park, Md. 20742, 405-2793. In Baltimore contact the Director for Admissions, The University of Maryland, School of Nursing, 655 W. Lombard Street, Baltimore, Md. 21201, (800) 328-8346. "RN to BSN" advisor: UMBC, 5401 Wilkens Ave., Catonsville, Md. 21228 (410) 455-3450.

### Pre-Optometry

Advisor: Bradley

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 Physiology.....	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

For additional information on pre-optometry studies, contact the Pre-medical Advisor, 1117 Hornbake Library, the University of Maryland, College Park, Md. 20742, 405-2793.

### Pre-Osteopathic Medicine

Advisor: Bradley

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.

For additional information on pre-osteopathy studies, contact the Pre-medical Advisor, 1117 Hornbake Library, the University of Maryland, College Park, Md. 20742, 405-2793.

### Pre-Pharmacy

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, 1117 Hornbake Library. Also at this location students may read about other schools of pharmacy.

The School of Pharmacy, located in Baltimore (UMAB), offers a four-year, entry-level Doctor of Pharmacy (Pharm.D.) program, offering different paths of concentration, including community practice and clinical pharmacy/pharmacotherapy. Completion of a two-year pre-professional curriculum is required before admission to the School of Pharmacy.

### 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 advising office. Applications for other programs must be obtained individually from the respective colleges.

Enrollment as a pre-pharmacy student does not guarantee admission to the School of Pharmacy at the University of Maryland at Baltimore (UMAB). Students who are uncertain about their chances of admission to professional school are encouraged to consult the advisor.

**Pre-Professional curriculum for UMCP students:**

	<b>Semester Credit Hours</b>
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
Total .....	60-61

**Further Information**

At College Park contact the Pharmacy Advisor, University of Maryland, 1117 Hornbake Library, College Park, Md. 20742, 405-2793. In Baltimore, contact Admissions Committee Chairman, University of Maryland School of Pharmacy, 20 North Pine Street, Baltimore, Md. 21201, (410) 706-7650.

**Pre-Physical Therapy**

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, 1117 Hornbake Library. Information about other schools is also available.

The University of Maryland offers two entry-level masters (MPT) programs in physical therapy, each three years in length. One is offered at the Baltimore City Campus (UMAB) and the other at the Eastern Shore Campus (UMES) in Princess Anne. Completion of a three-year pre-professional curriculum is required before admission to the three-year professional phase of either program. The first professional year starts in summer at UMAB and in fall at UMES.

**Application and Admission**

Applicants for the pre-physical therapy program at College Park must meet all of that institution's admission requirements. 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 about eight months prior to the expected date of enrollment in professional school. UMAB or UMES applications and instructions are available in the advising office. Applications for other programs must be obtained individually from the respective colleges.

Enrollment as a pre-physical therapy student 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 investigating schools in other states and other geographic regions.

Preprofessional curriculum for UMCP students applying to UMAB:

	<b>Semester Hours</b>
CHEM 103, 104*: General Chemistry I, Fundamentals of Organic & Biochemistry	4, 4
PHYS 121, 122: Fundamentals of Physics I & II	4, 4
BIOL 105: Principles of Biology	4
Biological science elective	4
ZOOL 211: Cell Biology and Physiology	4
MATH 220: Elementary Calculus I	3

Statistics (see advisor)	6
CMSC 103: Introduction to Computing	3
PSYC 100: Introduction to Psychology	3
Personality or development psychology	3
EDHD 320: Human Growth & Devel. through Life Span	3
ENGL 101: Introduction to Writing	3
ENGL 291 or 391: Intermediate or Advanced writing	3
General Education (See Advisor)	21
Electives	14
TOTAL	90

Curriculum must include at least 15 credits in upper-level course work.

**Pre-Professional curriculum for UMCP students applying to UMES:**

<b>Semester Hours</b>	
CHEM 103, 104*: General Chemistry I, Fundamentals of Organic & Biochemistry	4, 4
PHYS 121, 122: Fundamentals of Physics I,II	4
BIOL 105: Principles of Biology	4
ZOOL 201, 202: Human Anatomy & Physiology I, II	4, 4
ZOOL 211:Cell Biology and Physiology	4
MATH 115: Precalculus	3
Statistics	3
PSYC 100: Introduction to Psychology	3
Additional Psychology (abnormal or child)	3
ENGL 101: Introduction to Writing	3
English (including at least one additional writing course)	6
SPCH 107 OR SPCH 100: Technical Speech Communication OR Basic Principles of Speech Communication	3
Arts & Humanities (Literature, Foreign Language, Philosophy, or Fine Arts [non-studio])	6
Health Education	2
Physical Activities	2
Electives	24
TOTAL	90

\*CHEM 113 may be substituted for CHEM 104.

**Further information**

At College Park contact the Physical Therapy Advisor, 1117 Hornbake Library, College Park, Md. 20742, 405-2793. At UMES, contact Dr. Raymond Blakely, Department of Physical Therapy, UMES, Princess Anne, Md. 21853, (410) 651-6301. In Baltimore contact the Department of Physical Therapy, 100 S. Penn Street, Baltimore, Md. 21201, (410) 706-7720.

**Pre-Podiatric Medicine**

Advisor: Bradley

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, 1117 Hornbake Library, College Park, Md. 20742, 405-2793.

**Pre-Veterinary Medicine**

Advisors: Hohenhaus, Ingling, Loizeaux, Stephenson

UMCP students interested in veterinary medicine are eligible for a special degree program offered through the College of Agriculture. Through this program (see College of Agriculture entry in this catalog), students may earn a combined Bachelor of Sciences degree in Agriculture and Veterinary Medicine.

Students within any major may also prepare for admission to veterinary school by completing required courses. Students should consult catalogs from the veterinary schools in which they are interested. Minimum requirements for most programs include the following:

- UMCP CORE Requirements
- BIOL 105, 106, 222
- CHEM 103, 113, 233, 243
- BCHM 261 or 461; MICB 200
- PHYS 121 (or 141), 122 (or 142)
- MATH 220 (or 140) and 3 credits of other mathematics

## 132 Certificate Programs

Students should seek pre-veterinary advising through the Director of Resident Instruction, 1203 Gudelsky Veterinary Center, University of Maryland, College Park, Md. 20742, 935-6083.

### CERTIFICATE PROGRAMS

#### Afro-American Studies Certificate

##### College of Behavioral and Social Sciences

2169 LeFrak, 405-1158

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 the academic advisor of the Afro-American Studies Program in 2169 LeFrak Hall. Students pursuing the certificate must meet the University's general education (CORE) and department requirements.

See the complete description in the alphabetical list of programs.

#### East Asian Studies Certificate

##### College of Arts and Humanities

2101B Francis Scott Key Hall, 405-4309

The Undergraduate Certificate in East Asian Studies is a 24-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 bachelor's degree awarded previous 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  
KORA 211—Introductory Reading for Speakers of Korean I  
KORA 212—Introductory Reading for Speakers of Korean II

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 24-credit requirement for the certificate.

**Electives:** Students must complete at least 12 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 12 hours of electives must be upper-division (300-400 level) courses. A maximum of three credit hours of special topics courses on East Asian 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 focus (at least three disciplines

are recommended).

Interested students should contact Dr. Marlene Mayo, Department of History, Francis Scott Key Hall, (301) 405-4309.

#### Women's Studies Certificate

##### College of Arts and Humanities

2101 Woods Hall, 405-4977

The Women's Studies Certificate Program consists of an integrated, interdisciplinary curriculum on women that is designed to supplement another 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, 405-6877.

#### 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 & Culture...(3)
- WMST 400: Theories of Feminism .....(3)
- WMST 488: Senior Seminar

##### 2. Distributive Courses (9 credit hours) At least one course from each of the three distributive areas listed below.

###### Area 1: Arts and Literature

- WMST 241: Women of French Expression in Translation (X-listed as FREN 241) .....(3)
- WMST 250: Introduction to Women's Studies: Women, Art, and Culture .....(3)
- WMST 255 Women in Literature (X-listed as ENGL 255) .....(3)
- WMST 275: World Literature by Women (X-listed as CMLT 275) .....(3)
- WMST 281: Women in German Literature and Society (X-listed as GERM 281) .....(3)
- WMST 348: Literary Works by Women (X-listed as ENGL 348) .....(3)
- WMST 408: Special Topics in Literature by Women Before 1800 (X-listed as ENGL 408) .....(3)
- WMST 444: Feminist Theory and Literature (X-listed as ENGL 444) ..(3)
- WMST 448: Literature by Women of Color\* (X-listed as ENGL 448) ..(3)
- WMST 458: Special Topics in Literature by Women After 1800 (X-listed as ENGL 458) .....(3)
- WMST 466 Feminist Perspectives on Women in Art (X-listed as ARTH 466) .....(3)
- WMST 496: African American Women Filmmakers\* (X-listed as THET 496)

###### Area II: Historical Perspectives

- WMST 210: American Women to 1880 (X-listed as HIST 210) .....(3)
- WMST 211: American Women Since 1880 (X-listed as HIST 211) ....(3)
- WMST 212: Women in Western Europe, 1750-present (X-listed as HIST 212) .....(3)
- WMST 320: Women in Classical Antiquity (X-listed as CLAS 320)
- WMST 468: Selected Topics in Women's History (X-listed as HIST 458) .....(3)
- WMST 492: History of the Sportswoman in American Institutions (X-listed as KNES 492) .....(3)
- AASP 498W: Special Topics in Black Culture: Black Women in America \* .....(3)
- AMST 418J: Cultural Themes in America: Women and Family in

American Life .....(3)  
 HIST 301: Women and Industrial Development .....(3)

**Area III: Social and Natural Sciences**

WMST 200: Introduction to Women’s Studies: Women and Society...(3)  
 WMST 298: Special Topics: Caribbean Women.....(3)  
 WMST 313: Women and Science (X-listed as ZOO 313).....(3)  
 WMST 325: Sociology of Gender (X-listed as SOCY 325) .....(3)  
 WMST 326: Biology of Reproduction (X-listed as ZOO 326)  
 WMST 336: Psychology of Women (X-listed as ZOO 326) .....(3)  
 WMST 439: Gender Role Development in the Family  
 (X-listed as FMST 430).....(3)  
 WMST 436: Legal Status of Women (X-listed as GVPT 436).....(3)  
 WMST 452: Women and the Media (X-listed as JOUR 452).....(3)  
 WMST 471: Women’s Health (X-listed as HLTH 471) .....(3)  
 WMST 498: Advanced Special Topics in Women’s Studies:  
 Asian Women\* .....(3)  
 WMST 498: Advanced Special Topics in Women’s Studies:  
 Asian American Women\* .....(3)  
 WMST 498: Advanced Special Topics in Women’s Studies:  
 Women in the African Diaspora\* .....(3)  
 AASP 498F: Special Topics in Black Culture: Women and Work\* .....(3)  
 SOCY 425: Gender Roles and Social Institutions .....(3)  
 SOCY 498W: Special Topics in Sociology: Women in the Military.....(3)  
 SPCH 324: Communication and Gender .....(3)

\* Fulfills Women’s Studies Multicultural Requirement

**3. Cultural Diversity Requirement**

Students will select a course that fulfills a multi-cultural requirement. This course may overlap with other requirements.

4. The remaining courses may be chosen from any of the three distributive areas, or from among any of the WMST courses including WMST 498: Special Topics in Women’s Studies and WMST 499: Independent Study.  
 Advising

To obtain more information, contact the Undergraduate Advisor, Women’s Studies Program, 2101 Woods Hall, University of Maryland, College Park, Md., 405-6827

Course Code: WMST