



CHAPTER 7

DEPARTMENTS AND CAMPUS-WIDE PROGRAMS

ACCOUNTING

For information, consult the College of Business and Management entry in chapter 6.

AEROSPACE ENGINEERING (ENAE)

A. James Clark School of Engineering

3181 Engineering Classroom Bldg., 405-2376

<http://aerospace.umd.edu>

Chair: Fourney (Interim)

Professors: Anderson†, Chopra, Lee, Melnik, Schmidt

Associate Professors: Akin, Barlow, Celli, Leishman, Lewis, Vizzini, Winkelmann

Assistant Professors: Baeder, Pines, Sanner, Werely

Lecturers: Korkegi, Mills, Nelson, Regan, Russell, Winblade, Yanta

†Distinguished Scholar-Teacher

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, SGI, and, HP workstations, and terminals. There is network access to many

minicomputers, the campus mainframes, several supercomputing centers, and the World Wide Web.

Requirements for Major

Freshman Year	I	II
CHEM 133—General Chemistry	4	
PHYS 161—General Physics I		3
MATH 140, 141—Calculus I, II	4	4
ENES 100—Introduction to Engineering Design	3	
ENES 102—Statics		2
ENAE 100—The Aerospace Engineering Profession*	1	
CORE Program Requirements	3	6
Total	15	15

*ENAE 100 is strongly suggested for first semester students.

Sophomore Year	I	II
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

Junior Year	I	II
ENME 232—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 432—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

Senior Year

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

ELECTIVES:

Aerospace Electives	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	12

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

The technical elective 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 advisers.

Admission

See Clark School of Engineering entrance requirements in chapter 6.

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 adviser 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

AFRO-AMERICAN STUDIES PROGRAM (AASP)

College of Behavioral and Social Sciences
2169 Lefrak Hall, 405-1158

Director: S. Harley
Professor: R. Walters
Associate Professors: S. Harley, R. Williams, E. Wilson* (GVPT)
Assistant Professors: O. Johnson* (GVPT), F. Wilson
Lecturer: M. Chateauvert
* 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 department adviser 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 a thesis. 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.

	Semester Credit Hours
CORE Liberal Arts and Sciences	43
AASP Foundation Courses: (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
Upper-Division Electives in Afro-American Studies	18

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 AASP 397.

	Semester Credit Hours
CORE Liberal Arts and Sciences.....	43
AASP Foundation Courses: (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

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

FINAL OPTION:

AASP 397—Senior Thesis	3
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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 adviser.

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 University of Maryland, College Park faculty and guests. A reduced ratio of students to faculty ensures more individualized study. 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, training, and techniques of contemporary policy analysis. The program also features a summer component that includes a lecture series, research opportunities, and special seminars.

Admission into the BA/MPM program requires two steps:

Undergraduate

- (1) Students must major in the public policy concentration within the Afro-American Studies program and maintain an overall GPA of 3.0 or greater.

Graduate

- (2) Students apply to the joint program after completing 81 credit hours of undergraduate work. Applicants must meet both University of Maryland, College Park graduate and School of Public Affairs graduate admission requirements.

Eligibility

Freshmen or University of Maryland, College Park students in good academic standing with fewer than 60 credits may apply to the BA/MPM program.

Contact: The Afro-American Studies Program at 405-1158 for application and scholarship details.

Options for Study with AASP

For students who major in other departments, the Afro-American Studies Program offers three options for study:

1. Students may obtain a certificate in Afro-American Studies by completing 21 credit hours of course work. To qualify for the certificate in AASP, students must take AASP 100, AASP 101 and AASP 200 or AASP 202; nine credits of upper-division AASP electives**; and AASP 400 or AASP 402.

**Three of these credits may be taken outside of the department but permission is required from the AASP Adviser.

For more information on the Afro-American Studies Certificate, see the section on campus-wide programs later in this chapter

2. Students may designate Afro-American Studies as a double major, completing the major requirements for both AASP and another program.
3. AASP can be a supporting area of student for majors such as Computer Science, Business, or Engineering.

Scholarships and Financial Aid:

John B. and Ida Slaughter Scholarship

Advising

Undergraduates in good academic standing may enroll in the Afro-American Studies Program or obtain more information about available options and services by contacting the Undergraduate Academic Adviser, Afro-American Studies Program, 2169 Lefrak Hall, University of Maryland, College Park, Md. 20742, 405-1158.

Course Code: AASP

AGRICULTURAL SCIENCES, GENERAL (AGRI)

College of Agriculture and Natural Resources

1457 ANS/Biol. Res Building, 405-1198
bg4@umail.umd.edu

Coordinator: L.P. Grant

Agriculture is a complex scientific field, encompassing all other scientific and professional fields. However, majoring in Agricultural Sciences does not require an agricultural background. Students in this major have backgrounds as varied as is the field itself. The Agricultural Sciences program is designed for students who are interested in a broad education in the field of agriculture. It is ideal for students who would like to survey agriculture before specializing and for those who prefer to design their own specialized programs, such as International Agriculture or Agricultural Journalism. To supplement their classroom work, students in this major are encouraged to obtain summer positions that will provide technical laboratory or field experience in their chosen area. This program is administered by the Biological Resources Engineering Department. Advising is mandatory.

Requirements

	Semester Credit Hours
CORE Program Requirements*	40
BIOL 105—General Biology I	4
BIOL 106—General Biology II	4
CHEM 103—General Chemistry I	4
CHEM 104—Fundamentals of Organic and Biochemistry	4
or (CHEM 113—General Chemistry II and CHEM 233—Organic CHEM I)	4-8
MATH 110 or higher (115 recommended)	3
ENBE 100—Basic Agricultural Engineering Technology	3
ENBE 200—Introduction to Agricultural Mechanics	3
AGRO 101—Introductory Crop Science	4
AGRO 202—Fundamentals of Soil Science	4
ANSC 101—Principles of Animal Science	3
ANSC 215—Comparative Animal Nutrition	3
ANSC or AGRO**	3
AREC 250—Elements of Agricultural and Resource Economics	3
AREC—**	3
PBIO 365—Introduction to Plant Pathology or	3
ANSC 412—Introduction to Diseases of Animals	4
ENTM—**Insect Pest Type Course	3
HORT—**	3
SOCY 305—Scarcity and Modern Society	3
Community Development Related, Non-Agricultural Life Science, Biometrics, Computer, or Accounting	6
Electives (18 credit hours at 300-level or above)	20-29

*Includes 11 required credits listed below.

**Student may select any course(s) having required hours in the department indicated.

Course Code: AGRI

AGRICULTURAL AND EXTENSION EDUCATION (AEED)

College of Agriculture and Natural Resources

0200 Symons Hall, 405-2333

This program has been closed. New students are not being admitted to the program. Current students should contact the college for advising.

AGRICULTURAL AND RESOURCE ECONOMICS (AREC)

College of Agriculture and Natural Resources

2200 Symons Hall, 405-1293

arecuinfo@umail.umd.edu

[http://www.inform.umd.edu/EdRes/Colleges/AGRI/Depts/](http://www.inform.umd.edu/EdRes/Colleges/AGRI/Depts/AgResourceEcon)

AgResourceEcon

Professor and Chair: Chambers

Professors: Bockstael, Cain, Gardner††, Hardie, Hueth, Just††, Lopez, McConnell, Musser, Nerlove, Strand, Wysong

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

Assistant Professors: Aggarwal, Kerr, Lynch, McNew, Whittington

Emeriti: Bender, Brown, Foster, Moore, Stevens, Tuthill

†† Distinguished University Professor

Agricultural and Resource Economics majors complete a set of prerequisite courses, a core of classes offered by the Agricultural and Resource Economics Department, and one or more 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 offers 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 or a faculty adviser for more information, 405-1291.

Double Majors

The department features a double major with Spanish for students interested in careers in multinational agribusiness firms or international agencies. It features a double major with Government and Politics for students interested in law school. Both can be completed within 120 credits.

Requirements for Major

	Semester Credit Hours
Prerequisite Courses	
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

Major Core Courses

Seven of these courses must be successfully completed.

AREC 306—Farm Management	3
AREC 382—Computer-based Analysis in Agricultural and Resource Economics	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 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 – Intro. 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	3

• 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—Economics Development of Underdeveloped Areas	3
ECON 380—Comparative Economic Systems	3
ECON 440—International Economics	3
GEOG 442—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. Committee approval must be obtained 30 or more credit hours before graduation. A self-designed field may be used to study a foreign language as part of the AREC curriculum.

Course Code: AREC

AGRONOMY (AGRO)

Department of Natural Resource Sciences and Landscape Architecture

College of Agriculture and Natural Resources

2102 Plant Sciences Bldg., 405-1306

kh26@umail.umd.edu

<http://www.agnr.umd.edu/users/agron/>

Professor and Acting Chair: Weismiller

Professors: Angle, Aycock, Dernoeden, Fanning, Kenworthy, McIntosh†, McKee, Miller, Mulchi, Rabenhorst, Weil, Weismiller

Associate Professors: Carroll, Coale, Glenn, Hill, James, Ritter, Slaughter, Turner, Vough

Assistant Professors: Bolero, Costa, Dzanter

Adjunct Professors: Lee, Tamboli, Thomas

Adjunct Associate Professors: Daughtry, Meisinger, Saunders, Van Berkum

Emeriti: Axley, Bandel, Clark, Decker, Hoyert, Kuhn, Miller

†Distinguished Scholar-Teacher

Agronomy

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 Agronomy

Changes in requirements are under review. Students should check with a departmental adviser for updated information.

Agronomy Curricula. Core Program Requirements (40 semester hours); Math and science requirements (9 hours) are satisfied by departmental requirements.

Requirements (31 semester hours)

	Semester Credit Hours
AGRO 101—Introductory Crop Science	4
AGRO 202—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 adviser)	3
PHYS 117—Introduction to Physics OR	
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 Adviser)	8
AGRO—Advanced Soils Courses (Consult Adviser)	6
BIOL 106—General Biology	4
PBIO 420—Plant Physiology	4
One of the following:	4
PBIO 250—Plant Taxonomy	
BIOL 222—Principles of Genetics	
PBIO 425—Plant Structure	
Electives	34-35

Turf and Urban Agronomy Curriculum

University and Department Requirements	61
AGRO 411—Soil Fertility Principles	3
AGRO 305—Introduction to Turf Management	3
AGRO 453—Weed Science	3
PBIO 420—Plant Physiology	4
AGRO 401—Pest Management Strategies for Turfgrass	3
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
*ENTM 205 serves as a prerequisite	

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	

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.

Advising

Departmental advising is mandatory for second-semester sophomores and seniors.

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 AMST 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 adviser; this plan will be kept in the student's file. All cores must be approved in writing by an adviser.

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 and Natural Resources

1413 Animal Sciences Center, 405-1373

Department of Animal and Avian Sciences

Professor and Chair: Westhoff

Professors: Douglass, Erdman, Heath, Kuenzel, Mather, Ottinger, Peters, Russek-Cohen, Soares, Vijay, Wabeck

Associate Professors: Barao, DeBarthe, Doerr, Hartsock, Majeskie, Stricklin, Varner, Zimmerman

Assistant Professors: Dahl, Deuel, Kohn, Rankin

Emeriti: Flyger, Foster, King, Leffel, Mattick, Morris, Vandersall, Williams, Young

Adjunct Associate Professors: Allen, Oftedal, Paape, Rexroad

Extension Associate: Keyser

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

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
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
LABORATORY ANIMAL MANAGEMENT
SCIENCE, PRE-VET

Combined Degree Curriculum: Animal Sciences/Veterinary Medicine

Colleges of Agriculture and Veterinary Medicine

Students enrolled in the College of Agriculture and Natural Resources who have completed at least 90 credit hours, including all University and College requirements, may qualify for the Bachelor of Science degree from the University of Maryland, College of Agriculture and Natural Resources, upon successful completion in an accredited college of veterinary medicine of at least 30 semester hours. It is strongly recommended that the 90 hours include credits in animal science.

Combined Degree Requirements

CORE Program requirements*	40
ANSC 220 Livestock Management	4
ANSC 315 Applied Animal Nutrition	3
BIOL 105 Principles of Biology I	4
BIOL 106 Principles of Biology II	4
BIOL 222 Principles of Genetics	4
Mathematics (must include 3 credits of calculus)	6
CHEM 103 General Chemistry I	4
CHEM 113 General Chemistry II	4
CHEM 233 Organic Chemistry	4
CHEM 243 Organic Chemistry II	4
PHYS 121 Fundamentals of Physics I	4
PHYS 122 Fundamentals of Physics II	4
Biochemistry	3
Electives	9

* Includes 11 required credits listed above

For additional information, please contact the Associate Dean, VMRCVM, 1203 Gudelsky

Veterinary Center, University of Maryland, College Park, Md. 20742. Phone: 935-6083

Advising

Advising is mandatory. Each student will be assigned to a faculty adviser to assist in planning his or her academic program. For information or appointment: 1415A Animal Sciences Center, 405-1373.

Scholarships 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 and Natural Resources Student Awards Convocation. Addition for Scholarships and Awards section, The ANSC program administers several scholarships, including: C.W. England, Dairy Technology Society, the Kinghorn Fund Fellowship, the C.S. Shaffner Award, the Lillian Hildebrandt Rummel Scholarship, and the Owen P. Thomas Development Scholarship. 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, and the Poultry 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

<http://www.bsos.umd.edu/anth/anth.html>

Professor and Chair: Leone

Professors: Agar (emeritus), Chambers, Gonzalez† (emerita), Jackson†, Whitehead, Williams

Assistant Professors: Friedenbergs, Shackel, Stuart

Research Associates: Peterson (CuSAG)

Affiliate Faculty: Bolles (WMST), Caughey (AMST), Herndon (MUSC)

† Distinguished Scholar-Teacher

The Major

Anthropology, the holistic study of culture, seeks to understand humans as a whole—as social beings 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 cultures—differences in physical characteristics as well as in customary behavior. Anthropologists study how culture has changed through time human as the species has spread over the earth. Anthropology is the science of the biological evolution of human species, and of the cultural development of human beings' knowledge and customary behavior.

Anthropology at the University of Maryland, College Park offers rigorous training for many career options. A strong background in anthropology is a definite asset in preparing for a variety of academic and professional 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 course work in the four principal subdivisions of the discipline: 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 and archaeology. Field schools are offered in archaeology. The interrelationship of all branches of anthropology is emphasized.

The undergraduate curriculum is closely tied to the department's Master in Applied Anthropology (M.A.A.) program; accordingly, preparation for non-academic employment upon graduation is a primary educational goal of the department's undergraduate course work 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

Majors are required to take five courses in the core course sequence (three introductory courses and two advanced method and theory courses), for a total of 16-17 credit hours. They must also take 15 credit hours in anthropology electives and 18 supporting credit hours, courses that are primarily outside the major. Anthropology majors must also acquire a second language or complete a quantitative methods course.

Required Courses:

ANTH 220—Introduction to Biological Anthropology

ANTH 240—Introduction to Archaeology

ANTH 260—Introduction to Sociocultural Anthropology and Linguistics

At least Two of the Following: (one must be in major's area of primary focus-i.e., cultural anthropology, archaeology, biological anthropology)

ANTH 320—Human Evolution

ANTH 340—Method and Theory in Archaeology

ANTH 360—Method and Theory in Sociocultural Anthropology

ANTH 380—Culture and Discourse (may not be used as area of primary focus)

Quantitative Methods or Foreign Language Requirement:

- A) a quantitative methods course: 3 credit hours required—for a list of classes recommended for this requirement, see the Director for Undergraduate Studies; or
- B) Three or more terms of a foreign language, depending upon proficiency. Proficiency may be demonstrated in one of the following ways:
 - 1) successful completion of high-school level 4 in one language, or
 - 2) successful completion of a 12-credit sequence or of the intermediate level in college language courses, or
 - 3) successful completion of a placement examination at the above levels in one of the campus language departments offering such examinations

Electives: 15 credit hours in anthropology electives, 9 at the 300-level or above

Supporting: 18 credit hours outside of the department (with your academic adviser's approval, 8 hours may be anthropology course work)

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 of Undergraduate Studies, who serves as the Administrative Adviser 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 adviser 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 advisers (and should be contacted individually). Each major is expected to select an academic adviser 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 from your departmental adviser 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

APPLIED MATHEMATICS PROGRAM

College of Computer, Mathematical, and Physical Sciences

1104 Mathematics, 405-5062

<http://www.inform.umd.edu/EdRes/Colleges/CMPS/Depts/AppliedMath>

Director: Kellogg

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

ARCHITECTURE

For information, see the School of Architecture entry in chapter 6.

ART (ARTT)

College of Arts and Humanities

1211-E Art/Sociology Building

Undergraduate Program 405-1445

Graduate Program 405-7790

Professor and Chair: Pogue

Undergraduate Director: Ruppert

Graduate Director: DeMonte

Professors: DeMonte, Driskell††, Fabiano, Gips*, Lapinski, Truitt† (emerita)

Associate Professors: Craig, Forbes, Gelman, Humphrey, Kehoe, Klank,

Lozner, McCarty, Richardson, Ruppert, Sham, Thorpe

Instructor: Jacobs

†Distinguished Scholar-Teacher

††Distinguished University Professor

* Gallery Directors

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

Requirements for the Art major include a minimum of 45 upper-level credits completed and the foreign language requirement of the College of Arts and Humanities. We offer students a Bachelor of Arts (B.A.) degree and a Master of Fine Arts (M.F.A.) degree. 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 adviser each semester. The department has four advisers.

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, D.C., 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 ARCHAEOLOGY (ARTH)

College of Arts and Humanities

1211B Art/Sociology Building, 405-1479

<http://www.inform.umd.edu:8080/EdRes/Colleges/ARHU/Depts/ArtHistory/>

<http://www.inform.umd.edu/Archaeology>

Professor and Acting Chair: Pressly

Professors: Eyo, Farquhar, Hargrove, Miller, Wheelock

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

Assistant Professors: Gerstel, Gill, Holland, Kita, Promey, Sharp

The Major

The faculty and students of the Department of Art History and Archaeology form a dynamic nucleus within a major research university. The program, leading to the B.A. degree in Art History, provides a diverse selection of courses in the art and archaeology of Africa, Asia, Europe, and the Americas. The goal of the department is to develop the student's critical understanding of visual culture in both art historical and archaeological contexts. The numerous teaching awards won by faculty members indicate the department's concern for excellence in undergraduate education. In addition to its fine undergraduate program, the department offers graduate studies leading to the M.A. and Ph.D. degrees.

The department has strong coverage in Western art from the Classical period up to the present. In addition, by taking advantage of the unusual diversity of faculty interests, students can study in areas not traditionally offered in departments of art history and archaeology, such as art and archaeology of Africa, art of diaspora cultures, art and archaeology of the Americas, Eastern European art, Asian art, and feminist perspectives on art. Grounding in art historical and archaeological theory and method is provided in a number of courses. Students are encouraged to supplement their art historical and archaeological studies with courses in other fields. Studios in archaeology may be pursued in cooperation with other University departments. Faculty fieldwork in Greece, Israel, Mexico, Nigeria, and the United States affords undergraduates valuable first-hand experience in archaeological methods and practice.

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 adviser.

Business Option

Courses: CHIN 201-203; 202—204; 301—302; 303-304; 313 or 314 or 315; 421 or 422; HIST 284-481 or 485 or HIST 285-480 (24 credits); 18 credits in Chinese language and six credits in East Asian and Chinese history/civilization. Two electives at the 300—400 levels in Chinese linguistics and Chinese literature are also required. The following supporting courses are strongly recommended: CHIN 305—306; 401—402; 431—432.

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 the media. Students may also consider a double major in Japanese and another discipline, such as business, international relations, economics, or journalism.

After completing the prerequisite of one year of language (12 credits): JAPN 101 (Elementary Japanese I; six hours per week, fall); and JAPN 102 (Elementary Japanese II; six hours per week, spring), students must complete 42 credits for the major course requirements (24 language, six civilization/history, 12 elective). No grade lower than C may be used toward the major.

Requirements for the Japanese major include the College of Arts and Humanities requirement of 45 upper-level credits completed. The College foreign language requirement will automatically be fulfilled in the process of taking language major courses. Japanese students have the option of applying to live in St. Mary's Hall (Language House) and participating in a study-abroad program.

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 adviser.

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 adviser.

Business Option

Courses: JAPN 201-202; 305-306; 403-404; HIST 284-483 or 285-482 (36 credits). An additional six credits at the 300-400 level in electives in Japanese literature and linguistics are required.

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. Hebrew students have the option of applying to live in St. Mary's Hall (Language House) and participating in a study-abroad program.

Hebrew Language

The Hebrew Language Program provides, both to beginners and to those with previous background, an opportunity to acquire knowledge and skills in Hebrew language, 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.

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).

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. Hebrew students have the option of applying to live in St. Mary's Hall (Language House) and participating in a study-abroad program.

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: ASIA, CHIN, EALL, HEBR, JAPN, KORA

Course Codes: RUSS, SLAV

ASTRONOMY (ASTR)

College of Computer, Mathematical, and Physical Sciences

1204 Space Sciences Bldg., 405-3001

astrgrad@deans.umd.edu

<http://www.astro.umd.edu>

Chair: Leventhal

Associate Director: Trasco

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

Associate Professor: Mundy

Assistant Professors: Hamilton, Harris, Ostriker, Stone, Veilleux, Wang

Adjunct/Part-Time Professors: Holt, Trimble

Professors Emeriti: Erickson, Kerr, Wentzelt

Instructors: Deming, Theison

Associate Research Scientists: Arnaud, Aschwanden, Goodrich,

Gopalswamy, Lopez, Mc Fadden, Schmahl, Sharma, White

Assistant Research Scientists: Balachandran, Golla, Grossman

†Distinguished Scholar-Teacher

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.

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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 adviser, 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.

Note: Revisions to the undergraduate program are under consideration. Please check with the department for additional details.

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 normally should not 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 adviser 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 advisers 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 405-3001.

Course Code: ASTR

BIOLOGICAL RESOURCES ENGINEERING (ENBE)

Colleges of Agriculture and Natural Resources and A. James Clark School of Engineering
1457 An.Sci./Ag.Engr. Building, 405-1198

Chair: Wheaton (Acting)

Professors: Brodie, Johnson, Wheaton

Associate Professors: Grant, Kangas, Ross, Shirmohammadi

Assistant Professors: Baldwin, Brown, Schreuders

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

Freshman Year

ENES 100—Introduction to Engineering Design.....	3
*MATH 140—Calculus I.....	4
*CHEM 133—General Chemistry I.....	4
*BIOL 105—Principles of Biology I.....	4
or ENEB 110—Intro. to Bio. Res. Engineering	1
Total	16
ENES 102—Statics.....	2
*MATH 141—Calculus II.....	4
*CHEM 104—Fundamentals of Organic and Biochemistry	4
*PHYS 141—Principles of Physics.....	4
ENGL 101—Introduction to Writing.....	3
Total	17

Sophomore Year

MATH 241—Calculus III.....	4
*MICB 200—General Microbiology.....	4
ENES 220—Mechanics of Materials.....	3
*PHYS 142—Principles of Physics.....	4
Total	15
MATH 246—Differential Equations for Scientists and Engineers.....	3
ENME 217—Thermodynamics	3
ENBE 241—Computer Use in Bioresource Engineering	3
*ECON 201—Principles of Economics (or substitute approved course).....	3
*Core ¹	3
Total	15

Junior Year²

ENBE 453—Intro. to Biological Materials.....	3
ENME 342—Fluid Mechanics.....	3
or ENCE 330—Basic Fluid Mechanics	
ZOOL 211—Cell Biology and Physiology.....	4
[ENGR SCI: Technical Elective] ³	3
*Core ¹	3
Total	13
ENEE 300—Principles of Electrical Engineering.....	3
ENEE 301—Electrical Engineering Laboratory.....	1
ENBE 454—Biological Process Engineering	4
[BIOL SCI: Technical Elective] ³	3
[ENGR SCI: Technical Elective] ³	3
*Core ¹	3
Total	17

Senior Year

ENBE 471—Biological Systems Control.....	3
ENBE 422—Water Resources Engineering.....	3
ENBE Capstone Design I.....	1
[BIOL SCI: Technical Elective] ³	3
ENGL 393—Technical Writing.....	3
*Core ¹	3
Total	16

ENBE 482—Dynamics of Biological Systems.....	1
ENBE 484—Biological Responses to Environmental Stimuli.....	3
ENBE 485—Capstone Design II.....	2
[BIOL SCI or ENGR SCI: Technical Elective] ³	3
*Core ¹	3
Total	12
TOTAL	124

*Satisfies General Education Requirements

¹Students must consult with an adviser on selection of appropriate courses for their particular area of study.

²No 300-level and above courses may be attempted without special permission until 56 credits have been earned.

³Technical electives, related to field of concentration, must be selected from a departmentally approved list.

Biological Sciences (BIOL SCI) technical electives may be chosen, depending on students' interests, from an approved list of courses in the following programs: Agronomy, Animal Sciences, Chemistry and Biochemistry, Entomology, Nutrition and Food Science, Geography, Geology, Hearing and Speech Sciences, Horticulture, Kinesiology, Meteorology, Microbiology, Natural Resources Management, Plant Biology, Psychology, and Zoology.

Engineering Sciences (ENGR SCI) technical electives may be chosen, also depending on students' interests, from among the following programs: Aerospace Engineering, Biological Resources Engineering, Civil Engineering, Chemical Engineering, Electrical Engineering, Fire Protection Engineering, Mechanical Engineering, and Nuclear Engineering.

Students not qualifying for CHEM 133 must take CHEM 103 and CHEM 113.

Admission/Advising

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

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

Contact departmental academic advisers to arrange teaching or research internships.

Financial Assistance

The department offers three scholarships specifically for Biological Resources Engineering majors. Cooperative education (work study) programs are available through the Clark School of Engineering. Part-time employment is available in the department, in USDA laboratories located near campus, and at other locations.

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 Biological Resources, and Tau Beta Pi, the engineering honor society.

Student Organization

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

Course Code: ENBE

BIOLOGICAL SCIENCES PROGRAM

College of Life Sciences

1213 Symons, 405-6892

Director: Barbosa

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 (ZOO)
Cell and Molecular Biology and Genetics (CMBG)
Physiology and Neurobiology (PHNB)
Marine Biology (MARB)
Behavior, Ecology, Evolution & Systematics (BEES)
General Biology (GENB)
Individualized Studies (BIVS)

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 train students in modern research technologies. The program requires supporting course work in chemistry, mathematics, and physics, yet still allows time for exploration of other academic disciplines.

Each participating department 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 University of Maryland, College Park students.

Many of our graduates pursue advanced degrees in master's or doctoral programs or in medical, dental, or other professional schools. Some elect to seek employment as skilled technical personnel in government or industry research laboratories. Others pursue 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

	Semester Credit Hours
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
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	
Total Credits in Basic Program.....	42-44
Advanced Program.....	21-24
Electives.....	16-19

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A grade of C or better is required for BIOL 105, 106, 222, the diversity course, all courses in the Advanced Program and all 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 Advisers for the indicated Specialization Areas. They can be contacted for making appointments with an adviser or for any other information regarding that Specialization Area.

Smith	2107 Microbiology Bldg.	405-5435	CMBG, MICB
Infantino	2227 Zoo-Psych Bldg.	405-6904	ZOOL, PHNB, MARB
Barnett	2208 H.J. Patterson Bldg.	405-1597	PLNT, BEES
Armstrong	4112 PLNT Sciences	405-3925	ENTM
Presson	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

<http://echo.umd.edu/schools/umd/dept/chemical/ugrad/ugrad.html>

Professor and Chair: Sengers

Associate Chair and Undergraduate Director: Smith

Professors: Calabrese, Choi, Gentry, Greer, McAvoy, Pereira**, Regan, Sengers, Smith, Weigand

Associate Professors: Bentley, Gasner, Harris, Ranade**, Wang, Zafiriou

Assistant Professor: Adomaitis

Emeritus: Beckmann

**Adjunct

The Major

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

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, petroleum (refining, production, or petrochemical) and pharmaceutical industries. Additional opportunities are presented by the research and development activities of many public and private research institutes and allied agencies.

Requirements for Major

The curriculum is composed of: (1) the 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:	I	II
ENES 100—Intro to Engineering Design	3	
ENES 102 —Statics		2
MATH 140 —Calculus I	4	
MATH 141 —Calculus II	4	
CHEM 133 — Chemistry for Engineers	4	
ENGL 101 —Introduction to Writing.....	3	
PHYS 161 —General Physics I.....	3	
Core Program Requirements.....	6	
Total Credits	14	15

Sophomore Year

MATH 241—Calculus III	4
MATH 246—Differential Equations for Scientists & Engineers.....	3
PHYS 262, 263—General Physics	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.Engineering	3
Core Program Requirements	3
Total Credits	18

Junior Year

ENCH 300—Chemical Process Thermo-dynamics	3
ENCH 440—Chemical Engineering Kinetics	3
ENCH 442—Chemical Engr. Systems Analysis	3
CHEM 481, 482—Physical Chemistry I, II	3
CHEM 483—Physical Chemistry Lab I	2
ENCH 422—Transport Processes I	3
ENCH 424 —Transport Processes II.....	3
Core Program Requirements	3
Total Credits	14

Senior Year

ENCH 437—Chemical Engr. 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
Science or Technical Elective*	3
Core Program Requirements.....	6
Total Credits	15

Minimum Degree Credits: 120 credits and fulfillment of all departmental, school, and university requirements with a cumulative grade point average of 2.0.

*Students must consult with an adviser on selection of appropriate courses for their particular course of study.

Technical Electives Guidelines

Nine credits of technical electives and three credits of science or 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 adviser and written permission of the department, a limited amount of substitution may be permitted. Substitutes, including ENCH 468 Research (1-3 credits), must fit into an overall plan of study emphasis and ensure that the plan fulfills accreditation design requirements.

Chemistry and Biochemistry

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 adviser 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 chapter 6 of 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

Professor and Chair: Jarvis†

Associate Chairs: Ammon, Grim

Director, Undergraduate Programs: Sampugna

Professors: Alexander, Ammon, Bellama, DeShong†, Freeman, Greer, Grim, Hansen, Helz, Jarvis†, Khanna, Kozarich, P. Mazzocchi, Mignerey†, G. Miller, Moore, Munn, O'Haver, Thirumalai, Tossell, Walters, Weeks††, Weiner

Associate Professors: Blough, Boyd, DeVoe, Eichhorn, Falvey, Herndon, Julin, C. Miller, Murphy, Ondov, Reutt-Robey, Rokita, Sampugna, Woodson

Assistant Professors: Arias, Davis, Forbes, Jollie, Kahn, Pilato

Instructor: D. Mazzocchi

Lecturers: Ebrahimian, Hammond, Rebbert

Emeriti: Henery-Logan, Holmlund, Huheey, Jaquith, Kasler, McNesby, Pratt, Stewart, Stuntz, Svrbely, Vanderslice, Veitch

†Distinguished Scholar-Teacher

††Distinguished University Professor

The Majors

The Department of Chemistry and Biochemistry offers the B.S. Degree in both chemistry and biochemistry. The programs are designed with the maximum amount of flexibility to prepare students for graduate or professional school, career opportunities in chemical and pharmaceutical industries, and basic research positions in government and academic laboratories.

Chemistry courses for majors in chemistry or biochemistry begin with the two-semester General Chemistry sequence for majors: CHEM 143-153. Students who transfer into the chemistry or biochemistry programs and do not have the equivalent of CHEM 143-153 must take a three-semester sequence: CHEM 103—113—227. Additional courses common to both biochemistry and chemistry majors are the two-semester sequence in organic chemistry (CHEM 237—247), the one-credit seminar in professional issues (CHEM 395), the instrumental analysis course (CHEM 425), the two-semester lecture sequence in physical chemistry (CHEM 481—482) and the first semester (CHEM 483) of the physical chemistry laboratory sequence.

Supporting courses for majors in both programs include MATH 140, MATH 141, PHYS 141, and PHYS 142.

Requirements for Chemistry Majors

Departmental requirements for chemistry majors include 18 credits of lower-level and 23 credits of upper-level courses. In addition to the specific courses mentioned above, chemistry majors take the inorganic chemistry course (CHEM 401), the second semester of physical chemistry laboratory (CHEM 484), and six credits of electives selected from approved chemistry and biochemistry courses. 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.

Each required chemistry course must be passed with a minimum grade of C. Required supporting courses must be passed with a C average.

	Semester Credit Hours
University Core Requirements	30
College of Life Sciences Core Requirements	4*
Departmental Requirements	41

CHEMISTRY AND BIOCHEMISTRY (CHEM, BCHM)

College of Life Sciences

1320 Chemistry Building, 405-1788

Student Information: 1309 Chemistry Building, 405-1791

88 Civil Engineering

	Semester Credit Hours
University Core Requirements	30
College of Life Sciences Core Requirements	4*
Departmental Requirements	39
Supporting Courses	22
Electives	25
Total	120

*Other College of Life Sciences Core Requirements are satisfied by the departmental requirements.

Advising

Advising is mandatory. Appointments for advising can be made by contacting the secretary in the Office of Undergraduate Studies, Room 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 Scholarships of \$600 to two outstanding junior majors. No application is necessary, as all majors are automatically reviewed by the Awards Committee.

Honors and Awards

Students with a GPA of 3.0 or better who have completed two semesters of CHEM 399 (Introduction to Chemical Research) have an opportunity to sign up for CHEM 398 (Honors Research) in their senior year and be considered for departmental honors. After successful completion of a senior honors thesis and seminar, graduation "with honors" or "with high honors" in chemistry or biochemistry 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. The fraternity holds weekly meetings and provides tutoring for students in lower-level chemistry courses. The office is in Room 1403 Chemistry Building. Dr. Boyd (1206 Chemistry Building, 405-1805) is the faculty adviser.

Course Codes: CHEM, BCHM

CIVIL ENGINEERING (ENCE)

A. James Clark School of Engineering

1179 Engineering Classroom Building, 405-1974
<http://www.ence.umd.edu>

Professor and Chair: Baeher
Professors: Aggour, Albrecht, Amde, Ayyub, Birkner, Carter, Donaldson, Golden (Affiliate), Hao, McCuen, Ragan, Schelling, Schonfeld, Sternberg, Vannoy, Witczak
Associate Professors: Austin, L. Chang, P. Chang, Davis, Goodings, Haghani, Schwartz, Sircar (Affiliate)
Assistant Professors: Brubaker, Moglen, Seagren, Torrents

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 for 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 six major areas in civil engineering: construction engineering and management, environmental engineering, geotechnical engineering, structural engineering, transportation engineering, and water resources and remote sensing. A total of 122 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 18 credits of technical electives that may be selected from a combination of the six areas of civil engineering specialization and other approved courses. The curriculum provides a sensible blend of required courses and electives, which permits students to pursue their interests without the risk of overspecialization.

	Semester Credit Hours	
	I	II
Freshman Year		
Math 140—Calculus I	4	
Math 141—Calculus II		4
CHEM 133—Chemistry for Engineers	4	
ENES 100—Introduction to Engineering Design	3	
ENES 102—Statics		2
ENGL 101—Introduction to Writing	3	
PHYS 161—General Physics		3
Core Program Requirements	6	
Total	14	15

Sophomore Year

Math 241—Calculus III	4	
Math 246—Differential Equations for Scientists and Engineers	3	
PHYS 262, 263—General Physics II, II	4	4
ENES 220—Mechanics of Materials	3	
ENES 221—Dynamics	3	
ENCE 202—Computational Methods in Civil Engineering	3	
ENCE 203—Computational Methods in Civil Engineering II		3
Core Program Requirements	3	3
Total	17	16

Junior Year

ENCE 300—Fundamentals of Engineering Materials or		
CHEM 233—Organic Chemistry+	3	
ENCE 302—Probability & Statistics for Civil Engineers	3	
ENCE 315—Introduction to Environmental Engineering	3	
ENCE 320—Construction Engineering and Management	3	
ENCE 330—Basic Fluid Mechanics	3	
ENCE 340—Fundamentals of Soil Mechanics	3	
ENCE 353—Introduction to Structural Analysis or		
ENCE 355—Introduction to Structural Design++	3	
ENCE 370—Fundamentals of Transportation Engineering3		
ENGL 393—Technical Writing	3	
Core Program Requirements	3	
Total	15	15

Senior Year

ENCE Technical Electives (Group A, B, C, D, E, F, G, and H)*	9	9
ENCE 320—Thermodynamics	3	
ENCE 466—Design of Civil Engineering Systems	3	
Core Program Requirements	3	3
Total	15	15

Minimum Degree Requirements: 122 credits and the fulfillment of all departmental, school and University requirements with a cumulative grade point average of at least 2.0. Additional semester credits will be involved to the extent that courses carrying more than three credits are selected.

+ Depending on student's at 400-level electives, either one or both courses may be needed

++ Only one structures course is required at the junior level (either ENCE 353 or 355). If student completes both courses, one course will count as the required structures course and the other course will count as an elective.

* See below, Notes Concerning Technical Electives.

Notes Concerning Technical Electives in Civil Engineering

A minimum of 18 credit hours of technical electives are required as follows:

ENCE 4XX—Electives*	3
ENCE 4XX—Electives*	3
ENCE 4XX—Electives**	3
ENCE 4XX—Electives**	3
ENCE 4XX—Electives***	3
ENCE 4XX—Electives***	3

* Two electives from any one category A, B, C, D, E, or F.

** Any two electives from categories A-G.

*** Any two electives from categories A-H, or one technical elective such as CHEM 4XX, or any ENXX 400— level course.

Category A:	ENCE 423, ENCE 425
Category B:	ENCE 430, ENCE 431, ENCE 432
Category C:	ENCE 435, ENCE 436
Category D:	ENCE 441, ENCE 442
Category E:	ENCE 355, ENCE 454, ENCE 455
Category F:	ENCE 470, ENCE 471, ENCE 472
Category G:	ENCE 353, ENCE 463, ENCE 465
Category H:	ENCE 410, ENCE 420, ENCE 433, ENCE 440, ENCE 453, ENCE 488, ENCE 489

Admission/Advising

See A. James Clark School of Engineering entrance requirements in chapter 6.

All students are advised by Dr. Ali Haghani who assists in course selection and scheduling throughout the student's entire undergraduate program. For advising, contact Dr. Haghani, 405-1963, 1137 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 chapter 6 of 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 and Institute of Transportation Engineers student chapters which are 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 organization, 0401 Engineering Classroom Building.

Course Code: ENCE

CLASSICS (CLAS)

College of Arts and Humanities

2407 Marie Mount Hall, 405-2014

jh10@umail.umd.edu

<http://www.inform.umd.edu/EdRes/Colleges/ARHU/Depts/Classics>

Professors: Hallett† (Chair), Leshner* (Philosophy)

Associate Professors: Doherty, Lee, Rutledge, Staley, Stehle

*Joint Appointment with unit indicated

†Distinguished Scholar-Teacher

The Major

Classics is the study of the languages, literature, culture and thought of ancient Greece and Rome. Students at the University of Maryland 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.

Advising

Departmental advising is mandatory for all majors every semester.

Requirements for Major

Requirements for the Classics major include the College of Arts and Humanities requirements of 45 upper-level credits completed.

The College foreign-language requirement will be automatically fulfilled in the process of taking language course in the 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 upper-level supporting courses (normally in Art History, Archaeology, Architecture, Government, History, Linguistics, or Philosophy). Note: 300—and 400-level courses in LATN and GREK may be included among the 18 required hours in CLAS.

Students must take language acquisition courses sequentially, i.e., 101, 102, 201. Once credit has been received in a higher-level language acquisition or grammar course, a lower-level course may not be taken for credit. The student should begin the sequence at the appropriate level.

Course Codes: CLAS, GREK, LATN

COMPARATIVE LITERATURE PROGRAM (CMLT)

College of Arts and Humanities

2107 Susquehanna Hall, 405-2853

Core Faculty

Professor and Director: Harrison* (Spanish and Portuguese)

Professors: Berlin* (English and Jewish Studies), Collins* (English), Fuegi,

Hage†* (French), Lanser* (English), Lifton, Peterson* (English)

90 Counseling and Personnel Services

Associate Professors: Marchetti, Richter* (Germanic Studies), Wang* (English), Yee* (Asian and East European)
Instructor: Robinson

* Joint appointment with unit indicated

† Distinguished Scholar —Teacher

Affiliate Faculty

Professors: Alford, Auchard, Beck, Bolles, R. Brown, Caramello, Caughey, Chambers, Coogan, Cross, Cypess, Fink, Gillespie, Hallett, Handelman, Herndon, Holton, Kauffman, Mossman, Pearson, Robertson, Trousdale, Turner

Associate Professors: Barry, Bedos-Rezak, Bami, J. Brown, Cate, Doherty, Donawerth, Fahnestock, Falvo, Flieger, Grossman, Igel, Kelly, Kerkham, King, Kuo, Leinwand, Leonardi, Mintz, Norman, Peres, Phaf, Sargent, M. Smith, Strauch, Withers, Zilfi

Assistant Professors: Cohen, Coustaut, Greene-Gantzberg, Ray, Richardson, Sherman, Upton, Williams

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.

Citation in Comparative Studies

A student who specializes in 15-16 hours of concentrated study in the courses of the Comparative Literature Program will receive a citation on the official transcript. Please contact the Director of Undergraduate Studies for approval of courses.

Course Code: CMLT

COMPUTER SCIENCE (CMSC)

College of Computer, Mathematical and Physical Sciences
1103 A.V. Williams Building, 405-2672
ugrad@cs.umd.edu
<http://www.cs.umd.edu>

Professor and Chair: Gannon†

Professors: Agrawala, Basili, Davis, Kanal, Miller, Minker, Nau, O Leary, Reggia, Rosenfeld, Roussopoulos, Samet, Shneiderman, Stewart, Tripathi, Zelkowitz

Associate Professors: Aloimonos, Austing, Elman, Faloutsos, Gasarch, Hendler, Kruskal, Mount, Perlis, Pugh, Purtilo, Saltz, Shankar, Smith, Subrahmanian

Assistant Professors: Dorr, Franklin, Gerber, Hollingsworth, Keleher,

Khuller, Porter, Salem, Tseng

Instructors: Fontana, Kaye, Plane

Lecturers: Golub, Herman

Professors Emeriti: Atchison, Chu, Edmundson

†Distinguished Scholar-Teacher

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. A computer scientist is concerned with problem solving. Problems range from abstract determinations of what problems can be solved with computers and the complexity of the algorithms that solve them) to practical matters (design of computer systems which are 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

Note: Changes in major requirements are under review. Students should check with a departmental adviser for updated information.

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 105 or CMSC 106 or an acceptable score on the Advanced Placement exam or the department's CMSC 105 /106 exemption exam.
 - b. CMSC 114 or an acceptable score on the department's CMSC 114 exemption exam.
 - c. CMSC 150 or an acceptable score on the department's CMSC 150 exemption exam.
 - d. CMSC 214
 - e. 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 credit 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

Students may find employment as tutors or as members of the department's laboratory staff. Professors may also have funds to hire undergraduates to assist in research. Many students also participate in internship or cooperative education programs, working in the computer industry for a semester during their junior or senior years.

Honors

A departmental honors program provides an opportunity for outstanding undergraduates to take graduate-level courses or to begin scholarly research in independent study with a faculty member. Students are accepted into the program after their sophomore year based on their academic performance.

Student Organizations

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

Course Code: CMSC

Curriculum and Instruction

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, Hoffman, Sedlacek (Affiliate)
Associate Professors: Boyd, Clement (Emeritus), Fassinger, Greenberg, Jacoby (Affiliate), Komives, Lawrence, McEwen, Pope-Davis, Scales (Affiliate), Strein, Teglas, Westbrook (Affiliate)

Assistant Professors: Bagwell (Affiliate), Freeman (Affiliate), Gast (Affiliate), Heath, Hrutka (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: Sherman

Professors: Gottfredson, Nagel, Paternoster[†], Reuter (Public Affairs), Smith, Wellford

Associate Professors: Mackenzie, Simpson, Wish

Assistant Professor: Russell

Lecturers: Brooks, Bushway, Fisher, Mauriello, Stewart, Zumbun

Professor Emeritus: Lejins* (Sociology)

Research Scientist: Taxman

[†]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. The 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 department) 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.

Major Requirements	Semester Credit Hours
CCJS 100: Introduction to Criminal Justice	3
CCJS 105: Criminology.....	3
CCJS 230: Criminal Law in Action	3
CCJS 300: Criminological and Criminal Justice Research Methods	3
CCJS 340: Concepts of Law Enforcement Administration.....	3
CCJS 350: Juvenile Delinquency	3
CCJS 451, 452, or 454	3
CCJS Electives (3)	9
Total	30

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

Total for Major and Supporting51

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

CCJS 234, CCJS 320, CCJS 330, CCJS 331, CCJS 352, CCJS 357, CCJS 359, CCJS 360, CCJS 398, CCJS 399, CCJS 400, CCJS 432, CCJS 444, CCJS 450, CCJS 451, CCJS 452, CCJS 453, CCJS 454, CCJS 455, CCJS 456, CCJS 457, CCJS 461, CCJS 462, and CCJS 498.

Note: Criminal Justice (CJUS) majors and Criminology (CRIM) majors, which existed prior to 1992, have requirements different from the ones outlined here for Criminology and Criminal Justice (CCJS) majors. CJUS and CRIM majors are strongly urged to speak to a CCJS academic adviser regarding their requirements.

Internships

Internships are available through CCJS 398 and CCJS 359 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. CCJS 388H, the first course in the sequence, is offered only during the spring semester. The second and third courses in the sequence consist of a year-long research project (six credits, at least three each semester) or an honors thesis (one semester, six

92 Curriculum and Instruction

CURRICULUM AND INSTRUCTION (EDCI)

College of Education

2311 Benjamin Building

Professor and Chair: Johnson

Professors: Afflerbach, Davidson, Dreher, Fey* (Mathematics), Folstrom* (Music), Gambrell, Holliday, Jantz, Layman* (Physics), McWhinnie, Saracho, Weible

Associate Professors: P. Campbell, Cirrincione* (History/Geography), DeLorenzo, Graeber, Heidelbach, McCaleb* (Speech), O'Flahavan, Slater, Sullivan, Valli

Assistant Professors: Chambliss, Comas, Cooper* (Mathematics), Grant, McGinnis, McKillop, Price, Strutchens, VanSledright, vanZee, Wong
Emeriti: Amershek, Blough, Carr, Duffey, Eley, Henkelman, Lockard, Risinger, Roderick, Schindler, Stant, Weaver, Wilson

Joint appointment with unit indicated. Assistant Professors: Comas, Cooper (Mathematics), Gentzler, Grant, McGinnis, Owens* (Physical Education), Price, Strutchens, VanSledright, vanZee, 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 two undergraduate curricula leading to the Bachelor of Science or Bachelor of Arts degree:

1. Elementary Education: for the preparation of teachers of grades 1-8, and
2. Secondary Education: for the preparation of teachers in various subareas for teaching in middle schools and secondary schools, grades 5-12.

Graduates of the Elementary or Secondary Education programs meet the requirements for certification in the state 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.

Note: Changes in admission requirements are under review. Students should consult a department adviser for updated information.

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 chapter 6. Changes in admission requirements are under review. Students should consult a departmental adviser for updated information.

Advising

Advising is mandatory for all students desiring acceptance into the Teacher Education Program. Students will receive advising through individual appointments walk-in hours, or, 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, 2311 Benjamin

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 emphasis.

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) Social and Political History/Area A
Biological Science/Lab (4) or Physical Science/Lab (4) 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 (4) 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)
EDMS 410 (3)

Course work to complete the Area of Emphasis (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 emphasis. All pre-professional course work must be completed with a C or better prior to entering Professional Semester 2.

Professional Courses:

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

Professional course work to be taken prior to Professional Semester 2

EDCI 397—Principles and Methods of Teaching (3)
EDHD300E—Human Development and Learning (6)
EDCI 385—Computer Education for Teachers (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 the 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

Three Options

(Effective Summer, 1995. Students in the current English Education program may elect to complete that program or transfer to one of the three options.)

OPTION I: Double Major: English Education and English

Freshman Year

Core Program Requirements (13 credits)

MATH 110—Introduction to Mathematics (3)

SPCH 100—Foundations of Speech Communication, or SPCH 125—Introduction to Interpersonal Communication, or SPCH 220—Small Group—Small Group Discussion (3)

Foreign Language (Intermediate mastery of a modern or classical language is required) (8 credits)

ENGL 101—Introduction to Writing or ENGL 101H—Honors Composition (3)
(If exempt from ENGL 101, majors are required to take ENGL 291—Intermediate Writing or ENGL 294—Introduction to Creative Writing.)

Sophomore Year

Core Program Requirements (9 credits)

ENGL 201—World Literature, Homer to the Renaissance or ENGL 202—World Literature, Shakespeare to the Present (3)

ENGL 301—Critical Methods in the Study of Literature (3)

British and American Literature: one **upper-level** course in **five** out of the following **six** areas to be taken during the sophomore and junior years (one of these five courses must be in American Literature):

- Medieval Literature
- Renaissance Literature other than Shakespeare
- Restoration or 18th-Century Literature
- 19th-Century British Literature
- American Literature before 1900
- 20th-Century British or American Literature (15 credits)

LING 200—Introductory Linguistics (3)

EDPA 301—Foundations of Education (3)

EDHD 300S—Human Development and Learning (6)

Junior/Senior Years

Core Program Requirements (3 credits)

British and American Literature (remaining requirements)

SPCH 230—Argumentation and Debate or SPCH 330—Argumentation in Society or SPCH 350—Foundations of Communication Theory or SPCH 383—Urban Communication or SPCH 402—Communication Theory and Process (3)

ENGL 384—Concepts of Grammar or ENGL 383—The Uses of Language or ENGL 385—English Semantics or ENGL 482—History of the English Language or ENGL 483—American English or ENGL 484—Advanced English Grammar or ENGL 486—Introduction to Old English or ENGL 489—Special Topics in English Language (3)

ENGL 304—The Major Works of Shakespeare or ENGL 403—Shakespeare: The Early Works or ENGL 404—Shakespeare: The Late Works (3)

ENGL 487—Foundations of Rhetoric or SPCH 360—The Rhetoric of Black America or SPCH 401—Interpreting Strategic Discourse or SPCH 453—The Power of Discourse in American Life (3)

ENGL 470—African-American Literature, Beginning to 1910 or ENGL 471—African-American Literature, 1910-1945 or ENGL 472—African-American Literature, Since 1945 or ENGL 408—Literature by Women before 1800 or ENGL 458—Literature by Women, After 1800 or ENGL 448—Literature by Women of Color or ENGL 444—Feminist Critical Theory (3)

ENGL 391—Advanced Composition or ENGL 393—Technical Writing or ENGL 493—Advanced Expository Writing (3)

EDCI 390—Principles and Methods of Secondary Instruction (3)

EDCI 466—Literature for Adolescents (3)

EDCI 463—The Teaching of Reading in the Secondary School (3)

EDCI 467—Teaching Writing (3)

Senior Year

ENGL 399—Senior Seminar (3)

EDCI 340—Curriculum, Instruction and Observation: English, Speech, Theater Methods (3)

EDCI 447—Field Experience in English Teaching (concurrent with EDCI 340) (1)

EDCI 441—Student Teaching: English (12)

EDCI 440—Student Teaching Seminar in Secondary Education: English (concurrent with EDCI 441) (1)

OPTION II: B.A. Degree in English Education

The B.A. Degree in English Education is an additional route leading to the baccalaureate and certification for teaching secondary English language arts. **The education and English requirements are exactly the same for all three options.**

Option II is primarily for students who have already earned a bachelor's degree. It is also available to students working on their initial degree, but the double major is the recommended option since the requirements for both are identical. In Option II, completion of the English and professional education courses and field experiences will result in the awarding of a B.A. degree in English Education.

OPTION III: Double Degree

Option III is a third route leading to certification for teaching secondary English language arts. It is designed for students who have earned a bachelor's degree in another field (for example, history) and seek secondary teacher certification via a University of Maryland, College Park-approved teacher education program and a second bachelor's degree in English Education (EDCI). In addition to successful completion of the College of Education teacher education admissions requirements listed above, students must apply for admission to the approved teacher education program in secondary English Education. If the student's academic background does not include sufficient course work in composition; introductory and advanced English language and linguistics; rhetoric; world, British, and American literature; literary criticism; and literature by women and minorities, those courses must be part of the course of study leading to completion of the approved teacher education program. In Option III, completion of the English and professional education courses and field experiences will result in the awarding of a B.A. degree in English Education.

Art Education, K-12

Pre-Professional/Subject Area Course Work

ARTT 150—Introduction to Art Theory (3)

ARTT 100—Elements of Design (3)

ARTT 110—Elements of Drawing (3)

SPCH 107—Technical Speech Communication or SPCH 125 or SPCH 220 (3)

ARTH 200—Art of the Western World I (3)

ARTH 201—Art of the Western World II (3)

ARTT 200—Three Dimensional Art Fundamentals (3)

ARTT 210—Elements of Drawing II (3)

ARTT 320—Elements of Painting (3)

EDCI 273—Practicum in Ceramics (3) (Spring only)

ARTT 428—Painting II (3)

EDCI 406—Chaos of The Arts (3) (Fall only)

EDCI 407—Practicum in Art Education: Three Dimensional (3) (Spring only)

ARTT 340—ARTT 341—ARTT 342—ARTT 343—Elements of Printmaking: Intaglio (3)

Professional Courses

EDHD 300S—Human Development and Learning (6)

EDCI 390—Principles and Methods of Secondary Education (3)

EDCI 470—Introduction to Special Education

EDCI 403—Teaching of Art Criticism in Public Schools (3) (Spring only)

EDPA 301—Foundations of Education (3)

EDCI 300—Discipline Based Art Education (C&I Art Methods) (3) (Fall only)

EDCI 401—Student Teaching in Elementary Schools: Art (4-8)

EDCI 402—Student Teaching in Secondary Schools: Art (2-8)

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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 FL adviser and may be in any foreign language regardless of whether 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 adviser.

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. Adviser (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

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 adviser. 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 104 or 105 is required.

Students majoring in mathematics may prepare to teach mathematics by pursuing a special sequence of professional courses in the College of Education. Early contact should be made with either Dr. James Fey or Dr. Duane Cooper.

Pre-Professional/Subject Area Course Work

SPCH 100, 107, 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 104—Introduction to FORTRAN Programming or
CMSC 105—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

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 adviser who guides him or her through the various stages of the program in 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

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 409—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 and 106; CHEM 103 and 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 adviser 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)
 PBIO 200—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)
 PBIO 420—Plant Physiology (4)
 ZOOL 480 (4), BOTN 212 (4), and ENTM 205
 PHYS 122—Fundamentals of Physics II (4)
 PBIO 440-441 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 107, 125 or 220 (3)
 HIST 156, 157 (U.S.) (6)
 HIST (non-U.S. with one course non-Western) (6)
 SOCY 100 or ANTH 220 (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 Science 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 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)

Option II Geography: Requires 56 semester hours of which 29 hours must be in geography. GEOG 201, 211, 202, 212 are required. Nine hours of 300-level Gateway courses must be taken in physical geography, human geography, and geographic techniques. The remaining 12 hours in geography must be in upper-level systematic geography courses. One course in Ethnic and Minority studies must be included.

Pre-Professional/Subject Area Course Work

SPCH 107, 125, or 220 (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 212—Human Geography Laboratory (1)
 GEOG Gateway—Physical Geography (3)
 GEOG Gateway—Human Geography (3)
 GEOG Gateway—Geographic Technique (3)
 GEOG Systematic Electives (12)
 HIST 156 or 157 (3)
 HIST (non-Western) 101, 130-133, 144-145 (3)
 SOCY 100 or ANTH 220 (3)
 ECON 205 (3)
 ECON 310, 311, or 315 (3)
 GVPT 100, 240, or 280 (3)
 GVPT 170—American Government (3)
 History/Social Science Electives (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 adviser 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) (see adviser for substitute course)
 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 383 or ENGL 384 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)
 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 adviser 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 383 or ENGL 384 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: Rosen, A. Warren
 Instructor: Mayes
 Emeriti: Madden, L. Warren
 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

Requirements for the Dance major include a minimum of 45 upper-level credits completed and the foreign language requirement of the College of Arts and Humanities. 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.

Departmental advising is mandatory each semester.

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 Adviser: 3127A Tydings, 405-3503

Professor and Chair: Strasheim
 Professors: Abraham, Almon, Ausubel, Baily, Betancourt, Brechling, Calvo††, Clague, Crampton, Cropper, Dorsey, Drazen, Haltiwanger, Hulten, Kelejian, Montgomery, Mueller, Murrell, Oates, Olson††, Panagariya, Prucha, Schelling* (Public Affairs), Schwab
 Associate Professors: Bennett, Coughlin, Evans, Lyon, Shea, Wallis, Weinstein
 Assistant Professors: Fikkert, Hellerstein, Hoff, Kranton, Sakellaris, Sen, Swamy
 Emeriti: Bergmann, Cumberland, Harris, McGuire, O'Connell, Polakoff, Ulmer, Wonnacott
 *Joint appointment with unit indicated
 ††Distinguished University Professor

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

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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 (check with adviser)
- 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 course 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 advisers 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.

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

Professor and Chair: Cibulka

Professors: Berdahl†, Birnbaum, Clague, Finkelstein, Malen, Selden

Associate Professors: Goldman, Herschbach, Hopkins, Huden, Hultgren, Schmidtlein, Splaine

Assistant Professors: Collinson, Croninger, Enomoto, Fries-Britt, Mintrop, Rice

Affiliate Assistant Professors: Hall, Presley

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

Visiting Professors: Andrews, Dubel

†Distinguished Scholar-Teacher

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

rhee@eng.umd.edu

<http://www.ee.umd.edu/~rhee/>

Professor and Chair: Farvardin

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

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

Associate Professors: Fujia, Goldman, Iliadis, Lawson, Liu, Papamarcou, Pugsley, Silio, Tretter, Yang

Assistant Professors: Gomez, Milor, Stewart, Tassiulas

Emeriti: Davisson, Hochuli, Ligomenides, Lin, Taylor, Wagner

†Distinguished Scholar-Teacher

††Distinguished University Professor

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 undergraduates 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 is shown below.

	Semester I	II
Freshman Year		
CHEM 133—General Chemistry.....	4	
PHYS 161—General Physics	3	
Math 140, 141—Analysis I,II	4	4
ENES 100—Intro. to Engr. Design	3	
ENEE 114—Programming Concepts for Engineers.....	4	
General Education Courses (Core)	3	3

Total14 14

Sophomore Year

Math 241—Calculus III	4	
Math 246—Differential Equations.....	3	
PHYS 262, 263—General Physics	4	4
ENEE 206—Digital and Circuits Lab	2	
ENEE 241—Numerical Techniques in Engineers	3	
ENEE 204—Basic Circuit Theory	3	
ENEE 244—Digital Logic Design	3	
General education courses (Core)	3	3
Total	17	15

Junior Year

MATH (Elect. Advanced Math ²)	3	
ENEE 302—Analog Electronics	3	
ENEE 306—Electronic Circuits Design Lab	2	
ENEE 312—Digital Electronics.....	3	
ENEE 322—Signal and 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 —Advanced Elective Lab ²	2	
General education courses (Core).....	3	3
Total	17	15

Senior Year

Advanced Elective Lab	2	2
Technical Electives	9	9
General education courses (Core).....	6	3
Total	17	14

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 advisers. 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

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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. Adrian Papamarcou in the Electrical Engineering Undergraduate Office, 1419 A.V. Williams Building.

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

This program is under revision. Students should consult a department adviser for information.

All undergraduates 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 Adviser" 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 student affair'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 advisers 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 Year Requirements

Engineering Option

Mathematics/Physical Science Requirements ⁴	3
Engineering Sciences ^{2,4}	3
Primary Field ^{1,7}	24
Secondary Field ^{1,7}	12
Major Field or related electives ⁴	3
Approved electives ^{3,4}	6
Total credits	51

Applied Science Option

Mathematics/Physical Science Requirements ⁴	3
Engineering Sciences ^{2,4}	3
Primary Field ¹	18
Secondary Field ¹	12
Major Field or related electives ⁴	3
Approved electives ^{4,6}	9
Senior research project ⁵	3
Total credits	51

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.

¹All courses used to fulfill the primary and secondary fields of concentration must be at the 300- and 400-level.

²Engineering Science courses are courses offered by the Clark School of Engineering which have a prefix beginning with EN (e.g., ENES, ENME, ENEE, etc.). These elective courses may be in a student's primary or secondary field of concentration.

³Approved electives must be technical (mathematics, physical sciences, or

engineering sciences) but may not be in the primary or secondary fields of concentration.

*At least 50 percent of the elective courses (mathematics, physical sciences, engineering sciences, approved electives) must be at the 300- or 400-level.

§Students are required to complete 15 credits of approved electives which include a senior-level project or research assignment relating the engineering and science fields of concentration, unless specifically excused.

¶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.

¶For the engineering option, the program must contain the proper design component, as specified by ABET requirements. It is the responsibility of students and their advisers to ensure that the requirements are satisfied by the appropriate selection of courses in the primary and secondary fields of concentration.

ENGLISH LANGUAGE AND LITERATURE (ENGL)

College of Arts and Humanities

3101 (SQH) Susquehanna Hall, 405-3809

Undergraduate Advisers: 2115 SQH, 405-3825

Freshman English Office: 2101 SQH, 405-3771

Professional Writing Program: 3119 SQH, 405-3762

Chair: Coletti

Professors: Auchard, Auerbach, Berlin, Bryer, Caramello, Carretta, Coletti, Collier, Collins, Coogan, Cross, Fraistat, Freedman (Emeritus), Fry, Grossman, D. Hamilton, Handelman[†], Holton, Howard, Isaacs, Jellema (Emeritus), Kauffman, Kolker, Kornblatt, Lanser[†], Lawson, Lutwack (Emeritus), Mack, McKnight, Miller (emerita), Myers (Emeritus), Panichas (Emeritus), Pearson, C. Peterson, W. Peterson, Plumly, Salamanca (Emeritus), Trousdale, Turner, Vitzthum, Washington, Whittemore (Emeritus), Winton, Wyatt

Associate Professors: Barry, Cartwright, Cate, Coleman, Dobin, Donawerth[†], Fahnestock, Flieger, G. Hamilton, Hammond, Kleine, Leinwand, Leonardi, Levin, Levine, Loizeaux, Marcuse, Moser, Norman, Robinson, Schilb, Smith, Van Egmond, Wang

Assistant Professors: Chuh, Cohen, King, Lindemann, Logan, McDowell, Ray, Richardson, Rutherford, Sherman, Upton

Instructors: Miller, Ryan, Shapiro, Tercek

[†]Distinguished Scholar-Teacher

Advising

Departmental advising is mandatory for all majors each semester.

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

Requirements for the English major include a minimum of 45 upper-level credits completed and the foreign language requirement of the College of Arts and Humanities. 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 specialization 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 a) African-American literature, b) literature of peoples of color, c) literature by women, or d) gay, lesbian and bisexual literature
6. A senior seminar, to be taken after 86 credits and at least two upper-level English courses

Specializations (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 Specialization (special permission required)
11. Film and Visual Studies (special permission required)

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

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 SQH, 405-3825).

English and English Education Double Major

In conjunction with the College of Education, the English Department offers a special 125-credit program for students wishing to double major in English and English Education, allowing them to earn a certificate to teach English at the secondary level. For a list of requirements, contact the Office of Undergraduate Studies (2115 SQH, 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 adviser as early as possible in their college careers.

The Writing Center

The Writing Center, 0125 Taliaferro, 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

4112 Plant Sciences Bldg, 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, Steinhauer (Emeritus), Wood (Emeritus)

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

Assistant Professors: Shultz, Thorne

Assistant Research Scientist: Sina

The Major

Entomology is an Advanced Program Specialization in the area of Biological Sciences. 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 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 advisers in choosing electives.

Requirements for Specialization

See Biological Sciences elsewhere in this chapter and Entomology adviser for specific program requirements.

Course Code: ENTM

ENVIRONMENTAL SCIENCE AND POLICY (ENSP)

0206 H.J. Patterson Hall, 405-1345

bj5@umail.umd.edu

Director: James

Environmental Science and Policy is a new broadly interdisciplinary major, drawing courses and faculty from 20 departments and 4 Colleges (Agriculture and Natural Resources; Behavioral and Social Sciences; Computer, Mathematical, and Physical Sciences; and Life Sciences). There are 13 areas of concentration within the major, most of which are also cross-disciplinary. Students will be admitted into a particular area of concentration and will be assigned an adviser from among the faculty who are responsible for the particular area. Students will have the opportunity to change area of concentration from that originally selected as they learn about the diversity of the major and its offerings. The degree (B.A. or B.S.) earned will be in Environmental Science and Policy and in the area of concentration chosen. For some administrative purposes, the students will be associated with the Colleges of their academic advisers.

The Major

Environmental Science and Policy students will take a core of 10 courses, including 9 lower-division courses chosen from restricted lists and a Capstone course required of all majors during their senior year, and upper-division courses defined by the area of concentration. After accounting for prerequisites, CORE courses, and upper-division requirements, any area of concentration may be completed while allowing approximately 24 hours of free electives in a normal 120-hour program leading to the B.S. or B.A. degree. Some areas of concentration require an internship, and students will be encouraged to pursue practical work and volunteer opportunities as part of their undergraduate programs.

Requirements for Major

ENSP Core

1. A one-year introductory course sequence (ENSP 101-102) for three credits each semester, emphasizing Environmental Science in the first semester and Environmental Policy in the second.
2. At least one course each from five of the following six groups: a) Biology (BIOL 106); b) Chemistry (CHEM 103); c) Earth Sciences (GEOL 103, GEOL 107, GEOL 100-110, GEOG 201-211, AGRO 202, METO 200); d) Economics (AREC 240, ECON 203); e) Geography (GEOG 100, GEOG 170-171, GEOG 202); f) Government & Politics (GVPT 273, AREC 332).
3. One semester of Calculus (MATH 140 or MATH 220)
4. One semester of Statistics (BIOM 301, BIOM 401, ECON 321, PSYC 200, SOCY 201, STAT 400)
5. The Capstone course (a 400-level ENSP course in the Senior year)

Areas of Concentration

Agroecology; Biodiversity and Conservation Biology; Earth Surface Processes; Environmental Economics; Environmental Management; Environmental Mapping and Data Management; Environmental Plant Protection; Environmental Politics and Policy; Land Use; Landscape Ecology; Society and Environmental Issues; Soil, Water, and Land Resources; Wildlife Resources and Conservation

Advising

Advising is mandatory. Before registering, students should contact the Director of ENSP to discuss the program requirements and options, to explore their interests in possible areas of concentration, and to be assigned a faculty adviser.

FAMILY STUDIES (FMST)

College of Health and Human Performance

1204 Marie Mount Hall, 405-3672

<http://www.wam.umd.edu/~fmst>

Professor and Chair: Koblinsky

Professors: Billingsley, Epstein, Gaylin, Hampton

Associate Professors: Anderson, Leslie, Mokhtari, Myricks, Randolph, Rubin, Wallen

Instructor: Werlinich

Lecturers: Davis, Millstein

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 individuals within the family, and 3) the relationship of the family to its larger socio-cultural, historical, political and economic context. Students develop a working knowledge of individual and family development throughout the life span, interpersonal relations, and resource use. Courses examine family dynamics, changing family structures, ethnic families, intergenerational relations, family crises, family violence, family policy, legal problems, and family life enrichment. Students study prevention and intervention strategies for combatting family problems. The reciprocal relationships between families and the social policies, practices and management of institutions and organizations are examined. The curriculum prepares students for careers in human services, human resource management, family life education, public policy and related positions emphasizing the family. Opportunities exist in public, private and non-profit agencies and institutions working with family members, entire family units or family issues. Graduates are also prepared for graduate study in the family sciences, family therapy, human services administration, health, law, social work, human resource management 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 477—Internship and Analysis in Family Studies (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)

(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 courses. Required of all majors. All students must earn a grade of C or better in all courses applied toward completion of the major.

ECON 201—Principles of Economics I (3)
 or FMST 290—Family Economics (3)
 or ECON 203—Principles of Economics II (3)
 or ECON 205—Fundamentals of Economics (3)
 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 (3)
 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
<http://www.enfp.umd.edu>

Professor and Chair: Spivak
 Professors: Brannigan, Quintiere
 Associate Professor: Mowrer
 Assistant Professors: Milke, Torero
 Lecturers (part-time): Gagnon, Nelson
 Emeritus: Bryan
 Adjunct Professor: Rockett
 Affiliate Associate Professor:

The Major

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

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. These cover a wide spectrum involving safety assessment reviews, hazards analysis and research, loss prevention and regulatory issues.

Requirements for Major

		Semester I	II
Freshman Year			
Core Program Requirements (incl. ENGL 101)	3	6	
CHEM 103 and 113 or 133 — General Chemistry	4	(4)	
MATH 140, 141 — Analysis I, II	4	4	
ENES 100 — Introduction to Engineering Design	3		
ENES 102 — Statics	2		
PHYS 161 — General Physics I	3		
Total	14	15	

Sophomore Year

Core Program Requirements	3	3
MATH 240 — Linear Algebra or		
MATH 241 — Analysis III	4	
MATH 246 — Differential Equations	3	
PHYS 262, 263 — General Physics	4	4
ENES 221,220 — Dynamics/Mechanics of Materials	3	3
ENFP 251 — Introduction to Fire Protection Engineering	3	
ENFP 255 — Fire Alarm and Special Hazards Design	3	
Total	17	16

Junior Year

Core Program Requirements	3	6
ENXX or CMSC — Approved Computational Analysis or		
Computer Applications	3	
ENFP 300 — Fire Protection Fluid Mechanics	3	
ENFP 310 — Water Based Fire Protection Systems Design	3	
ENFP 312 — Heat Transfer Applications in Fire Protection	3	
ENFP 320 — Fire Assessment Methods and Laboratory	4	
Elective — Approved Elective (CHEM, ENFP, ENES, ENXX)*	3	
ENME 320 or 232 — Thermodynamics	3	
Total	16	15

Senior Year

Core Program Requirements	3	
ENFP 405 — Structural Fire Protection	3	
ENFP 411 — Fire Risk Assessment	3	
ENFP 415 — Fire and Combustion Phenomena	3	
ENFP 416 — Problem Synthesis and Design (Capstone)	3	
ENFP 421 — Life Safety and Risk Analysis	3	
Elective — Approved Electives (CHEM, ENFP, ENES, ENXX)*	6	3
ENFP 450 — Professional Development Seminar	1	
Total	15	13

*At least 3 credits of Approved Electives must be in ENFP and statistics is a recommended course, e.g. STAT 400, BIOM 401, or MATH 400 and a further chemistry course is recommended. A list of approved electives is available.

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Admission

Admission requirements are identical to those set by the A. James Clark School of Engineering. (See A. James Clark School of Engineering section in chapter 6.)

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. The majority of the scholarships are for junior and senior students, but some scholarships are available for first- and second-year students.

Honors and Awards

Academic achievement awards are sponsored by the department and the student professional-honor societies. These awards are presented at the annual A. James Clark School of Engineering Honors Convocation. Eligibility criteria for these awards are available in the department Office, 0151 Engineering Classroom Building. Qualified students in the department are eligible for participation in the A. James Clark School of Engineering honors program.

Student Organizations

The departmental honor society, Salamander, is open to academically eligible junior and senior students. The University of Maryland student chapter of the Society of Fire Protection Engineers is the professional society for all interested students in the department. Information on both organizations may be obtained from current members in the student lounge, 1123 Engineering Laboratory Building, 405-3999.

Course code: ENFP

FOOD SCIENCE PROGRAM

Please see entry for Nutrition and Food Science later in this chapter.

FRENCH AND ITALIAN LANGUAGES AND LITERATURES (FREN)

College of Arts and Humanities

3106C Jimenez Hall, 405-4024

Professor and Chair: Mossman

Professors: Fink, MacBain, Ch. Russell, Tarica

Associate Professors: Black, Brami, Falvo, Hage[†], Verdaguer

Assistant Professor: Campagne, Frindethié

Lecturers: Amodeo, Bondurant, C.P. Russell

Affiliate Lecturer: Jacoby

emeritae: Meijer, Therrien

[†] Distinguished Scholar-Teacher

French is one of the world's great languages of culture, providing access to an outstanding body of literature and criticism, studies in the arts, the humanities, the social and natural sciences, and career opportunities in commerce, foreign affairs, and the academic world. The department seeks to provide an atmosphere conducive to cultural awareness and intellectual growth. It hosts active student clubs and a chapter of a national honor society. It sponsors a study-abroad program (Maryland-in-Nice) and works

actively with the language clusters of the Language House.

The French Major

Requirements for the French major include the College of Arts and humanities requirements of 45 upper-level credits completed. The College foreign language requirement will be automatically fulfilled in the process of taking language major courses.

The undergraduate major in French consists of 36 hours of French courses above FREN 203. Three options, all having the same core, lead to the Bachelor of Arts degree: (1) French language and literature, (2) French language and culture, and (3) French/International Business. No grade lower than C may be used toward the major. Students intending to apply for teacher certification should consult the Director of Undergraduate Advising as early as possible for proper planning.

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.

Advising

Departmental advising is mandatory for second-semester sophomores and seniors.

Core required of all majors (9 credits): FREN 204, 250, 301.

Additional requirements outside French for all three options: 12 credits in supporting courses as approved by department, or at least 12 credits (six credits at 200 level and six credits at 300-400 level) in one specific area, representing a coordinated plan of study.

French Language and Literature Option (27 credits)

In addition to core: FREN 351, 352; 311 or 312 or 404; 401 or 405; 302 or 402; four additional 400-level courses of which three must be in literature (only one of FREN 480-485 may count towards the major).

French Language and Culture Option (27 credits)

In addition to core: FREN 351, 352; 311 or 312 or 404; 302 or 401 or 402; 471 or 472; 473; three additional 400-level courses (only one of FREN 480-485 may count towards the major).

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 Codes: FREN, ITAL

GEOGRAPHY (GEOG)

College of Behavioral and Social Sciences

2181 Lefrak Hall, 405-4050

<http://www.geog.umd.edu>

Acting Chair: Goward

Professors: Goward, Leatherman, Mitchell, Prince, Townshend

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

Assistant Professors: Boberg, Dubayah, Geores, Liang

Lecturers (part-time): Eney, Hall, Thomas, Vanderbloemen

Professor Emeritus: Harper, Wiedel

Adjunct Faculty: Cebrian, Walthall, Williams

*Joint Appointment with unit indicated.

The Major

The Department of Geography offers programs of study leading to the Bachelor of Science degree. Many students find that the multiple perspectives of geography form an excellent base for a liberal arts education. The abilities to write clearly and to synthesize information and concepts are valued highly in geographical education and practice. Students of geography must master substantive knowledge either in the physical/natural sciences or in the behavioral/social sciences in addition to methodological knowledge. International interests are best pursued with complementary study in foreign languages and area studies.

The central question in geographical study is "where?" Geographers research locational questions of the natural environment, of social and economic systems, and of past human activity on the land. Students of geography must master a variety of techniques that are useful in locational analysis, including computer applications and mapping, map making or cartography, air-photo interpretation and remote sensing, field observation, statistical analysis, and mathematical modelling.

Increasingly, geographers apply their combined methodological and substantive knowledge towards the solution of society's problems. Some graduates find geography to be an excellent background for careers in defense and intelligence, journalism, law, travel and tourism, the nonprofit sector, and business and management. Most professional career positions in geography require graduate training. Many geographers take positions in scientific research, planning, management and policy analysis for both government and private agencies.

Major Requirements Including Program Options

Within any of the specializations available in the geography major program it is possible for students to adjust their programs to fit their individual interests. The geography major totals 35 semester hours. In addition to the 35 semester hours, the geography major is required to take an additional 15 semester hours of supporting course work outside of the department. The hours can be either in one department or in an area of specialization. An area of specialization requires that a written program of courses be reviewed and placed on file by the department adviser. See Professor Cirrincione, 1125 LeFrak Hall, 405-3140. Supporting courses generally are related to the area of specialty in geography. The pass-fail option is not applicable to major or supporting courses. A minimum grade of C in each course is required for major and supporting courses.

The required courses for geography majors are as follows:

	Semester Credit Hours
Primary Courses (GEOG 201, 202, 211, 212).....	8
An upper-level physical geography course.....	3
An upper-level human geography course.....	3

An upper-level geographic technique course.....	3
Upper-level geography electives.....	15
Quantitative Methods or Statistics (e.g. GEOG 305 or its equivalent).....	3
Total.....	35

Geography Primary Courses

The following four courses provide the initial base of the Geography Program:

GEOG 201—Geography of Environmental Systems.....	3
GEOG 202—The World in Cultural Perspective.....	3
GEOG 211—Geography of Environmental Systems Laboratory.....	1
GEOG 212—The World in Cultural Perspective Lab.....	1

Upper-Level Elective

At least one upper-level course each in physical geography, human geography, and geographic technique is required regardless of the speciality of the individual student's program. These courses build on the initial base provided by the Primary Courses, and also serve as the basis for selection of upper-level geography courses.

Suggested Program of Study for Geography

	Semester Credit Hours
Freshman Year	
ENGL 101—Introduction to Writing.....	3
MATH 110—Elementary Mathematical Models.....	3
or MATH 115—Precalculus.....	3
University CORE Distributive Studies.....	24
(To be chosen from the three categories of Humanities-Arts, Math-Sciences, and Social Sciences)	
Sophomore Year	
University CORE Distributive Studies.....	4
(To be chosen from Math-Sciences lecture-laboratory courses)	
GEOG 201—Geography of Environmental Systems.....	3
GEOG 202—The World in Cultural Perspective.....	3
GEOG 211—Geography of Environmental Systems Lab.....	1
GEOG 212—The World in Cultural Perspective Lab.....	1
Quantitative Methods (GEOG 305 or its equivalent).....	3
Electives.....	15
Junior Year	
ENGL 391 or GEOG 310.....	3
CORE Advanced Studies.....	3
Advanced Human Geography.....	3
Advanced Physical Geography.....	3
Advanced Technique Geography.....	3
Geography Upper-Level Elective.....	3
Electives.....	12
Senior Year	
Geography Upper-Level Electives.....	12
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 Primary courses, totalling eight hours: one upper-level course in physical geography, and one in human geography plus six hours of systematic electives, totalling 12 hours; and Cartography/Geographic

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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 adviser.

Geography Minor and Secondary Education Geography Specialization

Secondary Education majors with a concentration in geography are required to take 29 hours in geography. Eight hours of Primary Courses (GEOG 201/211, 202/212) are required, plus at least one upper-level gateway course in physical geography, human geography, and geographic techniques. The remaining 12 hours are to be selected from upper-level systematic geography electives. 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 201/211, 202/12, and at least one upper-level gateway course in physical geography, human geography, and geographic techniques.

Internship Opportunities

The department offers a one-semester internship program for undergraduates (GEOG 384 and 385). The goal of the program is to enhance undergraduates' intellectual growth and career opportunities. The internship provides an opportunity for the students 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 201/211, 202/212, 305 or its equivalent, and the upper-level writing requirement. An application form from the undergraduate geography adviser must be submitted one semester before the internship is desired. See Professor Cirincione, 1125 LeFrak Hall (405-4053).

Honors

For information on the geography honors program, contact the undergraduate adviser.

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
<http://www.geol.umd.edu>

Professor and Chair: Brown
Professors: Candela, Chang, Wylie†
Associate Professors: McLellan, Prestegard, Ridky, Segovia, Stifel (emeritus), Walker
Assistant Professor: Gallup
Affiliate Associate Professor: Kearney
Adjunct Professor: Zen
Adjunct Associate Professor: Luhr
Adjunct Assistant Professors: Böhmle, Shirey
Assistant Research Scientists: Holtz, Piccoli, Tuttle
†Distinguished Scholar-Teacher

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 the University of Maryland, College Park offering camps approved by the department.

	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 331—Invertebrate Paleontology	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 423—Optical Mineralogy	3
GEOL 443—Petrology	4
GEOL 490—Field Camp	6
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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

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

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 adviser 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 STUDIES (GERM)**College of Arts and Humanities**

3215 Jimenez Hall, 405-4091

Associate Professor and Chair: Walker

Professors: Beicken, Best, Oster, Pfister, Frederiksen†

Associate Professors: Fleck, Greene-Gantzberg, Richter, Strauch

Emeriti: Bilik, Herin, Jones

†Distinguished Scholar-Teacher

***Changes in major requirements are under review. Students should consult a departmental adviser for updated information.**

The Major

The undergraduate major in Germanic Studies 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 adviser at least once each semester to update their departmental files and obtain written approval of their program of study.

Advising

Departmental advising is mandatory for second-semester sophomores, juniors, and seniors.

Requirements for Major

Requirements for the Germanic Studies major include the College of Arts and Humanities requirement of 45 upper-level credits completed.

The College foreign-language requirement will be automatically fulfilled in the process of taking language major courses.

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 adviser 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.

Honors in German

108 Health Education

The department offers an extensive Honors Program for majors. The Honors Program affords Honors students sustained individual contact with faculty members. Honors Students are called on to work independently, to pursue a project that carries them beyond the regular undergraduate curriculum. Interested students should ask for detailed information from the department Honors Studies Director.

Course Code: GERM

RUSSIAN LANGUAGE AND LITERATURE (RUSS, SLAV)

This program has moved to the Department of Asian and East European Languages and Cultures.

GOVERNMENT AND POLITICS (GVPT)

College of Behavioral and Social Sciences

3140 Tydings Hall, 405-4156

<http://www.bsos.umd.edu/gvpt.html>

Professor and Chair: Wilkenfeld

Professors: Alford[†], Butterworth[†], Davidson, Dawisha, Elkin, Franda, Glass, Gurr, Harrison (emeritus), Hathorn (emeritus), Heisler, Marando, McNelly (emeritus), Oppenheimer[†], Phillips, Piper, Pirages, Plischke (emeritus), Quester, Stone, Uslaner, Walters* (Afro-American Studies)

Associate Professors: Herrnson, Kaminski, Lalman, McIntosh, Pearson, Soltan, Swistak, Terchek, Tismaneanu, Williams, Wilson* (Afro-American Studies)

Assistant Professors: Conca, Gimpel, Graber, Haufler, Johnson (Afro-American Studies), Matthes* (Women's Studies), Schreurers

Lecturer: Vietri

[†]Distinguished Scholar-Teacher

* Joint Appointment with unit indicated

The Department of Government and Politics offers programs for the general student as well as for students who are interested in careers in government, the public sector, politics, foreign assignments, teaching, a variety of graduate programs, and law schools. Satisfactory completion of requirements leads to a Bachelor of Arts degree in government and politics.

The study of politics is both an ancient discipline and a modern social science. The origin of the discipline can be traced back to the earliest times when philosophers, statesmen, and citizens studied the nature of government, justice, responsibility, and the consequences of political action. More recently, the study of politics has also emphasized scientific analysis and methods of observations about politics. Today, the discipline reflects a broad effort to collect data about politics and governments utilizing relatively new techniques developed by all of the social sciences.

The Department of Government and Politics combines philosophical and scientific concerns in its overall program as well as in specific courses. It emphasizes such broad areas as political development, policy analysis, social justice, political economy, conflict, and human rights. These broad conceptual areas are integral components of study in the discipline. The areas are commonly referred to as American government and politics; comparative government; political theory; international relations; public administration; public law; public policy and political behavior.

Majoring in Government and Politics the Academic Review

All majors are subject to a performance review. To meet the provisions of the review, students must complete (1) GVPT 100, GVPT 170, and ECON 201 with a minimum grade-point average of 2.6 for the three courses and (2) a minimum cumulative GPA of 2.0.

Freshman Majors and the Academic Review

Entering freshmen can gain admission to the Department of Government and Politics upon admission to the University. Such students are to pass 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 Students and Transfer Majors. New transfer students to the University as well as on-campus students changing majors to Government and Politics with *fewer than 56 credits* will be required to meet the

performance review (as identified above) by the time they have completed 30 hours after transferring to the department. Those with *56 credits or more* will have to meet the performance review by the time they have completed 15 hours after transferring to the department.

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 of the 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 36 credits must be in upper-level courses and all majors are required to complete GVPT 100, GVPT 170, and GVPT 241.

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 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 graded GVPT internship credit will apply to the 36 hours needed in the major. Internship credit graded on a pass/fail basis may not be used to satisfy the GVPT major requirements. 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 Acting Chair: Wilson

Assistant Chair: Hyde

Professors: Beck, Burt, Feldman, Greenberg, Leviton, Wilson

Associate Professors: Clearwater, Desmond, Meiners

Assistant Professors: Sawyer, Schulken, Spalding

Instructors: Hyde, Schiraldi

Faculty Research Assistants: Baker, Brown, Chu, May, Higley, Lusby, Rotz,

Scheidhauer, Swartzlander

Lecturers: Ko, Pinciario, Reynolds, Simson

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 in chapter 6 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:

	Semester Credit Hours
Freshman Year	
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

Sophomore Year	
HLTH 230—Introduction to Health Behavior	6
PHIL 140—Contemporary Moral Issues.....	3
ZOOL 201, 202—Human Anatomy and Physiology I and II	4,4
Required Health Electives	6
PSYC 221—Social Psychology.....	3
HLTH 105—Science and Theory of Health	2
Core Requirement.....	9

School Health

Junior Year	
ENGL 391 or 393—Advanced Composition or Technical Writing	3
HLTH 420—Methods and Materials in Health Education.....	3
EDHD 300S—Human Development and Learning	6
EDCI 390—Principles and Methods of Secondary Education	3
Required Health Elective	3
EDHD 340—Human Development Aspects of the Helping Relationship.....	3
EDMS 410—Principles of Testing and Evaluation.....	3
EDCP 417—Group Dynamics and Leadership	3
Core Requirement.....	3

Senior Year	
HLTH 340—Curriculum, Instruction and Observation	3
Required Health Electives	6
EDPA 301—Foundations of Education.....	3
EDCI 491—Student Teaching in Secondary Schools Health.....	12
Core Requirement.....	6

Community Health

Junior Year	
ENGL 391 or 393—Advanced Composition or Technical Writing	3
MICB 100—Basic Microbiology.....	4
EDHD 340—Human Development Aspects of the Helping Relationship.....	3
EDMS 451—Introduction to Educational Statistics.....	3
HLTH 420—Methods and Materials in Health Education.....	3
HLTH 391—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

Senior Year	
Required Health Electives	9
HLTH 490—Principles of Community Health	3
FMCD 483—Family and Community Service Systems	3
HLTH 491—Community Health Internship	12

Advising

Advising is mandatory. Undergraduate Health Education Adviser: 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 grade point average.

Course Code: HLTH

HEARING AND SPEECH SCIENCES (HESP)

College of Behavioral and Social Sciences

0100 LeFrak Hall, 405-4214
h-office@bss1.umd.edu

Associate Professor and Chair: Ratner

Professors: McCall, Yeni-Komshian

Associate Professors: Gordon-Salant, Ratner, Roth

Instructors: Daniel, Dickson, Hart-Litz, McCabe, Mele-McCarthy, Perlroth, 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 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 36 semester hours needed for a major, 12 semester hours of supporting courses in statistics and other related fields are required. For these 12 hours, a C average is required.

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

Required courses for the HESP major:

HESP 202—Introduction to Hearing and Speech Sciences	3
HESP 300—Introduction to Psycholinguistics.....	3
HESP 305—Anatomy and Physiology of the Speech Mechanism	3
HESP 311—Anatomy, Physiology, and Pathology of the Auditory System	3
HESP 400—Speech and Language Development in Children.....	3
HESP 402—Speech Pathology I: Language Disorders in Children	3
HESP 403—Introduction to Phonetic Science.....	3
HESP 404—Speech Pathology II: Voice and Fluency Disorders	3
HESP 407—Bases of Hearing Science	3
HESP 411—Introduction to Audiology	3

Electives—Students must take six credits from the following offerings:

HESP 386—Experiential Learning	3
HESP 417—Principles and Methods in Speech Language Pathology and Audiology	3
HESP 418—Clinical Practice in Speech Language Pathology and Audiology	3
HESP 498—Seminar in Hearing and Speech Sciences	3
HESP 499—Independent Study	3

110 Horticulture and Landscape Architecture

Allied/Related Fields (12 credits):

In addition to a required statistics course, the student will take nine credits from course offerings in Allied/Related Fields. A full list of these offerings is available in the Hearing and Speech Sciences Department undergraduate guide.

Advising

Information on advising for hearing and speech sciences may be obtained by calling the department office, 405-4214. An undergraduate program guide is available.

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

HISTORY (HIST)

College of Arts and Humanities

2115 Francis Scott Key Hall, 405-4265

Professor and Chair: Harris

Professors: Bedos-Rezak, Belz, Berlin[†], Brush^{††}, Callcott[†] (emeritus), Cockburn, Cole[†] (emeritus), Eckstein, Evans (emeritus), Foust, Friedel (emeritus), Gilbert[†], Gordon (emeritus), Gullickson, Harlan^{†††} (emeritus), Henretta[†], Kaufman, Jashemski[†] (emerita), Kent (emeritus), Lampe, Sutherland, Warren (emeritus), Wright, Yaney (emeritus)

Associate Professors: Breslow, Cooperman, Flack, Grimsted, Holum, Majeska, Mayo, Moss, Muncy, Perinbam, Ridgway, Rozenblit, Stowasser (emeritus), Sumida, Zhang, Zilfi

Assistant Professors: Bradbury, Bravman, Brooks, David-Fox, Lapin, Lyons, Palmie, Rowland, Sicilia, Wetzell, Williams,

Adjunct: Carr, Papenfuse

Affiliate: Moses, Struna

[†]Distinguished Scholar-Teacher

^{†††}Distinguished University Professor

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 adviser assists each major in planning a curriculum to meet his or her personal interests. A "program plan," approved by the adviser, should be filed with the department as soon as possible. We require that students meet with an assigned adviser, both in the department and the College of Arts and Humanities, once every semester.

The department sponsors a History Undergraduate Association which majors and other interested students are encouraged to join. It also sponsors Phi Alpha Theta, study-abroad programs, and experiential learning (internships).

Requirements for Major

Requirements for the History major include a minimum of 45 upper-level credits completed and the foreign language requirement of the College of Arts and Humanities, and 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 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 Adviser's Office from the main office of the History Department, or from a history faculty adviser.

I. Survey Courses

1. The requirement is 12 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. For further information, see the department adviser.
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 15 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, Western Europe, the United States, East Asia, Africa, Eastern Europe, Russia, Britain;
 - b. Chronological periods: Ancient World, Medieval Europe, Early Modern Europe
 - c. Themes: Science and Technology, Intellectual, Economic, Religious, Diplomatic, Social, Women's, African-American, Jewish, Legal and Constitutional, Military History.
3. Students are encouraged to select upper-level courses only for area of concentration.
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. 12 Hours of History in at Least Two Areas Outside the Area of Concentration

1. Students are encouraged to select mainly 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.

A grade of C or higher is required in all required history and supporting courses.

A.P. and I.B. credits accepted.

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)

College of Agriculture and Natural Resources

Department of Natural Resource Sciences and Landscape Architecture
Plant Sciences Building

Horticulture : 405-4351, 405-4355

<http://www.inform.umd.edu/EdRes/Colleges/AGRI/Depts/Horticulture>

Professor and Chair: Weismiller (Acting)

Professors: Ng, Oliver, Quebedeaux, Solomos, Walsh

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

Assistant Professors: Coleman, Ererts, Lea-Cox, J.H. Sullivan

Instructor: Mityga

Lecturer: Nola

Professors Emeriti: Gouin, Link, Scott, Shanks, Stark, Thompson, Wiley

The Department of Natural Resource Sciences and Landscape Architecture offers five undergraduate majors. Four majors lead to a bachelor of science degree (B.S.) and the fifth major, landscape architecture, leads to a bachelor of science in landscape architecture (B.L.A.).

Horticulture

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 forestry 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. Horticulture majors may choose from three options: Horticulture Production, Horticultural Science, and Landscape Management. Each major prepares students either for graduate study or entry into horticultural and landscape-related industries or business.

Curriculum in Horticulture (BS)

Horticulture Major

Requirements—All Horticulture Options	Semester Credit Hours
AGRO 202—Fundamentals of Soil Science.....	4
CHEM 103—General Chemistry	4
ENTM 205—Principles of Entomology	4
MATH 115—Precalculus	3
PBIO 365—Introductory Plant Pathology	4
HORT 100—Introduction to Horticulture	4
HORT 202—Management of Horticultural Crop Production.....	4
HORT 271—Plant Propagation.....	3
HORT 398—Seminar	1

Horticultural Production Option

Production Requirements

AGRO 411—Principles of Soil Fertility	3
AGRO 453—Weed Science	3
AREC 250—Elements of Agricultural and Resource Economics	3
AREC 306—Farm Management or	
AREC 414—Agricultural Business Management	3
CHEM 104—Fundamentals of Organic and Biochemistry	4
HORT 201—Environmental Factors in Horticultural Crop Production.....	4
PBIO 420—Plant Physiology.....	4
HORT 201—Environmental Factors and Horticultural Crop Production.....	3
HORT 385—Horticultural Internship	3
HORT 474—Physiology of Maturation and Storage of Horticultural Crops ..	3

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 Horticultural Production Option requirements and electives.....	73
Additional Core Program requirements	27
University Electives.....	20

Horticultural Science Option

Science Requirements

BIOL 105—Principles of Biology I	4
BIOL 222—Principles of Genetics.....	4
CHEM 113—General Chemistry II	4
CHEM 233—Organic Chemistry I	4
MATH 220—Elementary Calculus I	3
HORT 201—Environmental Factors in Horticultural Crop Production or	
PBIO 200—Introductory Plant Biology	4
PBIO 420—Plant Physiology.....	4
PHYS 121—Fundamentals of Physics I	4
HORT 399—Special Problems.....	2
HORT 472—Advanced Plant Propagation.....	2
HORT 474—Physiology of Maturation and Storage of	
Horticultural Crops	3

Advanced Horticulture Electives (Select one of the following:)

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

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
PBIO 410—Plant Biochemistry	4
PHYS 122—Fundamentals of Physics II	3

Total Horticulture Science Option Requirements and Electives	76-78
Additional Core Program requirements	27
University Electives	15-17

Landscape Management Option

Landscape Management Requirements

AGRO 305—Introduction to Turf Management, or	
AGRO 411—Principles of Soil Fertility	3
AREC 250—Elements of Agricultural & Resource Economics	3
AREC 306—Farm Management, or	
BMGT 353—Retail Management	3
BMGT 220—Principles of Accounting.....	3
BMGT 350—Marketing Principles and Organization	3
CHEM 104—Fundamentals of Organic and Biochemistry	4
LARC 140—Graphic Fundamentals	3
HORT 160—Introduction to Landscape Architecture	3
HORT 200—Land Surveying	2
HORT 201—Environmental Factors in Horticultural Crop Production.....	4
HORT 253—Woody Plant Material I.....	3
HORT 254—Woody Plant Material II	3
HORT 255—Landscape Design and Implementation	4
HORT 320—Principles of Site Engineering.....	4
HORT 389—Horticultural Internship	3
HORT 452—Principles of Landscape Establishment and	
Maintenance	3
HORT 321—Landscape Structures and Materials	3

Total Landscape Management Option requirements	85
Additional Core Program requirements	21
University Electives.....	14

Course Code: HORT

112 Human Nutrition and Food Systems

HUMAN DEVELOPMENT (Institute for Child Study) (EDHD)

College of Education

3304 Benjamin Building, 405-2827

Professor and Director: Hardy

Professors: Alexander, Eliot, Fein, Fox, Guthrie, Porges, Rubin, Seefeldt[†], Torney-Purta

Associate Professors: Bennett, Byrnes, Flatter, Gardner, Killen, Klein, Marcus, Nettles, Robertson-Tchabo, Wentzel, Wigfield

Assistant Professors: Green, Jones, Metsala, Smith

Emeriti: Bowie, Dittman[†], Goering, Hatfield, Huebner, Morgan[†], Tyler

[†] Distinguished Scholar-Teacher

The Department of Human Development offers: (1) a major in Early Childhood Education; (2) undergraduate courses in human development at the 200-, 300-, and 400-levels; (3) graduate programs leading to the M.A., M.Ed., Ed.D., and Ph.D. degrees and the A.G.S. certificate; and (4) field experiences and internships to develop competence in applying theory to practice in schools and other settings. Concentrations 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. Undergraduate students may elect human development courses 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. Undergraduates may participate in these programs through course work and internships. If interested, contact the department/Institute.

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.

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 chapter 6.

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 3304 Benjamin.

Honors and Awards

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

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 advisers 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
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: FMST 332; SOCY 343; NFSC 100, EDCI 416	3
EDCI 280 School Service Semester	3

Professional Courses

The Early Childhood Professional Block I starts only in the Fall Semester and is a prerequisite to Professional Block II. 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), is normally completed after Professional Block II. See adviser for program planning.

Professional Block I:

EDHD 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
EDHD 312—Professional Development Seminar	3
EDHD 489—Field Experiences in Education	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
EDCI 419B—Human Development and Learning in School Settings	3

Professional Block III:

EDHD 421—Student Teaching: Preschool	4
EDHD 422—Student Teaching: Kindergarten	4
EDHD 423—Student Teaching: Primary Grades	8

Course Code: EDHD

HUMAN NUTRITION AND FOOD SYSTEMS

For information, consult the Nutrition and Food Sciences entry elsewhere in this chapter.

HUMAN RESOURCE MANAGEMENT

For information, consult the College of Business and Management entry in chapter 6.

JEWISH STUDIES PROGRAM

College of Arts and Humanities

0113 Woods Hall, 405-4975

Director: Cooperman

Professors: Beck, Berlin, Handelman

Associate Professors: Cooperman, Manekin, Rozenblit

Assistant Professors: Fradkin, Lapin

Instructors: Gur, Levy

The Major

The Jewish Studies major provides undergraduates 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, and medieval and modern Hebrew literature. Yiddish language and literature comprise an important sub-field.

Departmental advising is mandatory for second-semester sophomores and seniors.

Requirements for Major

Requirements for the Jewish Studies major include the College of Arts and Humanities requirement of 45 upper-level credits completed. The College foreign language requirement will be automatically fulfilled in the process of taking Hebrew language courses. The undergraduate major requires 48 semester hours (27 hours minimum at 300-400 level) in Jewish Studies. These courses may include courses offered by Jewish Studies or cross-listed by Jewish Studies with the Departments of Hebrew and East Asian Languages and Literatures, History, Philosophy, English, Women's Studies, and Comparative Literature.

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 adviser.

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 entries for Department of Asian and East European Languages and Cultures and East Asian Studies certificate elsewhere in this chapter. Students may also pursue a Jewish History concentration through the Department of History.

JOURNALISM (JOUR)

For information, consult the College of Journalism entry in chapter 6.

KINESIOLOGY (KNES)

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

Professor and Chair: Clarke

Associate Chair: Wrenn

Professors: Clark, Dotson, Hurley, Iso-Ahola, Steel, Struna

Associate Professors: Ennis, Hagberg, Hatfield, Phillips, Rogers, Wrenn

Assistant Professors: Jeka, McDaniel, Solmon, Vander Velden

Lecturers: Drum, Frazer, Owens, Wenhold

Instructors: Brown, Scott

Emeriti: Eyler, Hult, 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. All interested students are urged to schedule an advising appointment with the program coordinator early on.

Physical Education Degree Requirements

Fundamental Studies (Core)

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

Distributive Studies (Core)

Humanities and the Arts	9
Mathematics and the Sciences (PHYS/CHEM, BIOL 105, ZOOL 201)	10
Social Science	9

Advanced Studies (Core).....6

Human Cultural Diversity (Core)3

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.

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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

Freshman Year

BIOL 105	4
KNES 287—Sport and American Society	3
KNES 293—History of Sport in America	3
Activity Courses*	4
Electives	3

Sophomore Year

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
Activity Courses*	4
Related Studies*	6

Junior Year

KNES 300—Biomechanics of Human Motion	4
KNES 350—Psychology of Sports	3
KNES 360—Physiology of Exercise	3
Option*	3
Related Studies*	6

Senior Year

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 adviser.

In addition to the above required courses, students must fulfill the Core (general education) 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 Honors Program provides junior and senior students with opportunities

to engage in extended study, research, and discussions with faculty. The program requires 18 credits of Honors courses and a thesis, which will be defended before a faculty committee. Applicants must have a 3.5 overall GPA on a minimum of 45 credits and a 3.5 GPA on at least nine credits from the Kinesiology Core (KNES 262, 287, 293, 300, 350, 360, 370, 385). The faculty Honors committee will also consider leadership, motivation, and maturity. To remain in the program, students must maintain a 3.5 GPA. Students may graduate with high honors by completing a thesis rated as outstanding and earning a cumulative GPA of 3.7.

Course Code: KNES

LANDSCAPE ARCHITECTURE (LARC)

College of Agriculture and Natural Resources

Department of Natural Resource Sciences and Landscape Architecture
2146 Plant Sciences Bldg., 405-4350
mp5@umail.umd.edu
<http://www.agnr.umd.edu/users/hort/home.htm>

Professor and Acting Chair: Weismiller
Associate Professor/Coordinator: Pihlak
Assistant Professors: Hill, Hilsenrath, Sullivan
Adjunct Assistant Professor: Wallace

Landscape Architecture

The Department of Natural Resource Sciences and Landscape Architecture offers five undergraduate majors. Four lead to a bachelor of science degree and one leads to a bachelor of landscape architecture (B.L.A.) degree.

The landscape architecture curriculum is a four-year professional program that leads to the B.L.A. degree. Landscape architecture is primarily a site-based design discipline that also deals with regional and larger-scale environmental issues. The curriculum, a studio-based design program, integrates natural and social factor analysis into the design process. Digital design studios allow the integration of computer-aided design with fundamental design and drawing skills.

Admission to Landscape Architecture. Landscape Architecture is a limited-enrollment program (LEP). See chapter 1 of this catalog for general limited-enrollment program admissions policies. For further information, contact the College of Agriculture and Natural Resources at 314-8375.

Freshman Admission and the 45-Credit Review. Most entering freshmen who have a GPA of at least 3.0 and 1170 SATs will gain admission to the landscape architecture program directly from high school, as space permits. Early application is encouraged to ensure the best possible chance of admission.

Freshmen who are admitted directly to landscape architecture will be subject to a performance review by the time they have completed 45 credit hours. To meet the provisions of the review, these students must complete: (1) Fundamental Studies; (2) 30 percent of Distributive Studies; (3) LARC 160, LARC 140, LARC 141, LARC 240, LARC 220, MATH 115, HORT 253, and HORT 100 with minimum grades of C; and (4) a portfolio review as specified by the landscape architecture faculty. Students who do not meet these requirements will not be allowed to continue in the LEP and will be required to select another major.

Transfer Admission. The following requirements affect new transfer students to the University as well as on-campus students hoping to change majors to landscape architecture. Admission of transfer students is limited by space considerations.

In order to be admitted to landscape architecture, transfer students will be required to meet the following set of gateway requirements: (1) a minimum GPA of 2.7; (2) completion of LARC 160, MATH 115, and HORT 100 (or any four-credit Agriculture or Life Sciences class with a laboratory component) with minimum grades of C. Transfer students will also be subject to the 45-credit review administered by landscape architecture faculty.

Appeals. Students who are unsuccessful in gaining admission to landscape architecture and believe they have extenuating or special circumstances which should be considered, may appeal in writing to the Office of Undergraduate Admissions. The student will be notified in writing of the appeal decision once it is made. Students admitted to landscape architecture who do not pass the 45-credit review but believe they have special circumstances which should be considered may appeal directly to

the program.

Curriculum in Landscape Architecture

Landscape Architecture degree (B.L.A.)

	Semester	Credit	Hours
AGRO 202 Fundamentals of Soil Science	4		
GEOG 340 Geomorphology or GEOG 372 Remote Sensing	3		
HORT 100 Introduction to Horticulture	4		
HORT 253 Woody Plant Materials I	3		
HORT 254 Woody Plant Materials II	3		
MATH 115 Precalculus	3		
LARC 140 Graphic Fundamentals	3		
LARC 141 Design Fundamentals	3		
LARC 160 Introduction to Landscape Architecture	3		
LARC 220 Land Surveying	2		
LARC 240 Graphic Communications	3		
LARC 241 Electronic Studio	3		
LARC 263 History of Landscape Architecture	3		
LARC 265 Site Analysis and Design	3		
LARC 320 Principles of Site Engineering			
LARC 340 Site Design Studio	4		
LARC 341 Community Design Studio	4		
LARC 420 Professional Practice	3		
LARC 440 Urban Design Studio	4		
LARC 470 Capstone Studio	4		
Total Major Requirements	71		
Additional CORE program requirements	27		
Electives	22		
TOTAL CREDITS	120		

Course code: LARC

LINGUISTICS (LING)

College of Arts and Humanities

1401 Marie Mount Hall, 405-7002

Professor and Chair: Crain

Professors: Hornstein, Lightfoot

Associate Professor: Uriagereka, Weinberg

Assistant Professors: Benua, Lombardi, Resnik, Thornton

Affiliate: Berndt, Brent, Burzio, Gasarch, Smolensky, Zanuttini, Zsiga

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 and how that question influences the shape of technical analyses.

The major 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 in computer work).

Departmental advising in mandatory for second-semester sophomores and seniors.

Requirements for Major

Requirements for the Linguistics major include a minimum of 45 upper-level credits completed and completion of the foreign-language requirement of the College of Arts and Humanities.

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 421—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 of Arts and Humanities' 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 adviser.

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

MANAGEMENT AND ORGANIZATION

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

MANAGEMENT SCIENCE AND STATISTICS

For information, consult the College of Business and Management entry in chapter 6.

MARKETING

For information, consult the College of Business and Management entry in chapter 6.

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MATERIALS AND NUCLEAR ENGINEERING (ENMA, ENNU)

A. James Clark School of Engineering Materials Science and Engineering (ENMA)

2135 Chemical and Nuclear Engineering Bldg., 405-5208
<http://www.ennu.umd.edu/numa/>

Professor and Chair: Christou
Professors: Armstrong*, Arsenault, Dieter* (emeritus), Roytburd, Rubloff, Smith (emeritus), Wuttig, Yeh
Associate Professors: Ankem, Block, Lloyd (Program Coordinator), Ramesh, Salamanca-Riba
Assistant Professors: Briber, Kofinas, Martinez-Miranda, Wilson
Adjunct: Arora, Hsu, Lawn
* Member of Mechanical Engineering Department

The Major

The development and production of novel materials has become a major issue in all fields of engineering. Materials which are strong and light at the same time are needed for space structures; faster electro-optical switching materials will result in improved mass communications; and high temperature plastics would improve the efficiency of transportation systems. Many of today's materials requirements can be met by composites. The materials engineering program provides the student with an interdisciplinary science-based education to understand the structure and resulting properties of metallic, ceramic, and polymeric materials. A wide variety of careers is open to graduates of this program ranging from production and quality control in the traditional materials industries to the molecular construction of electronic materials in ultra-clean environments, and to the applications of materials in electronic packages. The application of materials to solve environmental, energy, and reliability problems and advanced reactors are also career options.

Students may major in the Bachelor of Science in Materials Science and Engineering Program or may use Materials Engineering as a field of concentration in the Bachelor of Science in Engineering Program.

Requirements for Major

Requirements for the materials science and engineering major include thorough preparation in mathematics, chemistry, physics, and engineering science as well as the required University general education (Core) requirements. All students will be required to select an area of specialization, an upper-class science elective, and two technical electives. A total of 123 or 124 credits is required for a bachelor's degree. A sample program follows.

	Semester I	II
Freshman Year		
Core Program Requirements.....	6	
ENES 100—Introduction to Engineering Design	3	
CHEM 133—General Chemistry.....	4	
Math 140—Calculus I.....	4	
MATH 141—Calculus II.....	4	
ENGL 101—Introduction to Writing	3	
ENES 102—Statics	2	
PHYS 161—General Physics I.	3	
Total	14	15
Sophomore Year		
Core Program Requirements.....	3	3
MATH 241—Calculus III.....	4	
MATH 246—Differential Equations for Scientists and Eng.	3	
PHYS 262—263 General Physics	4	4
ENES 230—Introduction to Materials and their Applications	3	
ENEE 204—Basic Circuit Theory.....	3	
CHEM 233—Organic Chem I. or CHEM 481*, Physical Chem. I.....	4 or 3	
Total	14	17 or 16

* Chem 233 is required for students specializing in polymers

Junior Year		
Core Program Requirements.....	3	3
ENMA 310—Materials Laboratory I, Structural Characterization. 3		

ENMA 311—Materials Laboratory II: Electromagnetic Properties	3
ENMA 362—Mechanical Properties	4
ENMA 363—Microprocessing of Materials.....	3
ENMA 460—Physics of Solid Materials.....	3
ENMA 461—Thermodynamics of Materials.....	3
Specialization Electives.....	3
Total	16

Senior Year		
Core Program Requirements.....	3	3
ENMA 463—Macroprocessing of Materials	3	
ENMA 471—Kinetics, Diffusion and Phase Transformations	3	
ENMA 490—Materials Design	3	
Specialization Electives.....	3	3
Technical Electives	6	
ENRE 489B—Principles of Quality and Reliability.	3	
Upper-level science elective	3	
Total	18	15

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

Four suggested specialization areas follow. Students are expected to take four specialization electives in one particular area during their junior and senior years after consulting with their adviser.

Materials Science: ENMA 464—Environmental Effects; ENMA 420—Intermediate Ceramics; ENMA 489Y—Smart Materials; ENMA 489C—Electronic Packing Materials; ENMA 495—Polymeric Materials; ENMA 499—Laboratory Projects

Applications of Materials and Manufacturing: ENMA 472—Technology and Design of Engineering Materials; ENMA 489A—Design of Composites; ENMA 489L—Manufacturing Ceramics; ENMA 489R—Manufacturing Polymers; ENME 400—Machine Design; ENMA 412—Mechanical Design for Manufacturing; ENME 465—Fracture Mechanics; ENMA 499—Laboratory Projects

Polymeric Materials: ENMA 495—Polymeric Materials; ENMA 496—Processing of Polymers; ENCH 490—Introduction to Polymer Chemistry; ENMA 489R—Manufacturing Polymers; ENCH 494—Polymer Technology Laboratory; ENMA 499—Laboratory Projects

Electrical and Electronic Materials: ENMA 481—Introduction to Electronic and Magnetic Materials; ENMA 489C—Electronic Packing Materials; ENEE 302—Introduction to Analog Circuits; ENEE 460—Control Systems; ENEE 480—Fundamentals of Solid State Electronics; ENEE 494—Solid State Devices; ENMA 499—Laboratory Projects

Admission

All Materials Engineering students must meet admission, progress, and retention standards of the A. James Clark School of Engineering.

Advising

Students choosing materials science and engineering as their major or materials engineering as their primary or secondary field of concentration should contact Dr. Lloyd, 2138 Chemical and Nuclear Engineering Building, 405-5221.

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 chapter 6.

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 adviser 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

Professor and Chair: Christou

Associate Chair: Pertmer

Professors: Almenas, Christou, Modarrest, Roush, Wolf

Associate Professors: Mosleh, Pertmer

Assistant Professors: Gavrilas, Smidts

Lecturers: Glapke, Speis

Emeriti: Duffy, Hsu, Munno, Silverman

Adjunct: Al-Sheiky

† 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, 441, 442, 443, 450, 455, 465, 480, 485, 490, and 495; (5) the course on environmental effects on materials, ENMA 464. A maximum degree of flexibility has been retained so that the student and adviser can select a number of elective courses. A sample program follows.

	Semester	
	Credit	Hours
	I	II
Freshman Year		
MATH 140—Calculus I.....	4	
MATH 141—Calculus II.....	4	
PHYS 161—General Physics	3	
ENES 100—Introduction to Engineering Design	3	
ENES 102—Statics	2	
CHEM 133—Chemistry for Engineers.....	4	
Core Program Requirements (including ENGL 101).....	3	6
Total	14	15
Sophomore Year		
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	
ENME 232—Thermodynamics (or equivalent)	3	
ENES 221—Dynamics	3	
ENNU 215—Intro. to Nuclear Technology	3	
Core Program Requirements.....	3	
Total	14	16

Junior Year

ENNU 441, 442—Nuclear Engineering Laboratory I, II	1	1
ENNU 450—Nuclear Reactor Engineering I.....	3	
ENNU 455—Nuclear Reactor Engineering II	3	
ENME 331—Fluid Mechanics (or equivalent)	3	
ENME 332—Transfer Processes (or equivalent)	3	
ENMA 464—Environmental Effects on Engineering Materials	3	
ENEE 300—Principles of Electrical Engineering.....	3	
ENGL 393—Technical Writing.....	3	
Math—Physical Science Elective	3	
Core Program Requirements.....	3	3
Total	16	16

Senior Year

ENNU 443—Nuclear Engineering Laboratory III	1	
ENNU 465—Nuclear Reactor Systems Analysis	3	
ENNU 480—Reactor Core Design	3	
ENNU 485—Nuclear Reactor Thermalhydraulics	3	
ENNU 490—Nuclear Fuel and Power Management.....	3	
ENNU 495—Design in Nuclear Engineering	3	
Engineering Electives.....	6	3
Core Program Requirements.....	3	3
Total	16	15

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

Students must consult with an adviser 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 chapter 6 of this catalog, or call the department office at 405-5208.

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 adviser 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 typically provides opportunities for summer employment to academically qualified students 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

MATHEMATICS (MATH)

College of Computer, Mathematical and Physical Sciences
1117 Mathematics Building, Undergraduate Office, 405-5053

Professor and Chair: Fitzpatrick

Professors: J. Adams, W. Adams, Alexander, Antman, Auslander, Benedetto, Berenstein, Boyle, Brin, Chu, Cohen, J. Cooper, Ellis, Fey**, Freidlin, Glaz, Goldberg, Goldman, Gray, Grebogi*, Green, Greenberg, Grillakis, Gromov, Grove, Gulick, Hamilton, Herb, Herman, Jacobson, Johnson, Kagan, Kedem, King, Kirwan, Kleppner, Kudla, Kueker, Layt, Li, Lipsman, Lopez-Escobar, Maddocks, Markley, Mikulski, Millson, Neri, Nochetto, Norikov, Osborn, Owings, Pego, Rosenberg, Rudolph†, Schafer, Slud, Sweet, Syski, Washington, Wolfe, Wolpert†, Yang, Yorke††***, Zedek

Associate Professors: Berg, Chang, Coombes, Dancis, Helzer, Laskowski, Lee, Machedon, Sather, Schneider, Smith, Stuck, Warner, Winkelkemper

Assistant Professors: D. Cooper**, Currier, Iozzi, Qin, Stevenson, von Petersdorff

Professors Emeriti: Babuska††, Brace, Correl, Edmundson, Ehrlich, Goldhaber, Good, Heins, Hovath, Hubbard, Hummel, Jackson, Kellogg, Lehner, Olver, Stellmacher

Affiliate Professors: O'Leary, Stewart, Young

Instructors: Alter

Adjunct Professor: Rinzel

†Distinguished Scholar-Teacher

††Distinguished University Professor

*Joint appointment: IPST and Institute for Plasma Research

**Joint Appointment: Department of Curriculum and Instruction

***Joint Appointment: IPST

The program in mathematics leads to a degree of Bachelor of Science in mathematics and offers students training in the mathematical sciences in preparation for graduate work, teaching, and positions in government or industry.

Requirements for Major

Each mathematics major must complete, with a grade of C or better in each course, the following:

1. The introductory sequence MATH 140, 141, 240, 241 or the corresponding honors sequence MATH 250-251.
2. Eight MATH/MAPL/STAT courses at the 400-level or higher, at least four of which are taken at College Park. The eight courses must include:
 - (a) At least one course from MATH 401, 403, 405.
 - (b) At least one course from MATH 246, 414, 415, 436, 462. If MATH 246 is chosen, it will not count as one of the eight Upper-level courses.
 - (c) One course from MAPL 460, 466. (This assumes knowledge of CMSC 104 or equivalent.)
 - (d) MATH 410 (completion of MATH 250-251 exempts the student from this requirement and (e) below; students receive credit for two 400-level courses).
 - (e) A one-year sequence which develops a particular area of mathematics in depth, chosen from the following list:
 - (i) MATH 410-411
 - (ii) MATH 403-404
 - (iii) MATH 446-447
 - (iv) STAT 410-420.
 - (v) MATH/MAPL 472-473
 - (f) The remaining 400-level MATH/MAPL/STAT courses are electives, but cannot include any of: MATH 400, 461, 478-488, or STAT 464. EDCI 451 may be used to replace one of the upper-level elective courses. Also, students with a strong interest in applied mathematics may, with the approval of the Undergraduate Office, substitute two courses (with strong mathematics content) from outside the Mathematics Department for one upper-level elective course.
3. One of the following supporting three course sequences. These are intended to broaden the student's mathematical experience. Other sequences might be approved by the Undergraduate Office but they would have to make use of mathematical ideas, comparable to the sequences on this list.
 - (a) i) PHYS 161-262-263
ii) PHYS 171-272-273
iii) PHYS 141-142, and an upper-level physics course approved by the Mathematics Department
 - (b) ENES 102, PHYS 161, ENES 220
 - (c) i) CMSC 112-113, and one of CMSC 311-330

ii) CMSC 112-150-251

iii) CMSC 114-214 and one of CMSC 311, 330

iv) CMSC 114-150-150

(d) CHEM 103-113, and one of CHEM 227-233

(e) ECON 201-203, and one of ECON 305 or 306

(f) BMGT 220-221-340.

Within the Department of Mathematics there are a number of identifiable areas which students can pursue to suit their own goals and interests. They are briefly described below. Note that they do overlap and that students need not confine themselves to one of them.

1. Pure mathematics: the courses which clearly belong in this area are: MATH 402, 403, 404, 405, 406, 410, 411, 414, 415, 417, 430, 432, 436, 437, 445, 446, 447, 452, STAT 410, 411, 420. Students preparing for graduate school in mathematics should include MATH 403, 405, 410 and 411 in their programs. MATH 463 (or 660) and MATH 432 (or 730) are also desirable. Other courses from the above list and graduate courses are also appropriate.
2. Secondary teaching: the following courses are required to teach mathematics at the secondary level: MATH 402 or 403, 430 and EDCI 451. (EDCI 451 is acceptable as one of the eight upper-level math courses required for a mathematics major.) These additional courses are particularly suited for students preparing to teach: MATH 406, 445, 463, STAT 400 and 401. EDHD 300, EDPA 301, EDCI 350 or 455, and EDCI 390 are necessary to teach; before registering for these courses, the student must apply for and be admitted to teacher education.
3. Statistics: For a student with a Bachelor of Arts seeking work requiring some statistical background, the minimal program is STAT 400-401. To work primarily as a statistician, one should combine STAT 400-401 with at least two more statistics courses, most suitably, STAT 440 and STAT 450. A stronger sequence is STAT 410, 420, 450. This offers a better understanding and wider knowledge of statistics and is a general purpose program (i.e., does not specify one area of application). For economics applications STAT 400, 401, 440, 450, and MAPL 477 should be considered. For operations research MAPL 477 and/or STAT 411 should be added or perhaps substituted for STAT 450. To prepare for graduate work, STAT 410 and 420 give the best background, with STAT 411, 440, 450 added at some later stage.
4. Computational mathematics: there are a number of math courses which emphasize the computational aspects of mathematics including the use of the computer. They are MAPL 460, 466, 467, 477, and MATH 450, 475. Students interested in this area should take CMSC 114, 214 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 advisers 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

<http://www.inform.umd.edu:8080/EdRes/Colleges/EDUC/Depts/EDMS>

Professor and Chair: Lissitz

Professors: Dayton, Macready

Associate Professors: De Ayala, Johnson, Schafer

Assistant Professor: Hancock

For Advanced Undergraduates and Graduates

The Department of Measurement, Statistics, and Evaluation offers courses in classroom assessment, applied statistics, and computer-based simulation (Monte Carlo method) for undergraduates. These courses provide a foundation in methods that are very useful for most career

choices. 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 measurement, applied 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 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: 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

<http://www.enme.umd.edu/>

Professor and Chair: Anand

Associate Chairs: Wallace, Walston

Professors: Anand, Armstrong, Barker, Berger, Bernard, Christou, Cuniff, Dally, Fournay, Gupta, Holloway, Irwin (PT), Kirk, Magrab, Pecht, Radermacher, Sanford, Talaat, Tsai, Wallace, Yang

Associate Professors: Azarm, Bigio, Dasgupta, diMarzo, Duncan, Herold, Joshi, Minis, Ohadi, Piomelli, Shih, Sirkis, Walston, Zhang

Assistant Professors: Balachandran, Dimas, Herrmann, Kiger, Krstic, Mead, Natishan, Schmidt, Tsui, Walsh, Wang

Lecturers: Ainane, Coder, Didion, Etheridge, Pavlin

Emeriti: Allen, Buckley, Dieter, Jackson, Marks, Sayre, Shreeve, Weske

The Major

The mechanical engineering major prepares the student for the challenges of today and the future. The curriculum is one of the most up-to-date and forward-looking programs in the country. Students become involved with real-world engineering projects early on in the program through extensive interaction with engineers from industry and this interaction is continued throughout the curriculum. The coursework is now fully integrated in order to provide a seamless experience in their undergraduate education. The student graduates with the skills and the knowledge base which are necessary for success in today's marketplace and with the education necessary to adapt and succeed in the future as technology continues to change.

The mechanical engineer of today faces a more extensive range of critical problems than ever before. It is essential that the graduate be skilled not only in the traditional fundamentals of mechanical engineering such as solid mechanics, fluid mechanics, thermodynamics, heat transfer, materials engineering, electronic instrumentation and measurements, controls and design, but also in the new and emerging areas such as mechatronics, smart structures, electronic packaging, communication, information systems, total quality management, reliability and electromechanical systems. Most of these topics require extensive use of modern computing hardware and software. New classrooms which are equipped with state-of-the-art computers and software have been added and these facilities are used as an on-going part of many courses. The student is taught to make use of this capability and to make sound engineering judgments while analyzing the seemingly unmanageable amounts of data and information which are obtained. Attributes such as teamwork, ethics, social awareness, and leadership are emphasized in many courses.

Electives taken during the senior year prepare the graduate to choose any of a number of career paths or to select a broad-based group of electives. All students work on projects throughout their program, many of which teach the advantages of teamwork and the skills required for a team to succeed. Individual projects provide the opportunity for sometimes far-out creative thinking. In all cases, the students work closely with individual faculty members who serve as teachers, advisors, and mentors. Many undergraduate students have the opportunity to serve as Research Fellows and/or Teaching Fellows in the department.

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Requirements for Major

	Semester Credit Hours	
	I	II
Freshman Year		
MATH 140—Calculus I.....	4	
MATH 141—Calculus II.....		4
CHEM 133—General Chemistry.....	4	
PHYS 161—General Physics.....		3
ENGL101—Introduction to Writing	3	
ENES 100—Introduction to Engineering Design.....	3	
ENES 102—Statics.....		2
Core Requirements.....		6
Total Credits.....	14	15

Sophomore Year		
MATH 241—Calculus III.....	4	
MATH 246—Differential Equations.		3
PHYS 262, 263—General Physics.....	4	4
ENES 220—Mechanics of Materials.	3	
ENES 221—Dynamics.....	3	
ENME 232—Thermodynamics.....		3
ENME 252—Electronics & Instrumentation I.....		3
Core Requirements.....	3	3
Total Credits.....	17	16

Junior Year		
ENME 331—Fluid Mechanics.....	3	
ENME 332—Transfer Processes.....		3
ENME 351—Electronics & Instrumentation II.....	3	
ENME 361—Vibration, Controls, & Optimization I.....	3	
ENME 362—Vibration, Controls, & Optimization II.....		3
ENME 371—Product Engineering & Manufacturing.....	3	
ENME 382—Engineering Materials & Manufacturing Processes.....	3	
ENME 392—Statistical Methods For Product & Process Development.....		3
ENGL 393 —Technical Writing	3	
Core Requirements.....	3	3
Total Credits.....	15	15

Senior Year		
ENME 471—Integrated Product & Process Development I.....	3	
ENME 472—Integrated Product & Process Development II.....		3
Technical Electives.....	9	9
Core Requirements.....	3	3
Total Credits.....	15	15
**At least three of the four technical electives must be design.		

Sample Topics of Electives

Computer Aided Design
Kinematic Systems of Mechanisms
Packaging of Electronic Systems
Energy Conversion
Environmental Engineering
Fracture Mechanics
Finite Element Analysis
Reliability and Maintainability
Automotive Design
Robotics
Manufacturing
Mechatronics
Fluid Machinery

Admission

Admission requirements are identical to those set by the Clark School of Engineering. Please consult chapter 1..

Advising

All mechanical engineering students are required to meet with an advisor during registration. Contact the Undergraduate Advising Office, 2188 Engineering Classroom Building.

Cooperative Education Program

Participation in the Cooperative Education Program is encouraged. See chapter 1 for details

Financial Assistance

A very limited amount of financial aid is available. Information may be obtained in the Undergraduate Advising Office.

Honors and Awards

The Honors Program is administered through the 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, the Society of Manufacturing Engineers, and the American Society of Heating, Refrigeration and 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

3424 Computer and Space Sciences Building, New Wing, 405-5392

<http://www.metolab3.umd.edu>

Professor and Chair: Hudson

Professors: Baer, Dickerson, Ellingson, Pinker, Thompson, Vernekar

Associate Professors: Carton, Zhang

Adjunct Professor: Sellers

The Department of Meteorology offers a limited number of courses of interest to undergraduate students. Undergraduates interested in pursuing a bachelor's degree program preparatory to further study or work in meteorology are urged to consider the Physical Sciences program. It is important that students who anticipate careers in meteorology consult the Physical Sciences program adviser representing the Department of Meteorology as early as possible in their studies.

Because of its interdisciplinary nature, the study of the atmosphere requires a firm background in the basic sciences and mathematics. To be suitably prepared for 400-level courses in meteorology, the student should have the following background: either the physics-major series PHYS 171-272-273 or the series PHYS 161-262-263; the mathematics series MATH 140-141-240-241-246 and either the series CHEM 103-113 or CHEM 105-115. Consult the list of approved courses (chapter 8) for electives in meteorology.

Students who may be preparing for graduate education in meteorology are strongly advised to pursue further course work from among the areas of physics, applied mathematics, chemistry, computer science, and statistics to supplement course work in meteorology. With proper counseling from the Department of Meteorology adviser, the student wishing to graduate with an M.S. degree in meteorology may achieve that goal in five-and-a-half years from the inception of university studies.

Course Code: METO

MICROBIOLOGY (MICB)

College of Life Sciences

Microbiology Building, 405-5435

Chair: Ades

Professors: Colwell, Gantt, Joseph, Roberson, Weiner, Yuan

Associate Professors: Benson, Hutcheson, Stein

Assistant Professors: DeStefano, Farber, Pontzer, Song, Stewart

Instructors: Gdovin, Smith

Professors Emeriti: Cook, Doetsch, Hetrick†, Pelczar

†Distinguished Scholar-Teacher

The Major

A major in Microbiology is offered as part of the Biological Sciences Program. Microbiology is a field fundamental to all of biology. Specilization in the field encompasses not only study of the fundamental processes of bacteria, but also the examination of animal, plant, and bacterial viruses, as well as animal and plant defense systmes that couner infection and invasion of microorganisms. Microbiology, including the subfields of Virology and Immunology, continues to be at the forefront. Microbiology principles are being applied in ecology, biotechnology, medicine, agriculture, and the food industry. Students of Microbiology will find opportunities in academia, industry, medicine, public health, biotechnology, and law.

Requirements for Specialization

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

Advising

Advising is mandatory. Students are assigned to a faculty member for advising and career counseling. Information can be obtained from the Department of Microbiology Office (1109 MICB Bldg, 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 adviser. 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

SCHOOL OF MUSIC (MUSC)

College of Arts and Humanities

Tawes Fine Arts Building, 405-5549

Director: Kendall

Associate Directors: Cooper, Gibson

Professors: Cohen, Cossa, Elsing, Fischbach, Folstrom, Guarneri String Quartet (Dalley, Soyer, Steinhardt, Tree), Head, Heifetz, Herndon, Hudson, Koscielnny, Mabbs, Montgomery, Moss†, Page, Robertson, Rodriguez, Traver†

Associate Professors: Balthrop, Barnett, Davis, Delio, Elliston, Fanos, Gibson, Gowen, Love, McCarthy, McCoy, Sparks, Wakefield, Wexler, Wilson

Assistant Professors: Brooks, King, Payerle, Taylor, Vadala

Lecturers: Beicken, Siolas

Instructors: Tate, Walters

†Distinguished Scholar-Teacher

The Major

Admission to all undergraduate music major degree programs (B.M., B.A., and B.S.) is based on a required performance audition before a faculty committee. Audition dates and requirements are available from the School of Music office.

Departmental advising is mandatory for all music majors every semester.

The objectives of the school 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. A grade of C or above is required in all major courses.

College of Arts and Humanities requirements are waived for students majoring in B.M. Degree programs.

Sample Program—Bachelor of Music (Perf. Piano)

	Credits
Freshman Year	
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
Sophomore Year	
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
Junior Year	
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

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Senior Year	
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. A grade of C or above is required in all major courses. Requirements for the Music-Bachelor of Arts Degree major include a minimum of 45 upper-level credits completed and the foreign language requirement of the College of Arts and Humanities.

Sample Program—Bachelor of Arts (Music)

	Credit Hours
Freshman Year	
MUSP 109/110—Applied Music	4
MUSC 150/151—Theory of Music I/II	6
MUSC 129—Ensemble	2

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)**College of Agriculture and Natural Resources**

3304 Marie Mount Hall, 405-4521

ji14@umail.umd.edu

<http://www.agnr.umd.edu/AcPro/Majors/MajNutFood.html>

Professor and Chair: Brannon

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

Associate Professors: Jackson, Kantor

Assistant Professors: Blake, Boyle, Meng

Lecturer: Curtis

Adjunct Professor: Hansen

Adjunct Associate Professor: McKenna

Emeriti: Prather, Wiley

†Distinguished Scholar-Teacher

The department offers three programs: 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 national certifying exam for 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.

*A change in title from Human Nutrition and Foods to Nutritional Sciences is pending approval.

Grades. All students are required to earn a grade of C 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 adviser for updated information.

I. Dietetics**a. Major Subject Courses**

NFSC 100—Elements of Nutrition	3
NFSC 112—Food Science and Technology	3
NFSC 250—Science of Food	4
NFSC 315—Nutrition During the Life Cycle	3
NFSC 350—Food Service Operations	5
NFSC 380—Nutritional Assessment	3
NFSC 440—Advanced Human Nutrition	4
NFSC 460—Therapeutic Human Nutrition	4
NFSC 470—Community Nutrition	3
NFSC 491—Issues and Problems in Dietetics or CORE Advanced Studies	3
Subtotal	35

b. Supporting Courses

MATH 113—Elementary Algebra or MATH 115—Precalculus	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
BIOL 105—Principles of Biology I	4
ZOOL 211—Cell Biology	4
ZOOL 422—Vertebrate Physiology	4
MICB 200—General Microbiology	4
SOCY 100—Introduction to Sociology	3
PSYC 100—Introduction to Psychology	3
EDMS 451—Introduction to Educational Statistics or BIOM 301—Introduction to Biometrics	3
BCHM 461—Biochemistry I	3
BCHM 462—Biochemistry II	3
ENGL 101—Introduction to Writing	3
ENGL 393—Technical Writing	3
BMGT 360—Human Resource Management	3
BMGT 364 Management and Organization Theory	3
Additional CORE program courses	18
Restricted Electives	2
Electives	3
Subtotal	85
TOTAL CREDITS	120

II. Food Science**a. Major Subject Courses**

NFSC 100—Elements of Nutrition	3
NFSC 112—Food Science and Technology	3
NFSC 250—Science of Food	4
NFSC 398—Seminar	1
NFSC 412—Principles of Food Processing	4
NFSC 421—Food Chemistry	3
NFSC 422—Food Product Research and Development (CORE capstone)	3
NFSC 423—Food Chemistry Laboratory	2
NFSC 430—Food Microbiology	2
NFSC 431—Food Quality Control	4
NFSC 434—Food Microbiology Laboratory	2
NFSC 450—Food and Nutrient Analysis	3
Subtotal	34

b. Supporting Courses

CMSC 102—Introduction to Information Technology or CMSC 103—Introduction to Computing	3
MATH 115—Precalculus	3
MATH 220—Elementary Calculus I	3
MATH 221—Elementary Calculus II	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
BCHM 461—Biochemistry I	3
BIOL 105—Principles of Biology I	4
ENBE 414—Mechanics of Food Processing	4
MICB 200—General Microbiology	4
PHYS 121—Fundamentals of Physics	4
ENGL 101—Introduction to Writing	3
ENGL 393—Technical Writing	3
BIOM 301—Introduction to Biometrics	3
Additional CORE program requirements	24
Restricted electives	3
Electives	3
Subtotal	86
TOTAL CREDITS	120

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III. Human Nutrition and Foods*

(*A change in title from Human Nutrition and Foods to Nutritional Science is pending approval.)

a. Major Subject Courses

NFSC 100—Elements of Nutrition.....	3
NFSC 112—Food Science and Technology.....	3
NFSC 315—Nutrition during the Life Cycle.....	3
NFSC421—Food Chemistry.....	3
NFSC 440—Advanced Human Nutrition.....	4
NFSC 450—Food and Nutrient Analysis.....	3
NFSC 495—Nutrition Research or CORE Advanced Studies.....	3
Subtotal	22

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.....	4
ZOOL 422—Vertebrate Physiology.....	4
PHYS 121—Fundamentals of Physics.....	4
BCHM 461—Biochemistry I.....	3
BCHM 462—Biochemistry II.....	3
BCHM 464—Biochemistry Laboratory I.....	2
BCHM 465—Biochemistry III.....	3
MICB 200—General Microbiology.....	4
BIOM 301—Introduction to Biometrics.....	3
ENGL 101—Introduction to Writing.....	3
ENGL 393—Technical Writing.....	3
BIOL 105—Principles of Biology I.....	4
BIOL 222—Genetics.....	4
Additional CORE program requirements.....	24
Restricted electives.....	3
Electives.....	5
Subtotal	98
TOTAL CREDITS	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 adviser when planning their course of study. Information on advising may be obtained by calling the department office, 405-4521.

Student Organizations

The NFSC Department has an active undergraduate Food and Nutrition (FAN) club which sponsors outreach activities, and 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 emeritus), Schlaretzki (emeritus), Suppe, Svenonius, Wallace (part-time)

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

Assistant Professors: Kerstein, Morreau, Washington

Affiliate Professors: Brush, Hornstein

Adjunct Professors: Crocker, Fullinwider, Galston, Luban, Sagoff

Adjunct Associate Professor: Wachbroit

Adjunct Assistant Professors: Levine, Li, Wasserman

The Major

The study of philosophy develops students' logical and expository skills and increases their understanding of the foundations of human knowledge and value. The department views philosophy as an activity rather than a body of doctrine and students can expect to receive intensive training in clear thinking, inventive synthesis, and precise expression. For some, this will serve as preparation for graduate studies in philosophy. However, philosophical skills are useful in professions such as law, medicine, government, business management, and in any field that demands intellectual rigor. The department offers a wide range of courses, including several that deal with the philosophy of various disciplines outside philosophy itself.

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.

Requirements for the Philosophy major include a minimum of 45 upper-level credits completed and the foreign language requirement of the College of Arts and Humanities.

Departmental advising is mandatory for second-semester sophomores and seniors.

Course Code: PHIL

PHYSICAL EDUCATION

See Kinesiology elsewhere in this chapter.

PHYSICAL SCIENCES PROGRAM

College of Computer, Mathematical and Physical Sciences

1120 Physics Building, 405-5949

http://www.inform.umd.edu:8080/EdRes/Colleges/CMPS/Depts/Physics/Physical_Science/

Chair: Einstein

Past Chair and Consultant: Williams

Astronomy: Deming

Chemistry: Sampugna

Computer Science: Kaye

Geology: Wylie

Engineering: Walston

Mathematics: Wolfe

Meteorology: Robock

Physics: Einstein

Purpose

This program is designed to meet the needs of a broad and diverse group; students whose interests cover a wide range of the physical sciences;

students 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; pre-professional students (pre-law [especially patent law], pre-medical); or students whose interest 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; some of the Urban Studies courses should be taken as electives. Students contemplating this program as a basis for preparation for secondary-school science teaching should 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 the engineering disciplines. 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. The selection of a primary adviser depends upon the interest of the student. Usually the student will choose to work with one of the committee members representing the discipline the student has selected as the primary area of concentration to satisfy the distributive requirements of the program. Two secondary-area advisers are also required.

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 CHEM 105 and 115 (8 credits); PHYS 161, 262 and 263 (11 credits) or PHYS 171, 272, 273, 275, 276 (12 credits); CMSC 104 (4 credits) or CMSC 105 (3 credits) or CMSC 106 (4 credits) or CMSC 114 and CMSC 214 (8 credits).

Students desiring a strong background in physics should take the 171-276 sequence, which is required of physics majors, leads directly into advanced physics courses, and offers much smaller classes than the 161-263 sequence. Students who select Computer Science as an area of concentration should consider taking the CMSC 114 and 214 sequence. (CMSC 150 is a prerequisite for CMSC 214.)

Beyond the basic courses, students complete 24 upper-level (300-400) distributive credits. The distributive credits must be divided among three areas of concentration with at least six credits in each area. The areas of concentration include the disciplines of chemistry, physics, mathematics (including statistics), astronomy, geology, meteorology, computer science or one of the engineering disciplines. Students who wish to select electrical engineering need the permission of the Associate Dean in the School of Engineering. A grade of "C" or better must be earned in all program courses (basic prerequisite and distributive requirement courses).

All Physical Science students must have a planned program of study, including specific core and distributive courses, approved by the Physical Sciences Committee. These plans should be submitted as early as possible, generally in the sophomore year and normally no later than the beginning of the junior year. The committee shall NOT approve a program which, at the time the program is submitted, has fewer than 18 credits in the three distributive areas of the Physical Sciences program to be completed. Any changes to the plan must be approved in writing by the student's adviser and the chairperson. Engineering courses used for one of the options must all be from the same department, e.g., all must be ENGR courses or a student may use a combination of courses in ENNU, ENCH and ENMA, which are all offered by Department of Chemical and Nuclear Engineering; courses offered as engineering sciences, ENES, will be considered as a department for these purposes. Selection of ENEE courses is by permission only. An Environmental Science option is also available; it is described on the Web site.

Certain courses offered in the fields included in the program are not suitable for Physical Science majors and cannot count as part of the requirements of the program. These include any courses corresponding to a lower level than the basic courses specified above (e.g. MATH 115), some of the special topics courses designed for non-science students, as well as other courses. Students should consult a Physical Sciences adviser for a current listing of "excluded" courses. Students must obtain written approval to use any of the special topics courses as part of their Physical Sciences requirement.

Honors

The Physical Sciences Honors Program offers students the opportunity for research and independent study, and will lead to a B.S. degree with Honors or High Honors. The requirements are: a) overall grade point average of 3.0 or better; b) grade point average of 3.2 or better in Physical Sciences courses; c) at least three credits (which may be distributed over two semesters) of independent study courses in the Physical Sciences Program; d) an honors thesis summarizing independent research; e) an oral examination concerning thesis and related subjects. The thesis adviser and two other faculty members (at least one a member of the Physical Sciences Committee) will comprise the examining committee.

Selection of College

Students may elect to receive their degrees from either the College of Computer, Mathematical, and Physical Sciences or the Colleges of Agriculture and Natural Resources and of Life Sciences. CMPS students have no further requirements to fulfill beyond those stated here plus the general education requirements. Agricultural and Life Sciences students must also satisfy the College requirements of their respective Colleges: these entail one additional course selected from one of the biological sciences, e.g., a four-credit course offered by the Departments of Botany (not BOTN 100), Entomology, Microbiology (not MICB 100) or ZOOL 101, but not BIOL.

PHYSICS (PHYS)

College of Computer, Mathematical, and Physical Sciences

1120 Physics Building, 405-5979

<http://www.physics.umd.edu>

Professor and Chair: Wallace

Professors and Associate Chairs: Chant, Ellis, Misner

Professors Emeriti: Falk, Ferrell, Glover, Griem, Holmgren, Richard, Snow†, Weber, Zorn

Chancellor Emeritus: Toll

Distinguished University Professors: DasSarma, Fisher, Ott, Sagdeev

Professors: Alley, Anderson, Antonsen, Banerjee, Bhagat, Boyd, Brill, C.C. Chang, C.Y. Chang, Chen, Currie, DeSilva, Dorfman†, Dragt†, Drake, Drew, Einstein, Gates, Glick, Gloeckler, Gluckstern, Goldenbaum, Goodman, Greenberg, Greene, Griffin, Hadley, Hassam, Hu, Kim, Kirkpatrick, Korenman, Langenberg, Layman, Liu, Lobb, Lynn, MacDonald, Mason, Misner, Mohapatra, Langenberg, Paik, Papadopoulos, Park, Pat†, Prange, Redish, Roos, Skuja, Sucher†, Venkatesan, Wallace, Webb, Williams††, Woo

Professor (part-time): Z. Slawsky

Adjunct Professors: Boldt, Mather, Phillips, Ramaty

Associate Professors: Anlage, Baden, Cohen, Ellis, Fivel, Hamilton, Jacobson, Jawahery, Kacser, Kelly, Ramesh, Skiff

Assistant Professors: Beise, Eno, Ji, Luty, Sullivan, Wellstood, Yakovenko

Lecturers: Nossal, Rapport, Restorff, M. Slawsky, Solow, Stern

† Distinguished Scholar-Teacher

†† Distinguished Faculty Research Fellow

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

Changes in major requirements are under review. Students should consult a departmental adviser for updated information.

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

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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

Upper-level Courses

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)

The Department of Plant Biology will be merged with other departments in the biological sciences into a new department structure during 1997.

College of Life Sciences

H.J. Patterson Hall, 405-1597

DETPBIO@umail.umd.edu

http://www.inform.umd.edu:8080/EdRes/Colleges/LFSC/life_science/.plant_biology/.WWW/firstpage.html

Associate Professor and Acting Chair: Wolniak

Distinguished University Professor: Diener

Professors: Bean, Cooke, Reveal, Wolniak, Sze

Associate Professors: Barnett, Bottino, Dudash, Fenster, Forseth, Motta, Racusen, Straney

Assistant Professors: Chang, Delwiche, Liu

Instructors: Browning, Koines

Emeriti: Kantzes, Lockard, Patterson, Sisler

Adjunct Professor: Cohen

Adjunct Associate Professor: Herman

This Biological Sciences 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 adviser for specific program requirements.

Advising

Academic advising is mandatory. Contact the Plant Biology Coordinating Adviser, Dr. Neal Barnett, 2208 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 advisers.

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: Hall

Associate Professor and Associate Chair: Plude

Professors: Anderson (emerita), Brauth, Carter-Porges, Dooling, Fein*, Fox*, Gelso, Goldstein, Gollub (Emeritus), Guzzo, Helms, Hill, Hodost†, Horton, Kruglanski, 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, Cassidy, Coursey, Freeman*, Hanges, K. Klein, Larkin, Leone*, Moss, Murnane, Norman, O'Grady, Schneiderman*, Stangor, Steele

Assistant Professors: Alexander, Aspinwall, J. Carter**, Castles**, K. Dies**, Gelfand, 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 adviser.

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 completion of PSYC 200 and completion of the Math-English-Science supporting course sequence. Also, a 2.5 GPA in PSYC 100 and 200 is required for graduation. 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. Note: Program requirements are under review. Please consult an adviser for correct information.

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 adviser 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.

RUSSIAN AREA STUDIES PROGRAM

College of Arts and Humanities

2115 Francis Scott Key Hall, 405-4307

Professors: Brecht (Asian and East European), Dawisha (Government and Politics), Lampe (History), Murrell (Economics), Robinson (Sociology)

Associate Professors: Hitchcock, Lekic and Martin (Asian and East European), Kaminski and Tismaneanu (Government and Politics), Majeska (History)

Assistant Professors: David-Fox (History), Martin, Gor (Asian and East European), Sharp (Art History and Archaeology)

Departmental advising is mandatory for second-semester sophomores and seniors.

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 Studies, Asian and East European Languages and Cultures, 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.

Requirements for the Russian Area Studies Program major include the College of Arts and Humanities requirement of 45 upper-level credits completed. The College foreign-language requirement will be automatically fulfilled in the process of taking the courses in Russian.

Students 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 adviser 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.

124 Special Education

In addition to the courses in Russian language, literature, and culture taught in the Department of Asian and East European Languages and Cultures, the following Russian Area courses are offered. Students should check the Schedule of Classes each semester.

ARTH 489—Modernism in Central and Eastern Europe
ECON 315—Economic Development of Underdeveloped Areas
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.

Russian Language and Literature

For information, see listing under Department of Asian and East European Languages and Cultures.

SOCIOLOGY (SOCY)

College of Behavioral and Social Sciences

2108 Art-Sociology Building, 405-6389

Professor and Chair: Hamilton

Professors: Bianchi, Billingsley* (Family and Community Development), Brown, Dager (emeritus), Falk, Finsterbusch, Hage[†], Henkel (Emeritus), Kammeyer, Lejins (emeritus), Meeker, H. Presser, S. Presser, Ritzer[†], Robinson, D. Segal[†], M. Segal[†]

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

Assistant Professors: Dance, Desai, Harper, Kestnbaum, Korzeniewicz, Malhotra, Milkie

Lecturer: Moghadam

[†]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 strengths of the department are the study of population (demography), military sociology, political economy, social psychology, and the connections among gender, work, and family.

A major in sociology offers (1) a general education especially directed toward understanding the complexities of modern society and its social problems by using basic concepts, research and statistical skills; (2) a broad preparation for various types of professions, occupations, and services dealing with people; and (3) preparation of qualified students for graduate training in sociology, social work, law, and business. Sociology also forms a valuable background for those interested in other fields or majors. Courses in sociology can be used as preparation for careers in government and private research, urban planning, personnel work, human resources management, and many other policy-making and administrative careers.

Areas of Specialization

Undergraduate specializations are available in research methods, social psychology, social demography, social institutions, and inequality. These specializations can often be integrated with a second major. Versatility and the rich experiential learning possibilities of the Washington metropolitan area combine to make the sociology curriculum valuable preparation for a

career choice.

Requirements for Major

Students in sociology must complete 50 hours of departmental requirements, none of which may be taken pass/fail. Thirty-eight of these hours are in sociology course work, which must be completed with a minimum grade of C in each course; SOCY 100 should be taken in the freshman or sophomore year followed by SOCY 203. Three hours of mathematics (MATH 111 or its equivalent or higher) are required of majors as a prerequisite of SOCY 201. SOCY 202 follows SOCY 201. SOCY 441 (stratification) and one additional upper-level methods course should be taken by the second semester of the junior year.

The supporting course requirement for majors is 12 hours of a coherent series of courses from outside of the department that relate to the student's major substantive*** or research interests. These courses need not come from the same department, but at least six hours must be 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 adviser.

Department of Sociology Requirements

	Semester Credit Hours
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

Regular advising is strongly recommended for all majors. Further information on course work, internships, the departmental honors program, careers, and other topics may be obtained from the Sociology Undergraduate Adviser, 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 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

Special Education

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 of 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 survey data collection 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, PORT)

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: Bouvier, Christian, Peres, Sánchez

Instructors: Little, Roman

^{††}Distinguished University Professor

The Majors

Requirements for the Spanish and Portuguese majors include the College of Arts and Humanities requirement of 45 upper-level credits completed. The College foreign-language requirement will be automatically fulfilled in the process of taking language major courses.

Undergraduate majors can benefit from a wide range of courses in Spanish and Latin American literature and civilization; technical courses in translation, linguistics, and commercial uses of Spanish. Area studies programs are also available in conjunction with other disciplines to provide the student with a solid knowledge of the Spanish and Latin American worlds.

A grade of at least C is required in all major and supporting area courses.

Departmental advising is mandatory for second-semester sophomores and seniors.

Language and Literature Major

Courses: SPAN 207, 221, 301-302, 311 or 312, 321-322 or 323-324, 325-326 or 346-347; plus four courses in literature at the 400-level; one course may be taken in Luzo-Brazilian literature, for a total of 39 credits. Nine credits of supporting courses, six of which must be at the 300—or 400-level in a single area other than Spanish, for a combined total of 48 credits. Suggested areas: art, comparative literature, government and politics, history, philosophy, and Portuguese.

Foreign Area Major

Courses: SPAN 207; 301-302; 311 or 312; 315 and 415 or 316 and 317; 321-322 or 323-324; 325-326 or 346-347, plus three courses in literature at the 400-level; one course may be taken in Luzo-Brazilian literature, for a total of 39 credits. Nine credits of supporting courses, six of which must be at the 300—or 400-level in a single area other than Spanish, for a combined total of 48 credits. Suggested areas: anthropology, economics, geography, government and politics, history, Portuguese, and sociology.

Translation Option

Courses: SPAN 207; 301-302, 311 or 312; 316 and 317; two courses from 318, 356, 357, 416, 417; 321-322 or 323-324; one course from 325, 326, 346, 347; plus two courses in literature at the 400-level; one course may be taken in Luzo-Brazilian literature, for a total of 39 credits. Nine credits of supporting courses, six of which must be at the 300—or 400-level in a single area other than Spanish, for a combined total of 48 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 at 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

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SPECIAL EDUCATION (EDSP)

College of Education

1308 Benjamin Building, 405-6515/4

<http://www.inform.umd.edu/EdRes/Colleges/EDUC/Depts/SpecialEducation>

Professor and Chair: Burke

Professors: Beckman, Egel, Graham, Harris, Hebeler (emeritus), Leone, Moon

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

Assistant Professors: Anderson, Nolet

Associate Director: McLaughlin

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

Coordinator of Undergraduate Advising: Molloy

Lecturers: Aiello, Danehy, Fink, Glower, Hart, Hudak, Johnson, Long, Lyles, Simon, Strong, Thanhouser, Waranch

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

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 adviser 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 12 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 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 adviser, who is carefully matched to the student's area of interest. It is required that all students consult an adviser 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 adviser 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)
- 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—Inclusive Practices in the Schools (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—Inclusive Practices in the Schools (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 480—Microcomputers in Special Education (3)
 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 (3)
 EDSP 441—Assessment and Instructional Design for the Handicapped:
 Oral Language and Communication Disorders (3) **OR**
 EDSP 404—Education of Students with Autism (3)

For SD endorsement: EDSP 403—Physical and Communication Adaptation
 for Students with Disabilities (3)

Course Code: EDSP

SPEECH COMMUNICATION (SPCH)

College of Arts and Humanities

2130 Skinner Building, 405-6519

Acting Chair: Watson

Professors: Fink[†], Freimuth, Watson, Wolvin

Associate Professors: Gaines, Klumpp

Assistant Professors: Cai, Rao

Lecturers: Chen, Waks

Adjuncts: Eadie, Niles

[†]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

Requirements for the Speech Communication major include a minimum of
 45 upper-level credits completed and the foreign—language requirement of
 the College of Arts and Humanities.

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

(30 semester hours): SPCH 200 or 230, 250, 400, 401, and 402. 15
 semester hours in SPCH courses, at least 12 of which must be at the 300-
 400 level.

Departmental advising is mandatory for second-semester sophomores and
 seniors.

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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, or ANTH 380. 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

THEATRE (THET)

College of Arts and Humanities

0202 Tawes Fine Arts Building, 405-6676

thetdept@umdacc.umd.edu

<http://www.inform.umd.edu/THET>

Chair: Meersman

Professors: Gillespie, Meersman

Associate Professors: Hébert, Huang, O'Leary, Patterson, Schuler

Assistant Professors: Anderson, Conway, Coustant, Reese, Wagner

Instructors: Kriebs, Krostyné

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 42 hours of course work in theatre, exclusive of those courses taken to satisfy college and university requirements. Of the 42 hours, at least 21 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

Requirements for the Theatre major include a minimum of 45 upper-level credits completed and the foreign language requirement of the College of Arts and Humanities.

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.

Performance 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 Performance 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 adviser.

Advising

Advising is mandatory for undergraduate theatre majors. Students should report to the Theatre department office for registration materials before making an appointment with their adviser.

Honors

The Theatre Department offers an honors program. Contact the Honors Program Adviser 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

TRANSPORTATION, BUSINESS, AND PUBLIC POLICY

For information, consult the College of Business and Management in chapter 6.

WOMEN'S STUDIES (WMST)

College of Arts and Humanities

2101 Woods Hall, 405-6877

WS93@umail.umd.edu

<http://www.inform.umd.edu:8080/EdRes/Colleges/ARHU/Depts/WomensStudies>

Professor and Director: Moses

Professors: Beck, Dill, Rosenfelt

Associate Professors: Barkely Brown, Bolles, Kim, King

Assistant Professor: Matthes

Affiliates Faculty: Harley, Williams (Afro-American Studies); Parks, Sies (American Studies); Gips (Art); Sharp, Withers (Art History); Greer (Chemistry); Doherty, Hallett, Stehle (Classics); Collins, Lanser, Marchetti, Peterson (Comparative Literature); Fassinger (Counseling and Personnel Services); Simpson (Criminal Justice and Criminology); Heidelberg (Curriculum and Instruction); Kerkham, Yee (Asian and East European Languages and Culture); Beauchamp, Coletti, Donawerth, Kauffman, King, Leonardi, Lindemann, Logan, McDowell, Ray, Schilb, Smith Upton, Washington (English); Leslie (Family Studies); Hage, Mossman (French and Italian); Frederiksen, Oster, Strauch (Germanic Studies); Bedos-Rozak, Brush, Gullickson, Muncy, Perinbam, Zilfi (History); Beasley, Grunig (Journalism); Hult (Kinesiology); Herndon, Robertson (Music); Fullinwider (Philosophy and Public Policy); Alexander, Goodman, Helms, Scholnick (Psychology); Badgett (Public Affairs); Bianci, Desai, Hunt, Moghadam, Presser, Segal (Sociology); Bouvier, Cypress (Spanish and Portuguese Languages and Literature); Solomon (Speech Communication); Coustaut, Gillespie, Schuler (Theatre); Weil (Center for Women in Int'l Security); Ryan (Writing Center); Palmer (Zoology)

The Major

The Women's Studies Department offers an interdisciplinary academic program designed to examine the historical contributions made by women, reexamine and reinterpret existing data about women, and introduce students to the methodology of feminist scholarship. The program offers interdisciplinary courses on women, encourages the offering of courses on women in other disciplines, and promotes the discovery of new knowledge about women. Women's Studies courses challenge students to question traditional knowledge about women and men and to examine differences among women. Students gain an understanding of and respect for differences in human lives as they encounter issues of diversity in the classroom: age, ability, class, ethnicity, race, religion, and sexual preference.

Requirements for 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 total of 39-42 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 major. Students will design their programs in consultation with a Women's Studies adviser. Advising is mandatory.

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—Feminist Education Practicum and Analysis	(6)
or	
WMST 380—Women's Studies Field Work and Analysis	(6)
WMST 400—Theories of Feminism	(3)
WMST 488—Senior Seminar	(3)

2. Distributive Courses (9 credit hours)

Area 1: Arts and Literature

WMST 241—Women Writers 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—Introduction to 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 408—Special Topics in Literature by Women before 1800 (X-listed as ENGL 408)	(3)
WMST 444—Feminist Critical Theory (X-listed as ENGL 444)	(3)
WMST 448—Special Topics in 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)	(3)
ENGL 348—Literature by Women	(3)
FREN 478—Themes and Movements of French Literature in Translation: French Women Writers in Translations	(3)
GERM 281—Women in German Literature and Society	(3)

Area II: Historical Perspectives

WMST 210—Women in America to 1880 (X-listed as HIST 210)	(3)
WMST 211—Women in America, 1880 to the Present (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)	(3)
WMST 468—Selected Topics in Women's History (X-listed as HIST 458)	(3)
WMST 492—History of the American Sportswoman: Institutions and Issues (X-listed as KNES 492)	(3)
HIST 309—Proseminar in Historical Writing: Women's History	(3)
HIST 319Z—Special Topics in History: Women in the Middle East	(3)
HIST 433—Changing Perceptions of Gender in the US: 1880-1935	(3)
HIST 493—Victorian Women in England, France, and the United States	(3)
HIST 494—Women in Africa*	(3)
HIST 495—Women in Medieval Culture and Society	(3)

Area III: Social and Natural Sciences

WMST 200—Introduction to Women's Studies: Women and Society	(3)
WMST 313—Women and Science (X-listed as ZOO 313)	(3)

WMST 325—Sociology of Gender (X-listed as SOC 325)	(3)
WMST 326—Biology of Reproduction (X-listed as ZOO 326)	(3)
WMST 336—Psychology of Women (X-listed as ZOO 326)	(3)
WMST 360—Caribbean Women*	(3)
WMST 410—Asian-American Women*	(3)
WMST 420—Women in the African Diaspora*	(3)
WMST 430—Gender Issues in Families (X-listed as FMST 430)	(3)
WMST 436—Legal Status of Woman (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)
AASP 498F—Special Topics in and Black Culture: Women and Work*	(3)
CCJS 498—Women and Crime	(3)
SOCY 425—Sex Roles and Social Institutions	(3)
SOCY 498W—Special Topics in Sociology: Women in the Military	(3)
SPCH 324—Communication and Gender	(3)

3. Courses in Cultural Diversity (6)

Students will select two courses for a minimum of six 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 adviser, 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 adviser 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.

Honors

The Honors Program is designed to give students the opportunity to pursue rigorous interdisciplinary research and writing. Interested students who have a GPA of at least 3.0 should apply to the program in their junior year. Students are required to take six credits of upper-level honors or honors-options courses, and honors seminar (WMST 488), as well as write and defend a thesis. Contact the Academic Adviser for further information.

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 Adviser, 405-6877, or writing to Women's Studies Program, 2101 Woods Hall, University of Maryland, College Park, Md. 20742-7415.

Course Code: WMST

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ZOOLOGY (ZOO)

College of Life Sciences

2227 Zoology-Psychology Building, 405-6904
email: ugrad@zool.umd.edu

Professor and Chair: Popper
Professors: Abrams, Borgia, Carter-Porges, Colombini, Costanza, Gill, Highton, Pierce, Reaka-Kudla, Sebens
Associate Professors: Carr, Chao, Cohen, Dietz, Goode, Higgins, Imberski, Inouye, Mount, Palmer, Payne, Small, Stephan, Wilkinson
Assistant Professors: Mueller, Rivas, Tanda
Instructors: Infantino, Kent, Opoku-Edusei
Adjunct Professors: Kleiman, Manning, Morton, Potter, Smith-Gill
Adjunct Associate Professors: Brietburg, Hines, Platt, Wemmer
Adjunct Assistant Professors: Braun, Cannon
Professors Emeriti: Anastos, Clark, Corliss, Haley
Director of Undergraduate Studies: Infantino

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

Requirements for Specialization

See Biological Sciences Program elsewhere in this chapter and Zoology adviser 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 can be scheduled through the undergraduate office, 405-6904. For advising in other Biological Sciences Specialization areas, see the Biological Sciences listing in this catalog for the appropriate coordinating adviser.

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

CAMPUS-WIDE PROGRAMS

Air Force Aerospace Studies Program (ROTC)

2126 Cole Student Activities Bldg., 314-3242

Director: Newton
Assistant Professors: Boland, Reid, 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 adviser, 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 summer prior to attending field training.

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). ARSC 200 provides 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. ARSC 201 examines concepts of leadership, ethics, and quality. 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

STUDY ABROAD PROGRAMS

3125 Mitchell Bldg., 314-7746
e-mail: studyabr@deans.umd.edu
<http://www.inform.umd.edu/INTL/StudyAbroad>

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 information 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.

Maryland Study Abroad Semester/Year Programs

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.

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

Study in London: The curriculum consists of courses in the humanities, business, social sciences, and sciences. Students are able to live in dorms, in flats with other program participants or with a British family to increase their immersion in British life.

Maryland-in-Nice: Offers French language courses for foreigners and regular courses at the University of Nice for students with sufficient French language background.

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

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 Florence: Students take courses at the Institute of Italian Studies, which is comprised of the Lorenzo De'Medici Institute and the Art Institute of Florence. Classes are in English for fall and spring semesters.

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

Maryland in Spain: Students take courses in Spanish language and culture at the Program for Foreigners. Students with sufficient competence in Spanish may take courses with Spanish students at the University of Alcalá in the humanities, social sciences, and business.

Summer Programs

Architecture Abroad: The School of Architecture sponsors various summer study programs which allow students at an advanced undergraduate and graduate level to deal creatively with architectural issues in a foreign environment. Program locations vary, but include Tunisia, Turkey, and Western Europe.

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

Summer in Taxco, Mexico: The Department of Spanish and Portuguese sponsors a six-week intensive Spanish language program for students at the elementary and intermediate levels.

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

Costa Rica: Sustainable Futures: On this eight-week program, students live and work in a rural but rapidly developing region on projects concerned with sustainable futures.

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 Kingston for chemistry 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; King's College for physics majors; ; University of Surrey for sociology majors and University of Liverpool for history majors. In Japan, Keio University in intensive Japanese and Hiroshima and Chiba Universities for the humanities, social sciences, and engineering. In Korea, Yonsei University. In Germany, the University of Bremen, the Free University of Berlin, and the Gesamthochschule Kassel. In Austria, the University of Vienna. In Spain, University of Alcalá for students in Business. In Sweden, Uppsala University.

January Programs

Global Studies—Europe: The three-week program will take place at Denmark's International Study program at the University of Copenhagen and provides students with a hands-on introduction to Europe today.

UNDERGRADUATE STUDIES

University Honors Program

Anne Arundel Hall, 405-6771/3
<http://www.inform.umd.edu/EdRes/Colleges/HONR>

Director: Mack

The University Honors Programs offers the most talented students on campus special educational opportunities and resources. Honors students combine Honors course work with regular electives and studies in their major to deepen their total educational experience. First- and second-year undergraduates broaden their intellectual horizons by selecting Honors seminars and Honors versions of regular courses in the arts and sciences, most of which fulfill Core (general education) requirements. They may earn the Honors Citation by fulfilling all requirements in five semesters. Juniors and seniors may continue taking Honors seminars, teach in two one-credit colloquia for first-year students, and apply to more than 30 departmental or college Honors programs that provide opportunities to work closely with faculty mentors on independent research projects.

Honors seminars offer small (12-20 students) academic experiences characterized by active participation, intensive writing, and faculty who encourage critical thinking and reflective learning. A course entitled *Knowledge and Its Human Complications* provides second-semester Honors students with the option of a challenging, interdisciplinary common intellectual experience.

Anne Arundel Hall, the Honors Living/Learning Center, houses 100 of the Honors students, program staff, scholar-in-residence, computer lab, Portz Library, seminar rooms, and lounges. Other Honors students live and study together in Queen Anne's Hall and on designated Honors floors in various residence halls.

Qualified first-year entering students are invited into Honors; transfer students with between 12 and 30 credits (excluding AP credits) will be considered for admission. Transfer 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. Most departmental and college Honors programs

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begin in the junior year. Please contact departments or colleges directly for admission requirements.

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

College Park Scholars

1125 Cumberland Hall 314-CPSP (2777)

Executive 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, eight programs are available:

**Advocates for Children
American Cultures
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)

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 adviser.

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
Assistant Director for Pre-Professional Advising: Lisa Bradley
0110 Hornbake Library, 405-2793 or 314-8418
Advisers: Health professions: Lisa Bradley, Monica Moore, Guy Hohenhaus
Law: Mary Crawford

General Information

Pre-professional programs are designed to provide the necessary academic foundation required for entrance into professional schools. Some students may be admitted to programs after two to three years of study but most students are admitted only after the completion of a bachelor's degree.

Six programs are advisory ONLY and except in certain limited circumstances, as described herein, these programs may not 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 adviser can provide guidance concerning the choice of major.

Of particular interest to allied health students, the University of Maryland, College Park offers the opportunity to complete courses required for admission into professional programs in the areas of dental hygiene, medical technology, nursing, pharmacy, and physical therapy.

However, the University of Maryland, College Park does not offer an academic degree (nor certificate/ diploma) in any of the aforementioned areas. Students who intend to apply to a professional curriculum must adhere to the policy set forth by the University of Maryland which states that students have until the accumulation of 56 credits to declare a degree-granting major. Allied health students may select from any of the degree-granting majors offered at the University of Maryland, College Park in deciding an appropriate major. Most professional schools for Allied Health programs tend to allow student discretion in selecting a major and do not give preference to one major over another. Popular majors for each of the pre-professional areas have been indicated within each subcategory. The academic advisers in the Division of Letters and Sciences and the allied health adviser can assist students in this process.

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 adviser. For admissions requirements, the student is urged to study the catalog of each professional school.

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

Pre-Dental Hygiene

Adviser: Moore

The Pre-Dental Hygiene program is designed to prepare students for entrance into the professional curriculum for Dental Hygiene at the University of Maryland at Baltimore and other institutions which offer Dental Hygiene programs. This is not intended as a Pre-Dental major. Popular majors for students interested in dental hygiene include health, nutrition and food science, and biology. However, any major is suitable as long as all prerequisite courses are completed. The Division of Letters and Sciences will assist students in making an appropriate major selection.

The Dental School of the University of Maryland (UMAB), located in Baltimore, 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. Admission into the professional program is not guaranteed.

Pre-Professional curriculum for University of Maryland, College Park students:

	Semester Credit Hours
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 (Elementary Mathematical Models) or MATH 113 (college algebra with applications or MATH 115 (Pre-calculus).....	3
SPCH 100 or 107—Foundations of Speech Communication or Speech Communication: Principles and Practice	3
Elective.....	3
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 100 or higher	3

*Awaiting approval of NFSC 100 as new Nutrition requirement. Check with adviser for current status.

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. Assistance with the application process is available in the advising office. Enrollment as a pre-dental hygiene student or as a registered dental hygienist does not guarantee admission into the professional phase of Dental Hygiene.

Further Information

At College Park contact the Pre-Dental Hygiene Adviser, 1117/0110 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

Adviser: 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 adviser. It is important, therefore, for the student to contact the pre-dental adviser 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 Adviser, 1117/0110 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 adviser will advise about the first two topics, while the Pre-Dental Adviser will advise about dental school admission requirements.

Although specific admission requirements vary somewhat from dental school to dental school, the undergraduate courses which constitute the basic admission requirements and which prepare the student for the DAT are the following:

	Semester Credit Hours
ENGL 101 and 391—English Composition	3, 3
CHEM 103, 113—General Chemistry I, II	4, 4
CHEM 233, 243—Organic Chemistry I, II	4, 4
PHYS 121, 122 or PHYS 141, 142—Physics	4, 4
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. BIOL 101, 102, 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. PBIO 100 and 101, BIOL 101 and 102, and MICB 100 may not be taken to meet this requirement. It

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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 adviser 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, College Park. The Bachelor of Arts degree is awarded by the University of Maryland, 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
Adviser: Crawford

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 skills which are essential in preparing to perform well in law school, on the Law School Admissions Test (LSAT), and ultimately as a lawyer. These skills 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 a 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 University of Maryland, College Park major with at least six credits at the 300-400 level; minimum grades of C achieved 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 adviser before registering for the first semester at College Park.

For additional information, contact the Pre-Law Adviser, 1117/0110 Hornbake Library, 405-2793.

Pre-Medical and Research Technology

Adviser: Moore

The Pre-Medical and Research Technology program is designed to prepare students for entrance into the professional curriculum for Medical and Research Technology. Popular majors for students interested in MedTech include biology, chemistry, and health; however, any major is suitable as long as all prerequisite courses are completed. The Division of Letters and Sciences will assist students in making an appropriate major selection.

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 as well as other institutions throughout the country. Completion of this two-year pre-professional curriculum is required **before** admission to the professional curriculum at UMAB. 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. Assistance with the application process is available in the advising office. Enrollment as a pre-professional student does not guarantee admission into a medical technology program.

Pre-Professional curriculum for University of Maryland, College Park 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—Principles of Biology I.....	4
ZOOL 201 or 202, Anatomy and Physiology I or II.....	4
MICB 200—Gen. Microbiology.....	4
MATH 110 or 113 or 115.....	3
CMSC 103 or higher.....	3
Statistics 100 or higher.....	3
ENGL 101—Introduction to Writing.....	3
Literature or English elective.....	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.....	63

*May not include health or physical education.

Further Information

At College Park, contact the Medical and Research Technology Adviser, University of Maryland, 1117/0110 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

Adviser: 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 bachelor's degree at College Park. The pre-medical adviser 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 school admissions committees generally request or require an evaluation from the

student's pre-medical adviser. It is important, therefore, for the student to contact the pre-medical adviser 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 Adviser, 1117/0110 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 adviser will advise about the first two topics, while the pre-medical adviser 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. BIOL 101, 102 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	3, 3
or MATH 140, 141—Calculus	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. PBIO 100, 101, 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 adviser 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 recommendation of the Dean of the School of Medicine and approval of the University of Maryland, College Park. The Bachelor of Arts degree is awarded by the University of Maryland, 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

Adviser: Moore

College Park students may prepare themselves not only for entrance into the professional curriculum for Nursing at UMAB, 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 and other area programs are available at the advising office, room 0110, Hornbake Library.

The School of Nursing, located in Baltimore at the University of Maryland at Baltimore, 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. Assistance with the application process is available in the advising office. Enrollment as a pre-nursing student does not guarantee admission to the nursing program at UMAB. Popular majors for students interested in Nursing include: nutrition, health, and psychology; however, any major is suitable as long as all prerequisite courses are completed. The Division of Letters and Sciences will assist students in making an appropriate major selection.

Pre-Professional curriculum for University of Maryland, College Park 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 (Prerequisite for MICB 200)	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 100—Elements of Nutrition.....	3
Elective.....	2-3
Total	59-60

140 Certificate Programs

*Must include at least one course which is not Mathematics or English.

Further information

At College Park contact the Nursing Adviser, 0110 Hornbake Library, College Park, Md. 20742, 405-2793. In Baltimore contact the Office of Admissions, The University of Maryland, School of Nursing, 655 W. Lombard Street, Baltimore, Md. 21201, (800) 328-8346.

Pre-Optometry

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

Pre-Osteopathic Medicine

Adviser: 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 Adviser, 1117/0110 Hornbake Library, the University of Maryland, College Park, Md. 20742, 405-2793.

Pre-Pharmacy

Adviser: Moore

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 Law & Health Professions Advising Office, 0110 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.

Popular majors for students interested in Pharmacy include: nutrition, biology, chemistry, and psychology; however, any major is suitable as long as all prerequisite courses are completed. The Division of Letters and Sciences will assist students in making an appropriate major selection.

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. Assistance with the application process is 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 adviser.

Pre-Professional Curriculum for University of Maryland, College Park Students:

	Semester Credit Hours
CHEM 103, 113—General Chemistry I, II.....	4, 4
CHEM 233, 243—Organic Chemistry I, II.....	4, 4
MATH 220—Elementary Calculus I or MATH 140.....	3, 4
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.....	60-62

Further Information

At College Park contact the Pre-Pharmacy Adviser, University of Maryland, 1117/0110 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

Adviser: Moore

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, 0110 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.

Note: Professional curricula may vary in length depending on institutions. Some institutions require a baccalaureate prior to admission. Popular majors for students interested in Physical Therapy include: kinesiology (especially biomedical sequence track), nutrition, psychology and health; however, any major is suitable as long as all prerequisite courses are completed. The Division of Letters and Sciences will assist students in making an appropriate major selection.

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.

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.

Pre-professional Curriculum for University of Maryland, College Park Students Applying to UMAB:

	Semester Credit Hours
CHEM 103, 104*—General Chemistry I, Fundamentals of.....	4,4
Organic & Biochemistry	
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 or MATH 140	3 or 4
Statistics (see adviser)	6
CMSC 103—Introduction to Computing.....	3
PSYC 100—Introduction to Psychology.....	3
Personality or Development Psychology	3
EDHD 320—Human Growth & Development	3
ENGL 101—Introduction to Writing	3
ENGL 291 or 391 or 395—Intermediate or Advanced Writing.....	3
General Education (see adviser)	21
Electives.....	14
TOTAL	90-91

*CHEM 113 may be substituted for CHEM 104.

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

Pre-Professional Curriculum for University of Maryland, College Park Students Applying to UMES:

	Semester Credit Hours
CHEM 103, 104*—General Chemistry I, Fundamentals of	4,4
Organic & Biochemistry	
PHYS 121, 122—Fundamentals of Physics I,II	4,4
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—Pre-calculus	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 100—Foundations of Speech Communication.....	
OR SPCH 107—Speech Communication: Principles and Practice.....	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.

**Requirements for UMES vary for applicants with an undergraduate degree.

Further information

At College Park, contact the Pre-Physical Therapy Adviser, 1117/0110 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

Adviser: 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 Adviser, the University of Maryland, 1117/0110 Hornbake Library, College Park, Md. 20742, 405-2793.

Pre-Veterinary Medicine

Advisers: Hohenhaus, Ingling, Loizeaux, Stephenson

University of Maryland, College Park students interested in veterinary medicine are eligible for a special degree program offered through the College of Agriculture and Natural Resources. Through this program (See College of Agriculture and Natural Resources entry in chapter 6 of 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:

University of Maryland, College Park 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

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 develop a specialization in African-American studies while pursuing a major in another field. Certificate students learn about the social, economic, political, and cultural history of African-American people through a concentration of courses (21 credit hours). Courses taken toward the certificate also may be used to satisfy Core requirements and electives.

Undergraduates in good standing may apply for the program by contacting the academic adviser 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
 JAPAN 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 adviser 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.

Latin-American Studies Certificate

College of Arts and Humanities

Latin-American Studies Center
4205 Jimenez Hall, 405-6456

The new multidisciplinary certificate program in Latin-American Studies is open to University of Maryland, College Park undergraduates in any major who are interested in international studies and Latin America. The undergraduate Certificate in Latin-American Studies will be awarded to students who have completed 21 credits with a grade of C or better in the following areas.

Requirements for Certificate

A. Core curriculum for all certificate students (12 credits)

SPAN/PORT 234 Issues in Latin-American Studies I
SPAN/PORT 235 Issues in Latin-American Studies II
HIST 250 or HIST 251 Latin American History I or II
SPAN/PORT 458 Senior capstone course in Latin-American Studies

B. Additional courses in Latin-American Studies (9 credits)

Nine credits is additional courses to be chosen from an approved list and from at least two different departments. At least six credits must be at the 300- or 400-level. See Latin-American Studies adviser for details.

C. Foreign Language Competency

All certificate students must demonstrate their competence in either Spanish or Portuguese. Competency may be proven with a grade of C or better in an intermediate-level course (PORT 203, SPAN 201) or higher. Native speakers of Spanish or Portuguese or students with extensive experience in these languages should consult with the Latin-American Studies adviser.

Interested students should contact Dr. Phyllis Peres, 2210 Jimenez Hall by phone (405-6456) or by E-mail(pb59@umail) or stop by the Latin-American Studies Office, 4205 Jimenez Hall.

Women's Studies Certificate

College of Arts and Humanities

2101 Woods Hall, 405-4977

<http://www.inform.umd.edu/EdRes/Colleges/ARHU/Depts/WomensStudies>

See Women's Studies Department for faculty roster.

The Women's Studies Certificate Program consists of an integrated, interdisciplinary curriculum on women that is designed to supplement a student's major. Any student in good standing may enroll in the certificate program by declaring her/his intention to the Women's Studies

Undergraduate Adviser. 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 21 credits in Women's Studies courses, nine of which must be at the 300/400 level. No more than three credit hours of special topics courses may be counted toward the certificate. No more than nine credit hours which are applied toward a major may be included in the Certificate Program. No more than nine credit hours may be taken at institutions other than the University of Maryland, College Park. Each student must obtain a grade of C or better in each course that is to be counted toward the certificate. Of the 21 credits, courses must be distributed as follows:

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 I: Arts and Literature

WMST 241—Women Writers of French Expression in Translation
(X-listed as FREN 241)3
WMST 250—Introduction to Women's Studies:
Women, Art, and Culture3
WMST 255—Literature by Women (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 408—Special Topics in Literature by Women before 1800
(X-listed as ENGL 408)3
WMST 444—Feminist Critical Theory (X-listed as ENGL 444)3
WMST 448—Special Topics in 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 Perspective on Women in Art
(X-listed as ARTH 466)3
WMST 493—Jewish Women in International Perspective*3
WMST 494—Lesbian Communities and Difference*3
WMST 496—African-American Women Filmmakers*
(X-listed as THET 496)3
ENGL 348—Literature by Women3
FREN 478—Themes and Movements of French Literature in
Translation: French Women Writers in Translation3
GERM 281—Women in German Literature and Society.....3

Area II: Historical Perspectives

WMST 210—American Women to 1880 (X-listed as HIST 210)3
WMST 211—American Women 1880 to the Present
(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: Institutions and Issues
(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 Life3
HIST 309—Proseminar in Historical Writing: Women's History3
HIST 319Z—Special Topics in History: Women in the Middle East*3
HIST 433—Changing Perceptions of Gender in the U.S.: 1880-1935 ..3
HIST 493—Victorian Women in England, France, and the United States3
HIST 494—Women in Africa*3
HIST 495—Women in Medieval Culture and Society.....3

Area III: Social and Natural Sciences

WMST 200—Introduction to Women's Studies: Women and Society ...3
WMST 313—Women and Science (X-listed as ZOOL 313)3
WMST 325—Sociology of Gender (X-listed as SOCY 325).....3

WMST 326—Biology of Reproduction (X-listed as ZOOL 326)	
WMST 336—Psychology of Women (X-listed as ZOOL 326).....	3
WMST 360—Caribbean Women*	3
WMST 410—Asian-American Women*	3
WMST 420—Woman in the African Diaspora*	3
WMST 430—Gender Issues in Families	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
AASP 498F—Special Topics in Black Culture: Women and Work*	3
CCJS 498—Women and Crime	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. Courses in Cultural Diversity

Students will select two courses for a minimum of six credits. Approved courses are noted with an asterisk in section 2, above. Courses in this category 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 298 or 498: Special Topics in Women's Studies and WMST 499: Independent Study.

Advising

To obtain more information, contact the Undergraduate Adviser 405-6877, or write to Women's Studies Department, 2101 Woods Hall, University of Maryland, College Park, Md., 20742.

Course Code: WMST

Science, Technology and Society Certificate

College of Arts and Humanities

College of Engineering

1102A Skinner Hall, 405-5706

The undergraduate certificate program in Science, Technology, and Society (STS) offers students an opportunity to expand their understanding of the complex relationships of science, technology, and society and to augment their general scientific and technological literacy. Students in the Program may concentrate on one of two tracks: History and Philosophy of Science and Technology (HPST) or Social and Policy Studies of Science and Technology (SPSST).

Requirements for Certificate:

Students will take thirty credits, comprised of three general fundamental courses plus the track fundamental and track elective courses in the track they wish to pursue. No more than nine credit hours may be applied toward the student's major. A minimum of nine credit hours must be taken in upper division courses. A maximum of three credit hours of "Special Topics" or "Selected Topics" course may be taken. No more than nine credit hours may be taken at institutions other than the University of Maryland, College Park.

When all requirements for the certification have been completed with a minimum grade of "C" in each course, and after the Director of the program has so recommended, the Registrar will issue a certificate. The certificate will not be issued before the granting of the Bachelor's degree.

General Fundamental Courses:

1. A suitable introductory or capstone course approved by the STS policy committee.*
2. A course in "technological literacy": currently approved courses include ENES 100, ENES 105, and GEMS 101.
3. A natural science course satisfying the requirements for a major in that discipline, such as AGRO 302, PHYS 141, ENTM 205, MICB 200, PHYS 141, or ZOOL 210. The course need not have an associated laboratory section.

The History and Philosophy of Science and Technology Track

A. HPST Track Fundamental courses:

1. One course from the SPSST track fundamental course list drawn from areas 2,3,4 or 5.
2. One introductory course in the history of science or technology or introductory philosophy of science:
HIST 174—(Introduction to the History of Science).
HIST 175—(Science and Technology in Western Civilization).
PHIL 250—(Philosophy of Science I).
PHIL 256—(Philosophy of Biology I).

3. Three advanced courses in the history of science or technology or philosophy of science, approved by the STS policy committee, with no more than two drawn from each department.

HIST 401—The Scientific Revolution: From Copernicus to Newton
HIST 402—he Development of Modern Physical Science:

From Newton to Einstein

HIST 403—twentieth Century Revolutions in the Physical Sciences

HIST 404—History of Modern Biology

HIST 406—History of Technology

HIST 407—Technology and Social Change in History

PHIL 450—Scientific Thought I

PHIL 451—Scientific Thought II

PHIL 452—Philosophy of Physics

PHIL 453—Philosophy of Science II

PHIL 455—Philosophy of the Social Sciences

PHIL 456—Philosophy of Biology II

PHIL 458—Topics in the Philosophy of Science

PHIL 485—Philosophy of Neuroscience

B. HPST Track Electives

Two courses from the above list of advanced courses in the history and philosophy of science that were not selected to fulfill the HPST fundamental requirement, or courses approved by the STS policy committee.

Social and Policy Studies of Science and Technology Track:

A. SPSST Track Fundamental Courses:

1. One course from the HPST track fundamental course list, or an HPST track elective not listed as an SPSST track elective.
2. A course in economics, such as ECON 105, ECON 201, approved by the STS policy committee.
3. A course in government, such as GVPT 273 or GVPT 306, approved by the STS policy committee.
4. A social studies of science and technology course, such as SOCY 333 or EDIT 476, approved by the STS policy committee.
5. One course in public policy, such as GVPT 479 or AREC 240, or a course approved by the STS policy committee.

B.SPSST Track Electives

Two courses from a list of courses prepared by the STS policy committee.

* Courses that will currently satisfy this requirement include: the CPSP course, "Issues in Science, Technology, and Society," and the GEMS courses, "Technology and Society: Historical Perspectives," and "Technology and Society: Sociological Perspectives."