

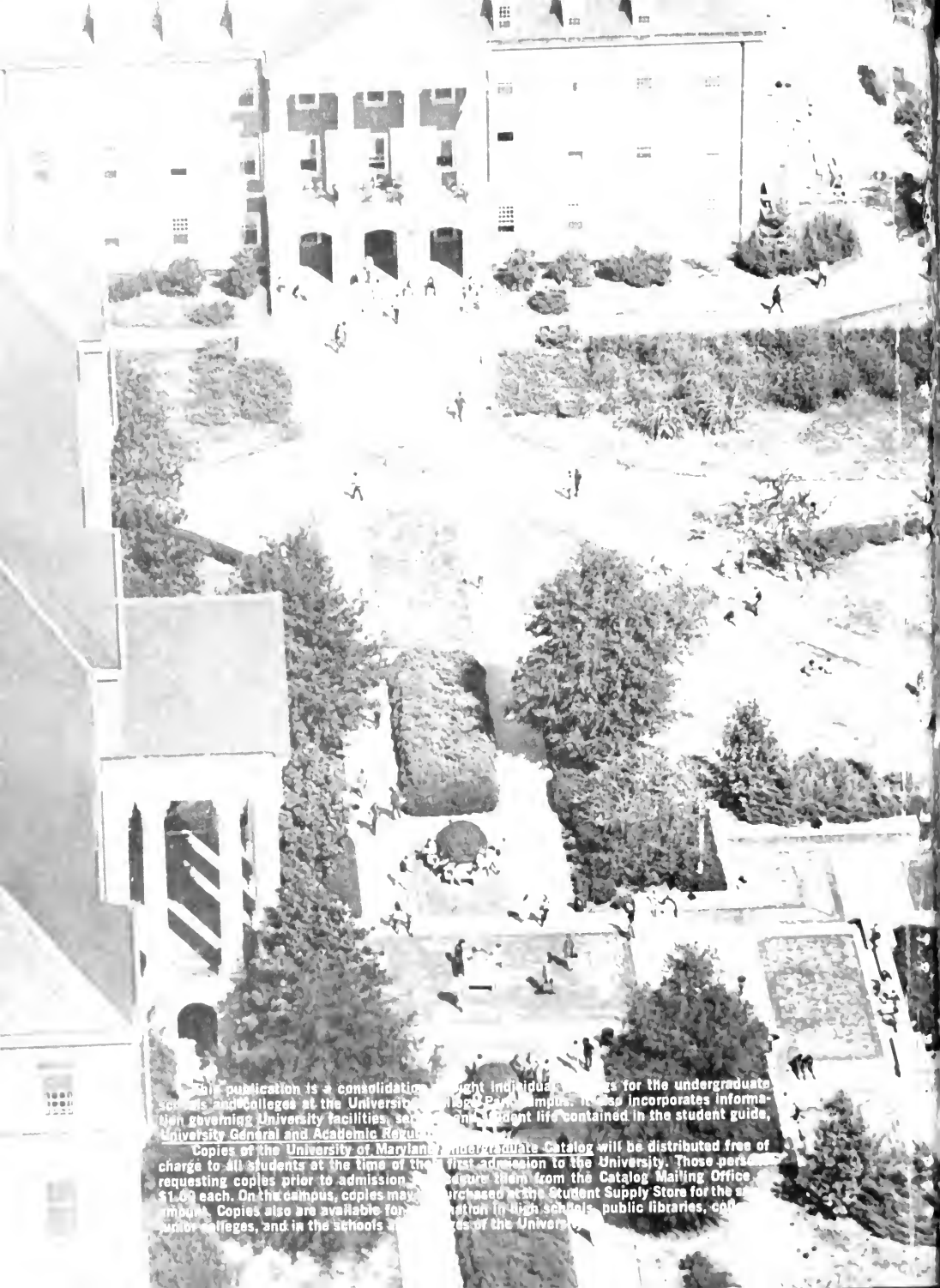
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consolidated
undergraduate
catalog

1970-71



This publication is a consolidation of the most important individual sources for the undergraduate schools and Colleges at the University of Maryland, College Park campus. It also incorporates information governing University facilities, services, and student life contained in the student guide, University General and Academic Regulations.

Copies of the University of Maryland Undergraduate Catalog will be distributed free of charge to all students at the time of their first admission to the University. Those persons requesting copies prior to admission should secure them from the Catalog Mailing Office, \$1.00 each. On the campus, copies may be purchased at the Student Supply Store for the same amount. Copies also are available for distribution in high schools, public libraries, college and cafes, and in the schools and libraries of the University.

THE UNIVERSITY OF MARYLAND
AT COLLEGE PARK
UNDERGRADUATE
CONSOLIDATED CATALOG
1970-71

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THE UNIVERSITY OF MARYLAND BULLETIN is published: once in August; three times in September; two times in October; once in November; seven times in December; three times in January; once in February; once in March; two times in April; four times in May; two times in June; and three times in July. Published thirty times. Re-entered as second class mail matter under the Act of Congress on August 24, 1912, and second class postage paid at College Park, Maryland 20742.



The University of Maryland is dedicated to providing its students with opportunities to develop fully their intellectual capacities. In addition to the many different baccalaureate degree programs, an honors program and other special programs have been developed to enable students to design curricula to meet their individual interests. Every effort is made to ensure that those who enroll in the University find their studies to be an exciting adventure in learning.

C. E. Bishop

FOR ADDITIONAL INFORMATION . . .

College Park Campus
University of Maryland
College Park, Maryland 20742:

For copies of this publication—
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The Registrar, UMBC
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Baltimore, Maryland 21228

Office of the Dean of the
Respective College
University of Maryland
Lombard and Greene Streets
Baltimore, Maryland 21201

Director of Admissions
University of Maryland,
Eastern Shore
Room 311, Maryland Hall
Princess Anne, Maryland

The provisions of this publication are not to be regarded as an irrevocable contract between the student and the University of Maryland. Changes are effected from time to time in the general regulations and in the academic requirements. There are established procedures for making changes, procedures which protect the institution's integrity and the individual student's interests and welfare. A curriculum or graduation requirement, when altered, is not made retroactive unless the alteration is to the student's advantage and can be accommodated within the span of years normally required for graduation. When the actions of a student are judged by competent authority, using established procedure, to be detrimental to the interests of the University community, that person may be required to withdraw from the University.

The University of Maryland, in all its branches and divisions, subscribes to a policy of equal educational and employment opportunity for people of every race, creed, ethnic origin or sex.

The University of Maryland has been elected to membership in the Association of American Universities. This Association founded in 1900 is an organization of those universities in the United States and Canada generally considered to be preeminent in the fields of graduate and professional study and research.



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FALL SEMESTER, 1970

September 8-11	Tuesday-Friday	Fall Semester Registration
September 12	Saturday	Teacher Registration
September 14	Monday	Instruction begins
November 25	Wednesday	After last class—Thanksgiving recess begins
November 30	Monday	8:00 a.m. — Thanksgiving recess begins
December 18	Friday	After last class — Christmas recess begins
January 4	Monday	8:00 a.m. — Christmas recess ends
January 13	Wednesday	Pre-exam Study Day
January 14-19	Thursday-Tuesday	Fall Semester Examinations
January 20	Wednesday	Study Day
January 21-22	Thursday-Friday	Fall Semester Examinations

SPRING SEMESTER, 1971

February 1-5	Monday-Friday	Spring Semester Registration
February 6	Saturday	Teacher Registration
February 8	Monday	Instruction begins
April 9	Friday	After last class — Spring recess begins
April 19	Monday	8:00 a.m. — spring recess ends
May 26	Wednesday	Pre-exam Study Day
May 27-29	Thursday-Saturday	Spring Semester Examinations
May 31	Monday	Memorial Day
June 1-4	Tuesday-Friday	Spring Semester Examinations
June 5	Saturday	Commencement

SUMMER SCHOOL 1971

June 21, 22	Registration	
June 23	Instruction begins	Monday-Tuesday
July 5	Independence day Holiday	Wednesday
August 13	No classes	Monday
	Summer session ends	Friday

ACADEMIC CALENDAR

FALL SEMESTER 1971-72

September 7-11	Fall Semester Registration	Tuesday through Saturday
September 13	Instruction begins	Monday
November 24	Thanksgiving recess begins	Wednesday, after last class
November 29	Thanksgiving recess ends	Monday, 8:00 A.M.
December 17	Christmas recess begins	Friday, after last class
January 3	Christmas recess ends	Monday, 8:00 A.M.
January 11	Instruction ends	Tuesday, after last class
January 12, 19	Exam study days	Wednesdays
January 13, 21	Fall semester final exams	Thursday through Friday

SPRING SEMESTER 1972

January 31—	Spring Semester Registration	Monday through Saturday
February 5	Instruction begins	Monday
February 7	Spring recess begins	Friday, after last class
March 31	Spring recess ends	Monday, 8:00 A.M.
April 10	Instruction ends	Tuesday, after last class
May 23	Pre-exam study day	Wednesday
May 24	Memorial day	Monday
May 29	Spring semester examinations	Thursday through Friday
May 25—June 2		

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GENERAL INFORMATION

THE UNIVERSITY

The contemporary university is a comprehensive educational institution composed of colleges and schools and offering a multiplicity of undergraduate programs that are closely related to the graduate and professional programs.

Comprehensive universities as we know them in the United States have existed for not more than a century, but their roots can be traced back to medieval history. The English college system served as the model for the earliest American efforts at higher education. The ancient German university tradition was joined with this in the 1870's to form the basic outlines of our present institutions. Practical studies were grafted onto these more classically and theoretically-oriented traditions by the agricultural emphasis of the land grant movement.

With the explosion of scientific and technological knowledge in the early twentieth century, the role of the universities in American society attained increased importance, and today almost all aspects of national life—social, economic, scientific, and cultural—benefit from their educational, research and service functions.

OBJECTIVES OF THE UNIVERSITY

Although the University of Maryland is a state institution quite large in physical plant, student enrollment, number of curricula offered, and services performed, its objectives remain constant and form a basis for all educational activity. Simply stated they are: (1) to prepare students in the arts, the humanities, the basic and applied sciences, and the professional curricula; (2) to provide general education in its broadest sense, both formal and informal, for all students who enroll; (3) to develop

those ideals and finer relationships among students which characterize cultured individuals; (4) to conduct systematic research and to promote creative scholarship; and (5) to offer special, continuation, and extension education in communities where it is feasible to do so.

HISTORY

The University had its beginnings in 1807 with the establishment in Baltimore of the College of Medicine, an entirely faculty-owned institution granting the M.D. degree. When, five years later, its name was changed to the University of Maryland, it was given power to confer additional degrees. Subsequently, the University opened a School of Dentistry (1840), the first such school in the world, and then added Schools of Pharmacy (1871), Law (1882), and Nursing (1889).

The College Park campus of the University was opened in 1859 as the Maryland Agricultural College under a charter secured in 1856 by a group of Maryland planters. After a disastrous fire in 1912, the State acquired control of the College and bore the costs of rebuilding. In 1920 the State took over the faculty-owned University in Baltimore, merging it with the State-owned institution at College Park to form the present-day University of Maryland.

In 1886 the Delaware Conference Academy was founded by the Methodist Church in Princess Anne, Maryland. Title to the institution was acquired by the State of Maryland in 1926, and it became a division of the University of Maryland in 1948. The Regents have approved a proposal to make it an integral part of the University system with the name, University of Maryland Eastern Shore (UMES).

A new undergraduate branch campus, known as University of Maryland Baltimore County (UMBC), was opened at Catonsville in 1966.

THE UNIVERSITY TODAY

The University of Maryland is a comprehensive educational unit offering curricula in over 120 fields. These curricula are offered through the following major academic divisions:

At College Park

- College of Agriculture
- College of Arts and Sciences
- College of Business and Public Administration
- College of Education
- College of Engineering, the Glenn L. Martin Institute of Technology
- College of Home Economics
- College of Physical Education, Recreation, and Health
- University College
- Graduate School
- School of Library and Information Services (Graduate level only)

- Summer School
- School of Architecture
- School of Nursing (First two years)
- School of Pharmacy (First two years)

At Baltimore City

- School of Dentistry
- School of Law
- School of Medicine
- School of Nursing
- School of Pharmacy
- School of Social Work and Community Planning

At Catonsville

- University of Maryland Baltimore County

At Princess Anne

- University of Maryland Eastern Shore

Other resources of the University include a library system, the Computer Science Center, the Agricultural Experiment Station, the University Hospital, the Psychiatric Institute, the Natural Resources Institute, and various other institutes and bureaus.



UNDERGRADUATE DEGREE PROGRAMS

One major advantage of attending a university is the broad range of programs available. This diversity allows the student to change from one major to another without leaving the institution, to choose from a wide spectrum of elective courses, and to benefit from daily contact with students of diverse academic interests and backgrounds.

The undergraduate majors available at College Park are as follows:

College of Agriculture—B.S. Degrees in:

- General Agriculture
- Agricultural Chemistry
- Agricultural Economics (General, Agricultural Business, International Agriculture, Agribusiness Teaching)
- Agricultural and Extension Education
- Agricultural Engineering
- Agronomy (Crops; Technical Crops; General Crops and Turf Management; Technical Soils; General Soils and Soil Conservation; and Crops, Soils, and Geology)
- Animal Science (Large Animal, Dairying, Poultry, and Animal Science Business)
- Botany
- Conservation and Resource Development
- Entomology
- Food Science
- Geology
- Horticulture (Pomology and Olericulture, Floriculture and Ornamental Horticulture, and Horticultural Education)

College of Arts and Sciences

- American Studies—B.A.
- Anthropology—B.A.
- Art—B.A. (General, Art History, and Studio)
- Astronomy—B.S.
- Biochemistry—B.S.
- Botany—B.A.
- Chemistry—B.S.
- Classical Languages and Literature—B.A.
- Comparative Literature—B.A.
- Dance—B.A.
- Economics—B.A.
- English—B.A.
- Foreign Languages and Literature—B.A. (Language and Area Studies in French, German, Russian, and Spanish)
- General Biological Sciences—B.S.
- General Physical Sciences—B.S.
- Geography—B.A.
- Government and Politics—B.A.
- History—B.A.
- Mathematics—B.S.
- Microbiology—B.S.
- Music—B. Mus., B.A. (B. Mus. in Theory and Composition, History and Literature, and Applied Music)
- Philosophy—B.A.
- Physics—B.S.

- Psychology—B.S., B.A.
- Russian Area Studies—B.A.
- Sociology—B.A.
- Speech and Dramatic Art—B.A. (General, Dramatic Art, Radio and Television, and Speech and Hearing)
- Zoology—B.S.

College of Business and Public Administration—B.S. Degrees in:

- Business Administration (General, Accounting, Finance, Insurance and Real Estate, Marketing, Personnel and Labor Relations, Production Management, Statistics and Transportation)
- Economics
- Geography (Urban, Physical, and Cultural Geography and Cartography)
- Government and Politics (General, International Affairs, and Public Administration)
- Journalism
- Information Systems Management

College of Education

- Education (includes several non-departmentalized degree programs, both undergraduate and graduate)—B.S., B.A.
- Agricultural and Extension Education—B.S.
- Early Childhood and Elementary Education—B.S., B.A. (Physical Education, Music, Art, and Foreign Languages)
- Industrial Education—B.S.
- Library Science Education—B.A.
- Secondary Education—B.S., B.A. [Art, English, Foreign Languages (classical or modern), Home Economics, Mathematics, Music (instrumental or vocal), Physical Education, Science, Social Studies (history or geography), Speech, General Business, Secretarial, and Distributive]
- Special Education—B.S.
- Education for Industry—B.S.
- Vocational-Industrial Education—B.S.

College of Engineering—B.S. Degrees in:

- Aerospace Engineering
- Agricultural Engineering
- Chemical Engineering
- Civil Engineering
- Electrical Engineering
- Engineering (Undesignated)
- Fire Protection
- Mechanical Engineering

College of Home Economics—B.S. Degrees in:

- Family and Community Development (Family Studies, Community Studies, and Management and Consumer)
- Food, Nutrition, and Institution Administration (Food and Nutrition, Experimental Foods, Nutrition; Institutional Administration; and Dietetics)
- Textiles and Clothing [Textiles (Textiles and Apparel, Textile Science, or Textile Marketing)]
- Housing and Applied Design (Advertising Design, Costume, Crafts, Housing, and Interior Design)
- Home Economics Education

College of Physical Education, Recreation and Health—B.S. Degrees in:

Physical Education
Recreation
Health Education

School of Architecture—B. Arch. Degree

University College:

General Studies—B. A.
Military Science—B. S. (No new enrollments accepted)

SPECIAL PROGRAMS

There are certain subjects which the student cannot choose as his undergraduate major but can choose as his minor field of study. These include:

Afro-American Studies
Chinese
Portuguese
Hebrew
Greek
Italian
Computer Science
Linguistics

AIR FORCE ROTC

The Department of Air Science operates the Air Force Reserve Officers Training Corps program on an elective basis. The program provides college men with an opportunity to earn commissions in the United States Air Force while earning their degrees. The Air Force ROTC mission is to commission, through a college program, career-oriented second lieutenants in response to Air Force requirements. Students should contact their college within the University to determine the number of AFROTC credits that may be applied toward their degree requirements.

TWO PROGRAMS OFFERED

Four-Year Program

A General Military Course (GMC) is normally for freshmen and sophomores. Those who successfully complete the GMC may apply for the Professional Officer Course (POC) which is the final two years of AFROTC. Progression into the POC is not automatic but is limited to selected students only. Students in the four-year program must attend four weeks of field training at a designated Air Force base during the summer after completing the junior year of college. To enter the AFROTC program, one should inform his advisor and register for it in the same manner as for other courses. Only students who elect the four-year program are eligible to apply for the AFROTC College Scholarship Program.

Two-Year Program

The Professional Officer Course (POC) is normally offered in the junior and senior years, but may be taken by graduate students otherwise qualified. This program is especially attractive for those unable to take the four-year program, particularly transfer students. Evaluation of candidates is normally begun during the first semester of the sophomore year, since each student must meet physical and mental standards set by the Air Force. Interested students should contact a professor of air science as early in their sophomore year as possible. Students in the two-year program must attend six weeks of field training at a designated Air Force base during the summer preceding initial entry into the two-year academic portion. The academic program for the last two years (POC) is identical with the final two years of the four-year program. Cadets in the POC are exempt from the draft, since they are enlisted in the Air Force Reserve. This entitles them to all privileges afforded to military reservists.

UNDERGRADUATE ADMISSION

The University of Maryland, in all its branches and divisions, subscribes to a policy of equal educational opportunity for people of all races, creeds and ethnic origins.

FRESHMAN ADMISSION

Maryland Residents

Admission from secondary school is based on evidence indicating the applicant's probable success in the program of his choice. Applicants will be evaluated by two sets of criteria: (1) high school academic record in college preparatory subjects and class standing and (2) the University's predictive index.

High School Record and Class Standing

Applicants for admission from secondary school who have (1) achieved at least a C average (when D is the lowest passing grade) in college preparatory subjects and (2) rank in the top half of their class will be offered admission.

Predictive Index

Applicants who have achieved at least a C average but who do not rank in the upper half of their class will be evaluated on the basis of the University's predictive index. The variables included in the index are the applicant's (1) grade-point average in academic courses, (2) class rank, and (3) Scholastic Aptitude Test scores.

An applicant whose predicted grade-point average at the end of his first year at the University is 1.75 or better will be offered admission.

Other Requirements for Admission

In addition to meeting one of the sets of criteria noted above all applicants must also:

1. Be recommended for admission by their high school principal or counselor;
2. Have received their high school diploma before their first registration with the University;
3. Have successfully completed the high school subjects required for the college and curriculum for which application is made. (Note: Admission to the School of Architecture is competitive with selection based on previous academic achievement.);
4. Have completed the Scholastic Aptitude Test and have requested that the results be submitted to the University. Applicants should take the SAT before the end of the Fall Semester preceding enrollment at the University. For further information on the SAT, applicants should consult their high school counselor or write to the Educational Testing Service, Princeton, New Jersey 08540. To have the test results sent to the University of Maryland at College Park, use the College Park Campus code number, 5814, in the proper place on the test.

Early Decision

Applicants who have a B average in college preparatory subjects during their junior year in high school or who are in the top fourth of their respective classes may be offered an early decision on admission. Once the applicant accepts the offer by remitting the fifty dollar enrollment deposit, he only needs to submit a final transcript documenting graduation from high school to complete the requirements for admission.

The Out-of-State Student

As the state university, the University of Maryland must give preference to residents. The University will offer admission, however, to a limited number of non-residents of proven academic ability for whom particular programs of the University are especially relevant.

The limitations on out-of-state applicants apply both to freshmen and transfer students.

TRANSFER STUDENT ADMISSION

An applicant must be in good standing in scholarship and character to be considered for admission. Transfer applicants who are residents of Maryland are required to have at least a C average (2.0 on a 4.0 scale) in all previous work. The Associate of Arts degree qualifies the community college transfer student for admission.

Non-resident applicants are required to have a cumulative average of at least 2.5 on a 4.0 scale.

For further information contact the Coordinator of Transfer Students, Office of Admissions.

Transfer Credit

Advanced standing is assigned to transfer students from accredited institutions prior to registration. Academic courses carrying a grade of C or higher usually are transferable provided they are applicable to the curriculum into which the student is transferring.

Transfer of Credit from Community Colleges

A maximum of sixty (60) academic credits are transferable from community colleges. In general, courses taken at a community college which are equivalent to junior or senior level courses at the University may not be transferred.

Special Problems. The College of Business and Public Administration subscribes to the policy that advanced work in professional courses should not be included in the first two years of undergraduate education. The College also limits transfer of lower division courses in Business Administration to a maximum of nine (9) semester hours. Similar limitations are placed on transfer of credit in other professional areas.

Transfer foreign language credit is usually acceptable in meeting college requirements. Prospective students should consult college catalogs to determine the specific requirements of various colleges and curricula.

Credit by Examination. Transfer credit will not be granted for courses taken by examination at other institutions.

The Academic Retention Plan

The academic average of a transfer student at the University of Maryland is based **only** on those courses actually taken at the University. Credit hours for courses taken at other institutions may be transferred, but grades and quality points do not transfer. The level of expectation of academic performance, however, is determined by the total number of credit hours transferred plus the number of hours attempted at the University.

THE SPECIAL STUDENT

Applicants over 21 years of age who qualify for admission but who do not desire to work toward a baccalaureate degree may be admitted as special students. These students are ineligible to matriculate for a degree until they have submitted all required documents. Permission from the dean of the various schools and colleges of the University is

often needed in order to enroll as a special student.

Special students who have received a baccalaureate degree are advised that no credit earned while enrolled as special students may be applied at a later date to a graduate program. These post-baccalaureate students may enroll for courses at the 100 to 199 level for which they possess the necessary prerequisites but may not enroll in courses restricted to graduate students only.

THE FOREIGN STUDENT

The foreign student applying for admission to the undergraduate schools of the University of Maryland should make application at least six months in advance of the term for which he is applying. He will be required to submit (1) an application for admission on a form furnished by the Admissions Office of the University upon request, (2) official copies of his second secondary school preparation, (3) certificates of completion of state secondary school examinations, and (4) records of college or university studies completed in schools in the United States or elsewhere. He will also be required to furnish proof of adequate finances and of his ability to read, write, speak, and understand English sufficiently well to pursue satisfactorily an approved course of study in one of the colleges of the University. Arrangements can be made through the Office of the Director of International Education Services and Foreign Student Affairs for administering an English test to prospective students both in the United States and in other countries.

The foreign student accepted for admission to the University will receive from the Director of Foreign Student Affairs the appropriate immigration form needed to secure a student visa from the American consul.

Every foreign student is expected to notify the Director of Foreign Student Affairs as to the approximate date of his arrival at the University and arrange to arrive in time for the special orientation program that precedes registration. The office of the Director is located in the North Administration Building, Room 222-A.

APPLICATION PROCEDURES

Application Forms

Application forms may be obtained by writing to:
Director, Office of Admissions
North Administration Building
University of Maryland
College Park, Maryland 20742

Application forms also are supplied to Maryland high schools. Seniors in high school may obtain the forms from their high school counselors.

All applicants must comply fully with the directions printed on the application form. Incomplete forms cannot be processed.

Application Fee

A non-refundable \$10.00 application fee is required with each application.

Enrollment Deposit

Applicants for the September term who are found to meet admission requirements may be sent an offer of admission. They are then required to submit the enrollment deposit of \$50 within three weeks after the date of this offer. Failure to submit the enrollment deposit within the required time limit will be taken as evidence that the applicant is not seriously interested in admission, and the offer will be cancelled.

Refunds of the \$50 enrollment deposit will be made provided the request for the refund is received by the Admissions Office on or before June 1, for those students who plan to enter in September.

CLOSING DATES FOR APPLICATIONS

Fall Semester

All applications for undergraduate admission for the fall semester at the College Park campus must be received by the University on or before June 1. (Note: Foreign students are required to submit application six months in advance of registration. Applications including supporting documents for the School of Architecture must be received on or before March 1.) High school students are encouraged to file their applications during the fall months of their senior year.

All supporting documents for an application for admission must be received by the appropriate University office on or before July 15. Supporting documents include education records (except current summer school grades), SAT scores (in the case of new freshmen) and medical examination reports.

Spring Semester

The deadline for the receipt of applications for the Spring Semester is December 1. All supporting documents for an application must be received on or before the first workday after January 1. (Foreign students are required to submit applications six months in advance.)

ORIENTATION PROGRAMS

Freshmen Orientation and Registration

Upon final admission to the University the student will receive materials pertaining to his participation in The Freshmen Orientation and Registration Program for the University of Maryland. ALL ENTERING FRESHMEN ARE REQUIRED TO ATTEND THIS PROGRAM which is administered by the director of Orientation and Special Programs of the Office of Student Activities. The primary goals of the program are three-fold in nature: to inform the student about the University, involve him in the program and assist him in dealing with the problems he may encounter. The program is operated at the College Park campus during the months of July and August. Each freshman will attend with a group of his future classmates. During the two days he will engage in the following:

1. Formal and informal discussions about University life and the standards of performance the University will expect of him.
2. A personal conference with a faculty adviser in his college who will assist him in selecting and registering for fall semester courses. (To assure the success of this conference, please have the SAT scores submitted to the University early in the spring.)
3. An introduction to campus facilities, sources of help for the problems the typical freshman must face, and out-of-class opportunities.
4. Payment of fall semester fees and charges and, if he so desires, purchase of his textbooks.

Through this program, the entering student receives a personalized and individual introduction to the University.

Transfer Student Orientation

Upon admission to the University, the transfer student receives information concerning an orienta-

tion program that is held during the summer. This program includes a conference with representatives of his college to explain academic requirements, as well as a general orientation to the campus itself. The program is particularly geared to the needs of upper class students and their special concerns.

Foreign Student Orientation

All foreign students admitted to the University are required to attend the orientation program arranged especially for them by the Director of Foreign Student Affairs with the cooperation of the International Club. The September Orientation is held on the Friday and Saturday preceding registration week; the February Orientation is held on the Friday only preceding registration week. At the close of the afternoon sessions on Friday, a coffee is held where new foreign students are introduced informally to members of the faculty and administration as well as to other students, both foreign and American.

Fall Activities Week

During Fall Registration Week students and faculty combine their efforts to plan a program to help students become acquainted with the many aspects of life at the University. The activities of this week range from open houses and picnics to study skills seminars and welcome assemblies. Faculty members participate in a series of programs designed to initiate the academic year. Entertaining social events are planned to help the student become acquainted with his future classmates. Student leaders show him how he can become involved in activities varying from intramural sports to student politics. Selected upperclassmen who compose the Fall Orientation Board are on hand to answer questions and lead small discussion groups.

For information about any of the orientation programs, please write:

Orientation Director
Student Union
University of Maryland
College Park, Maryland 20742

SUMMER SCHOOL

New freshmen students who have met the regular University admission requirements for fall enrollment may begin their studies during the summer rather than await September. The final date for admission to Summer School is June 1.

The student who enters on this basis and who continues attending summer sessions can shorten his college career by a semester or by a year, depending upon his curriculum and the progress he makes in it.

Courses which are offered during the summer are the same in content and in instruction as are courses offered during the fall and spring semesters. Many students have found the transition from secondary school to college facilitated by attending the summer session. Undergraduate students attending the eight-week session are permitted to register for a maximum of nine semester hour credits.

For additional information write for a Summer School Catalog, which may be obtained from the Director of the Summer School, College Park, Maryland 20742.

UNIVERSITY COLLEGE

University College subscribes to the philosophy that continuing education is essential to meet the

demands of today's complex society. Thus, the College, in contrast to the usual practice of bringing students to the University, makes educational opportunities available to adult students at hours and locations convenient for them.

As a result of this philosophy, most University College courses are given in the evening. Therefore, the average undergraduate—that is, a person who wishes to be a full-time day student—would have little reason to enroll with University College. Nor would he be allowed to do so, except in special cases. However, if a student who first enrolls as a full-time day student later finds it necessary to take a day-time job, he may then take evening courses with University College.

Specifically, University College has a three-fold purpose: (1) to extend the program of the University by offering college-credit evening courses for adults on campus and off campus throughout the State, in the District of Columbia, and at various overseas centers; (2) to offer the Bachelor of Arts degree in General Studies to qualified adult students; and (3) through the Conferences and Institutes Division, to arrange special programs to meet specific non-credit educational needs of various adult groups.

The General Studies curriculum provides opportunities for programs in the humanities, the social sciences, and business administration, with concentrations in such fields as commerce, English, government and politics, history, philosophy, psychology, and sociology.

Off-campus centers in Maryland and the District of Columbia at which courses in these fields are offered include:

Aberdeen Proving Ground
Andrews Air Force Base
Baltimore Campuses
Bainbridge Naval
Training Center

Bolling Air Force Base
D.C. Recreation Dept.
Edgewood Arsenal
Fort Meade
Fort Ritchie
Maryland Penitentiary
Montgomery County Police
National Bureau of Standards
National Institute of Health
National Security Agency
Naval Ordnance Laboratory
Naval Research Laboratory
Patuxent Naval Air Station
Pentagon
Prince Georges County Police
Soc. Security Bldg.—Baltimore
Tolchester Missile Site
Walter Reed Army
Medical Center

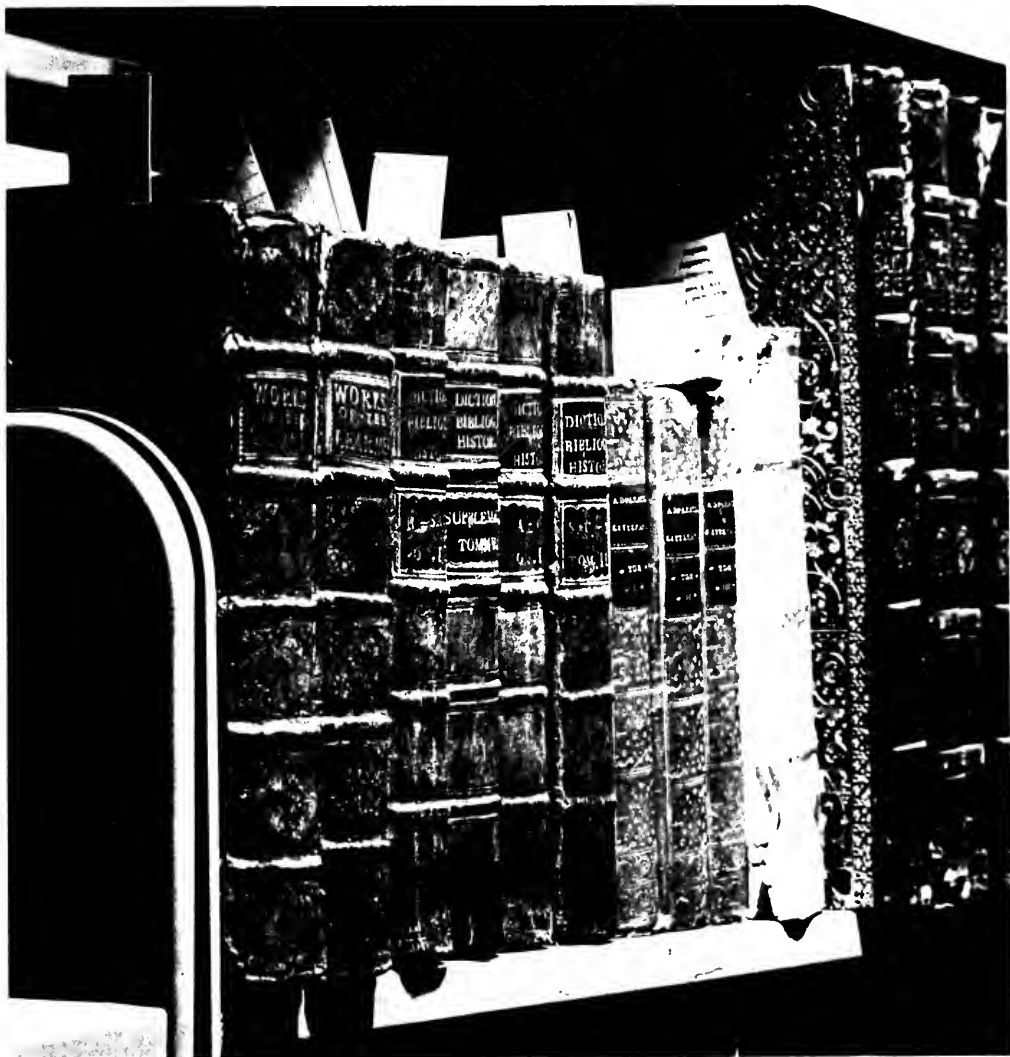
In addition, the Off-Campus Division of University College offers courses for teachers in most of the counties in Maryland. The College Park Evening Division offers courses on campus.

Overseas, University College courses are offered to military personnel and their dependents, and to certain civilians, in twenty-five foreign countries on four continents. These courses are offered in cooperation with the U.S. Armed Forces.

To enroll in University College, students who have never attended a college or university must have either an acceptable high school diploma or the high school equivalent; students who have attended another college or university must be in good academic standing. Further information about admission requirements may be obtained from a University College adviser (call 454-2311 for an appointment) or from the University College Catalog, which may be obtained by writing to the Dean, University College, University of Maryland, College Park Maryland 20742.

The College does not offer correspondence courses.





EXPENSES AND FINANCIAL AID

GENERAL

All fees are due and payable in full at time of registration. Returning students will not be permitted to complete registration until all financial obligations to the University including library fines, parking violation assessments, and other penalty fees and service charges are paid in full.

All checks or money orders should be made payable to the University of Maryland for the exact amount due. In cases where the University has awarded a grant, scholarship, or workshop, the appropriate amount will be deducted on the bill.

No degree will be conferred, nor any diploma, certificate, or transcript of record issued to a student who has not made satisfactory settlement of his account.

Although changes in fees and charges ordinarily will be announced in advance, the University reserves the right to make such changes without prior announcement.

FEES FOR RESIDENTS AND NON-RESIDENTS: 1970-1971 ACADEMIC YEAR

	Fall Semester	Spring Semester	Total
Fees for Undergraduate Students:			
Maryland Residents			
Fixed Charges.....	\$205.00	\$205.00	\$410.00
Instructional Materials.....	13.00	13.00	26.00
Athletic Fee.....	30.00	..**	30.00
Student Activities Fee.....	18.00	..**	18.00
Auxiliary Facilities Fee.....	15.00	..**	15.00
Recreational Facilities Fee.....	40.00	..**	40.00
	\$321.00	\$218.00	\$539.00
Board - Full Contract*.....	\$300.00	\$300.00	\$600.00
Lodging.....	\$200.00	\$200.00	\$400.00
	\$821.00	\$718.00	\$1,539.00

Full Time Undergraduate-Non-Residents

Fixed Charges and other fees			
(some as above).....	\$321.00	\$218.00	\$539.00
Non-Resident Fee.....	\$250.00	\$250.00	\$500.00
Board Full Contract*.....	\$300.00	\$300.00	\$600.00
Lodging.....	\$250.00	\$250.00	\$500.00
	\$1,121.00	\$1,018.00	\$2,139.00

*Partial Contract for Board is \$250.00 per Semester

**Students who register for the Spring Semester but who were not enrolled in the Fall Semester are required to pay the following additional fees: Athletic Fee, \$15.00; Student Activities, \$9.00; Auxiliary Facilities Fee, \$7.50; Recreational Facilities Fee, \$20.00.

Definition of Residence and Non-Residence

Students who are minors are considered to be resident students if at the time of their registration their parents have been domiciled in the State of Maryland for at least six months.

The status of the residence of a student is determined at the time of his first registration in the University and may not thereafter be changed by him unless, in the case of a minor, his parents move to and become legal residents of Maryland by maintaining such residence for at least six months. However, the right of the minor student to change from a non-resident status to resident status must be established by him prior to the registration period set for any semester.

Adult students are considered to be residents if at the time of their registration they have been domiciled in Maryland for at least six months provided such residence has not been acquired while attending any school or college in Maryland or elsewhere. **Time spent on active duty in the armed services while stationed in Maryland will not be considered as satisfying the six months period referred to above except in those cases in which the adult was domiciled in Maryland for at least six**

months prior to his entrance into the armed service and was not enrolled in any school during that period.

The word "domicile" as used in this regulation shall mean the permanent place of abode. For the purpose of this rule only one domicile may be maintained.

Explanation of Fees

The application fee for the undergraduate colleges and the summer session partially defrays the cost of processing applications for admission to these divisions of the University. If a student enrolls for the term for which he applied, the fee is accepted in lieu of the matriculation fee. Applicants who have enrolled with the University of Maryland in its Evening Division at College Park or Baltimore, or at one of its off-campus centers are not required to pay the fee since they have already paid a matriculation fee.

The Fixed Charges Fee is not a charge for tuition. It is a charge to help defray the cost of operating the University's physical plant, to pay administrative and clerical expenses and other costs which ordinarily would not be included as a cost of teaching personnel and teaching supplies.

The Instructional Materials Fee represents a charge for instructional materials and/or laboratory supplies furnished to students. Full-time undergraduate students subject to the fees set forth below will be billed the appropriate fee and also will be billed the Instructional Materials Fee: Math 1, \$45; Applied Music, \$40; and P.E. 8 Riding Class, \$26.

The Athletic Fee is charged for the support of the Department of Intercollegiate Athletics. All students are eligible and all students are encouraged to participate in all of the activities of this department and to attend all contests in which they do not participate.

The Student Activities Fee is a mandatory fee included at the request of the Student Government Association. It covers class dues and is used in sponsoring various student activities, student publications and cultural programs.

The Recreational Facilities Fee is paid into a fund which will be used to expand the recreational facilities on the College Park campus, especially the Student Union Building.

The Auxiliary Facilities Fee is paid into a fund which is used for expansion and operation of various facilities such as roads, walks, campus lighting and other campus facilities. These facilities are not funded or are funded only in part from other sources.

OTHER FEES

Undergraduate Applications

The deadline for the receipt of applications for the Spring Semester is December 1. All supporting documents for an application must be received on or before the first workday after January 1 1970.

All applications for undergraduate admission for the Fall Semester at the College Park campus must be received by Admissions Office on or before June 1. All supporting documents for an application for admission must be received by the appropriate University Office on or before July 15. Supporting documents include education records (except current summer school grades), SAT scores (in the case of new freshmen), and the medical examination report.

Application Fee	\$ 10.00
Enrollment Deposit Fee (This fee is non-refundable after June 1st At time of registration fee will be applied against University charges)	50.00
Registration Fee — Pre-College Orientation Program	15.00
Late Application Fee	25.00
Matriculation Fee	10.00
Graduation Fee for Bachelor's degree	10.00
Room Deposit Fee payable upon application for dormitory room (To be deducted from the first semester room charges at registration.)	50.00
Vehicle Registration Fee, each vehicle (Payable each academic year by all students registered for courses on the College Park campus and who drive on the campus.)	10.00
Special Fee for students requiring additional preparation in Mathematics, per semester (Required of students whose curriculum calls for Math 10 or 18 and who fail in qualifying examination for these courses. Students enrolled in this course and concurrently enrolled for 6 or more credit hours will be considered as full-time students for purposes of assessing fees.)	45.00
Special Guidance Fee per semester (for students who are required or who wish to take advantage of the effective study course, and/or the tutoring service offered by the Office of Intermediate Registration)	15.00
Applied Music Fee (each course)	40.00
Riding Class Fee	26.00
Fees for Auditors and courses taken for audit are the same as those charged for courses taken for credit at both the undergraduate and graduate levels. Audited credit hours will be added to hours taken for credit to determine whether or not an undergraduate student is full-time or part-time for fee assessment purposes.	
Special students are assessed fees in accordance with the schedule for the comparable undergraduate or graduate classification.	

MISCELLANEOUS FEES AND CHARGES

Part-time Undergraduate Students:	
Fee per credit hour	22.00
Auxiliary Facilities Fee — Payable each semester or summer session	4.00
Vehicle Registration Fee (\$10.00 for first vehicle and \$2.00 each for additional vehicles in accordance with published regulations.) (Payable each academic year by all students registered for classes on the College Park Campus and who drive on the campus.)	10.00
(The term "part-time students" is interpreted to mean undergraduate students taking B-semester credit hours or less. Students carrying 9 semester hours are considered to be full time and must pay the regular full-time fees.)	
Late Registration Fee (All students are expected to complete their registration, including the filing of class cards and payment of bills, on the regular registration days. Those who do not complete their registration during the prescribed days must pay this fee.)	20.00
Fee for change in registration	5.00
Fee for failure to report for medical examination appointment	2.00
Special Examination Fee — to establish college credit — per semester hour	5.00
Transcript of Record Fee (one transcript furnished without charge)	1.00
Property Damage Charge: Students will be charged for damage to property or equipment. Where responsibility for the damage can be fixed, the individual student will be billed for it; where responsibility cannot be fixed, the cost of repairing the damage or replacing equipment will be prorated.	
Service Charges for Dishonored Checks: Payable for each check which is returned unpaid by the drawee bank on initial presentation because of insufficient funds, payment stopped, post-dating, drawn against uncollected items, etc.	
For checks up to \$50.00	5.00
For checks from \$50.01 to \$100.00	10.00
For checks over \$100.00	20.00

Library Charges:

Fine for failure to return book from General Library before expiration of loan period	per day	25
Fine for failure to return book from Reserve Shelf before expiration of loan period		
First hour overdue		1.00
Each additional hour overdue		2.00 max
In case of loss or mutilation of a book, satisfactory restitution must be made.		
In the event it becomes necessary to transfer uncollected charges to the Cashier's office, an additional charge of \$1.00 is made.		

TEXTBOOKS AND SUPPLIES

Textbooks and classroom supplies: These costs vary with the course pursued, but will average per semester	85.00
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FEES FOR GRADUATE STUDENTS

Fee per semester hour, Resident	\$ 38.00
Fee per semester hour, Non-resident	48.00
Fee per semester hour, Maryland Teachers	34.00

Application Fee, payable at time of first application for admission to the Graduate School	\$ 10.00
Graduation Fee Master's Degree	10.00
Graduation Fee for Doctor's Degree	50.00
Auxiliary Facilities Fee (per semester)	4.00
Vehicle Registration Fee	10.00
(\$10.00 for first vehicle and \$2.00 each for additional vehicles in accordance with published regulations.)	
Payable each academic year by all students registered for classes on the College Park Campus and who drive on the campus.)	
Foreign Language examination	10.00
Graduate Education Testing Fee	5.00
Special Fee (full-time graduate students on Baltimore City Campus only)	25.00
Service Charges for Dishonored Checks (See explanation above)	5.00 to 20.00
All fees, except Graduation Fee, are payable at the time of registration for each semester.	
Graduation Fee must be paid prior to graduation.	
There is no provision for housing graduate students in University dormitories.	

FEES FOR UNIVERSITY COLLEGE COURSES

Undergraduate Matriculation Fee (Payable once, at the time of first registration by all undergraduate students, full-time and part-time)	\$ 10.00
Tuition charge for undergraduate students per credit hour	20.00
Tuition charge for GRADUATE students per credit hour:	
Residents of Maryland	38.00
Fee per semester hour, Maryland Teachers	34.00
Non-residents of Maryland (Status as determined upon admission)	48.00
Graduate Education Testing Fee	5.00
Vehicle Registration Fee, College Park Campus, each vehicle	10.00
Auxiliary Facilities Fee	4.00
(Payable at each registration by all part-time undergraduates and all graduate students taking courses on the College Park Campus and/or UMBC Campus and all graduate students taking courses on the Baltimore City Campus. In the event of a duplicate registration during the same session, the duplicate payment will be refunded provided that the student makes written request to the Registrar.)	
Special Fee	
(Payable each semester by students registering for classes on Baltimore City Campus and who are enrolling for 12 credits or more)	
Continuous Registration Fee (per semester)	12.50
(For further information see Graduate School catalog)	
Service Charges for Dishonored Checks	5.00 to 20.00
Baltimore Student Union Fee (Payable each semester by students registering for classes on Baltimore City campus):	
Students registering for from one through eleven credits	3.00
Students registering for twelve credits or more	15.00
Late Registration Fee: Students who do not complete their registration during the scheduled days will be charged a fee of	20.00
in Registration Fee (Payable when a student, enrolled in University College courses, or wishes to substitute one course for another or one section of a course for another, or add a course), after he completes registration	5.00
Payment of fees: Registration is not complete until all fees are paid in full. All checks, money orders, or postal notes should be made payable to the University of Maryland.	

A Maryland teacher is defined for fee assessment purposes as any full-time professional employee of a school or college located in the State of Maryland and accredited by the State Department of Education. The teacher must be currently under contract or on official leave for the purpose of taking full-time graduate work at the University of Maryland. Teachers enrolling in the Summer Session will be considered as being currently under contract provided that they have a valid contract for the academic year immediately following the Summer Session. Contract status must be established anew at each registration by the submission of a letter, or other appropriate document, provided by the Board of Education of the city or county or principal officer of the school or college in which the teacher is employed. If the letter or document is needed by the teacher for other purposes, he must supply a photocopy which will be retained by the registration clerk. The necessary letter, document or photocopy must be provided at the time of registration.

An additional late application fee of \$10.00 will be assessed against students who fail to apply for graduation within the first eight weeks of a regular semester or the first three weeks of a summer session. Students who apply after the end

of the twelfth week of a regular academic semester and those who apply after the end of the fourth week of a summer session will be required to wait for the next academic semester in order to obtain a diploma.

WITHDRAWAL AND REFUND OF FEES

Any student compelled to leave the University at any time during the academic year should file an application for withdrawal, bearing the proper signature, in the Office of the Registrar. If this is not done, the student will not be entitled, as a matter of course, to a certificate of honorable dismissal, and will forfeit his right to any refund to which he would otherwise be entitled. The date used in computing refunds is the date the application for withdrawal is filed in the office of the Registrar.

In the case of a minor, withdrawal will be permitted only with the written consent of the student's parent or guardian.

Students withdrawing from the University will be credited for all academic fees charged to them in accordance with the following schedule:

Period from Date Instruction Begins	Refundable
Two weeks or less	80%
Between two and three weeks	60%
Between three and four weeks	40%
Between four and five weeks	20%
Over five weeks	00%

The following table summarizes the fixed charges, mandatory fees, and room and full contract board charges for students enrolled in the undergraduate programs in the University of Maryland at College Park in 1970:

	First Semester	Second Semester	Total
Maryland Residents			
1. Not living in the University residence halls	\$346	\$243	\$589
2. Living in the University residence halls	\$871	\$768	\$1,639
Residents of the District of Columbia, other States, and other Countries			
1. Not living in the University residence halls	\$696	\$593	\$1,289
2. Living in the University residence halls	\$1,271	\$1,168	\$2,439

Full-time undergraduate students who register for the second semester, but who were not full-time undergraduate students in the first semester, are required to pay additional fees of \$45.

Special course fees, book costs, and personal expenses are not included.

All fees are due and payable in full at time of registration.

No part of the charges for room and board is refundable except where the student officially withdraws from the University or where he is given permission by the appropriate officials of the University to move from the residence halls and/or to discontinue dining hall privileges. In these cases, the room refund will be computed by deducting ten percent of the charge for the semester as a service charge and the remainder will be prorated on a weekly basis. Refunds to students having full board contracts will be calculated in the same manner. No room and/or board refunds will be made after the

fourteenth week of the semester. ID Cards with dining hall validation issued to boarding students must be surrendered at the Auditor's Office in the Administration Building on the day of withdrawal before any refund will be processed.

In computing refunds to students who have received the benefit of scholarships and loans from University Funds, the computation will be made in such a way as to return the maximum amount to the scholarship and loan accounts without loss to the University.

No refund of the Athletic, Student Activity, Special Recreational Facilities, and Advisory and Testing Fees is made to students who withdraw at the close of the first semester.

A student who registers as a full-time undergraduate will receive no refunds of Fixed Charges, Instructional Materials Fee, Athletic Fee, etc., when courses are dropped (irrespective of the number of credit hours dropped) unless the student withdraws from the University.

A student who registers as a graduate student or as a part-time undergraduate student will be given an 80% refund of credit hour fees for courses dropped during the first week of classes. No refunds will be made for courses dropped thereafter.

A special refund schedule applies to full-time students who are drafted into the Armed Services or called up as Reservists.

University College students enrolled in off-campus and 8-week courses are subject to a somewhat different refund schedule. Please see the University College Bulletin for details.

TRANSCRIPTS OF RECORDS

Students and alumni may secure transcripts of their scholastic records from the Office of the Registrar. No charge is made for the first copy; for additional copies, there is a charge of \$1.00 for each transcript. Checks should be made payable to the University of Maryland. Transcripts of records should be requested at least two weeks in advance of the date when the records are actually needed. No transcript of a student's record will be furnished any student or alumnus whose financial obligations to the University have not been satisfied.

FINANCIAL AID

The Office of Student Aid provides advice and assistance in the formulation of student financial plans and, in cooperation with other University offices, participates in the awarding of scholarships, loans, and part-time employment to deserving students. Scholarships, grants, and loans are awarded on the basis of evident academic ability and financial need. In making awards, consideration is also given to character, achievement, participation in student activities, and to other attributes which may indicate success in college. It is the intent of the Committee to make awards to those qualified who might not otherwise be able to pursue college studies. Part-time employment opportunities on campus are open to all students, but are dependent upon the availability of jobs and the student's particular skills and abilities.

Additional information is available from the Director, Office of Student Aid, Room 222, North Administration Building, University of Maryland, College Park, Maryland 20742.

Scholarships

Most scholarships are awarded to students before they enter the University. However, students who have completed one or more terms, and have not received such award, are eligible to apply. Most of these scholarships are awarded to students who have earned a cumulative grade point average of 3.0 (B) or better. Applicants may submit applications to the Office of Student Aid between February 10 and May 1 in order to receive consideration for scholarship assistance for the ensuing year.

Scholarship award letters are normally mailed between May 1 and July 1. Any applicant who does not receive an award letter during this period should assume that he has not been selected for a scholarship.

FULL SCHOLARSHIPS. The University awards 56 full scholarships covering board, lodging, fixed charges, fees, and books. Not more than twenty of these scholarships may be held by out-of-state students, and at least twelve are reserved for women. Scholastic achievement and participation in student activities are given primary consideration.

UNIVERSITY GRANTS. The University awards to deserving and qualified secondary school graduates a limited number of grants covering fixed charges only.

GENERAL ASSEMBLY GRANTS. These grants are awarded by members of the State Legislature. They may be awarded to persons living in the legislative district which the Delegate or Senator represents.

SPECIAL ACADEMIC SCHOLARSHIPS. A limited number of scholarships are awarded each year to students of exceptional ability, out of funds derived from campus enterprises. The amount of these scholarships varies, depending upon the extent of need.

TEACHER EDUCATION GRANTS. The General Assembly of Maryland provides grants equivalent to fixed charges to Maryland residents pursuing certain teacher education curricula on a full-time basis. Recipients must agree to teach in Maryland public schools for at least two years immediately following graduation. The agreement form must be signed by the student and countersigned by the parent, guardian, or other responsible adult.

GENERAL STATE SCHOLARSHIPS. The General Assembly of Maryland provides a number of limited scholarships to students entering college for the first time. The scholarships may be used in any approved institution of higher education within the State. Awards are made by the State Scholarship Board based upon financial need and the results of a competitive examination. For additional information, contact high school guidance counselors or the Maryland State Scholarship Board, 2100 Guilford Avenue, Baltimore, Maryland 21218.

ENDOWED SCHOLARSHIPS AND GRANTS. The University has a number of endowed scholarships and special grants. These range in value from \$100 to \$1,000. Recipients are chosen by the University in accordance with terms established by the donor. It is usually inadvisable for a student to apply for a specific scholarship. Each applicant will receive consideration for all scholarships for which he is eligible.

EDUCATIONAL OPPORTUNITY GRANTS. Under provisions of the Higher Education Act of 1965, lim-

ited grants are available to encourage youths of exceptional financial need to continue their post-secondary school education. A recipient must be a United States citizen enrolled as a full-time undergraduate. The amount of the grant must be matched by an equal amount of some other type of aid provided through the University.

NURSING SCHOLARSHIPS. Nursing students of exceptional financial need are eligible to receive assistance under the provisions of the Health Manpower Act of 1968. Students submitting applications for financial aid will be automatically considered for both scholarship and loan.

LOCAL AND NATIONAL SCHOLARSHIPS. In addition to the scholarships provided by the University of Maryland, a student should give careful consideration to scholarship aid provided by local and national scholarship programs. Ordinarily, the high school principal or counselor will be well informed as to these opportunities.

Loans

Loan funds to meet educational expenses are available for students enrolled in the University. The extent of financial need must be clearly established by providing a complete statement of the applicant's financial resources and estimated expenses for the academic year.

Loan awards are normally granted on a yearly basis, although short-term and emergency loans are granted for shorter periods.

To apply for a long-term loan, an application should normally be filed between February 1 and August 1 for the ensuing year. If funds are available, applications may be considered at other times, but the student should bear in mind that it generally takes about six weeks to process a loan.

Students applying for a loan must have a 2.0 (C) average for courses taken the preceding semester. New students need a 2.5 average in academic subjects for the previous two years of school.

Loans are not available for non-educational expenses, nor are they available for repayment of previously incurred indebtedness.

NATIONAL DEFENSE EDUCATION ACT LOAN FUND. This loan fund was established by the Federal government in agreement with the University of Maryland to make low-interest loans available to superior students with clearly established financial need. Applicants must be United States nationals (citizens and permanent resident status) and must be enrolled for eight or more credit hours at day school on the College Park campus.

If funds are available, a student may request up to \$1,000 per year; the average approved loan is about half this amount. The borrower must sign a note and have a co-signer if under 21 years of age. Repayment begins one year after the borrower leaves school and must be completed within ten years thereafter. No interest is charged until the beginning of the repayment schedule. Interest after that date is charged at the rate of three percent per annum.

NURSING STUDENT LOANS. Loans up to \$1500 per year are available under provision of the Nurses Training Act of 1964. The borrower must be a full-time student in pursuit of a baccalaureate or graduate degree in nursing and able to establish financial need. Repayment begins one year after the borrower ceases to be a full-time student and must be com-

pleted within ten years thereafter. No interest is charged until the beginning of the repayment schedule. Interest after that date accrues at the rate of three percent per annum.

Up to fifty percent of the loan plus interest may be cancelled in the event that the borrower is employed full-time as a nurse in a public or nonprofit institution or agency. Such cancellation is at the rate of ten percent per year. In the event of total or permanent disability or death, the borrower's obligation is automatically cancelled.

INSTITUTIONAL STUDENT LOANS. Institutional loan funds have been established through the generosity of University organizations, alumni, faculty, staff, and friends. These loans are normally available at low interest rates to upperclassmen only. For specific information, the student should inquire at the Office of Student Aid.

LAW ENFORCEMENT EDUCATIONAL PROGRAM LOAN. Qualified full-time students in approved fields may apply for loan assistance up to \$1800 per academic year. Loans are repaid at the rate of 7 percent simple interest, commencing six months after termination of full-time study. Interested students should contact either the Dean, University College, or Department of Sociology, College of Arts and Sciences.

BANK LOANS. Loan programs have been established through the Maryland Higher Education Loan Corporation and the United Student Aid Fund which permit students to borrow money from their hometown banks. These programs enable undergraduates in good standing to borrow up to \$1,000 per year, and notes may not bear more than seven percent simple interest. Monthly repayments begin ten months after graduation or withdrawal from school. The Federal government will pay the interest while the student is in school. Further details and a listing of participating banks may be secured from the Office of Student Aid.

Part-time Employment

More than one-half of the students at the University of Maryland earn a portion of their expenses. The Office of Student Aid serves without charge as a clearing house for students seeking part-time work and employers seeking help. Many jobs are available in the residence halls, dining halls, libraries, laboratories, and elsewhere on campus and off campus.

Working during college years may offer advantages in addition to the obvious one of financing a college education. The employed student has a special opportunity to learn new skills, to develop good work habits, and to learn how to get along with people. Part-time employment experience often is helpful to the student in making his career choice.

The Office of Student Aid welcomes the opportunity to counsel a student about employment. However, securing a position through intelligent application and retaining that position through good work is the individual's responsibility.

Freshman students who do not need financial aid probably should not attempt to work during the first year at the University. Adjustment to college study and to the changes from life at home usually require the student's best efforts without the added responsibility of partial self-support.

However, freshman students who need to work

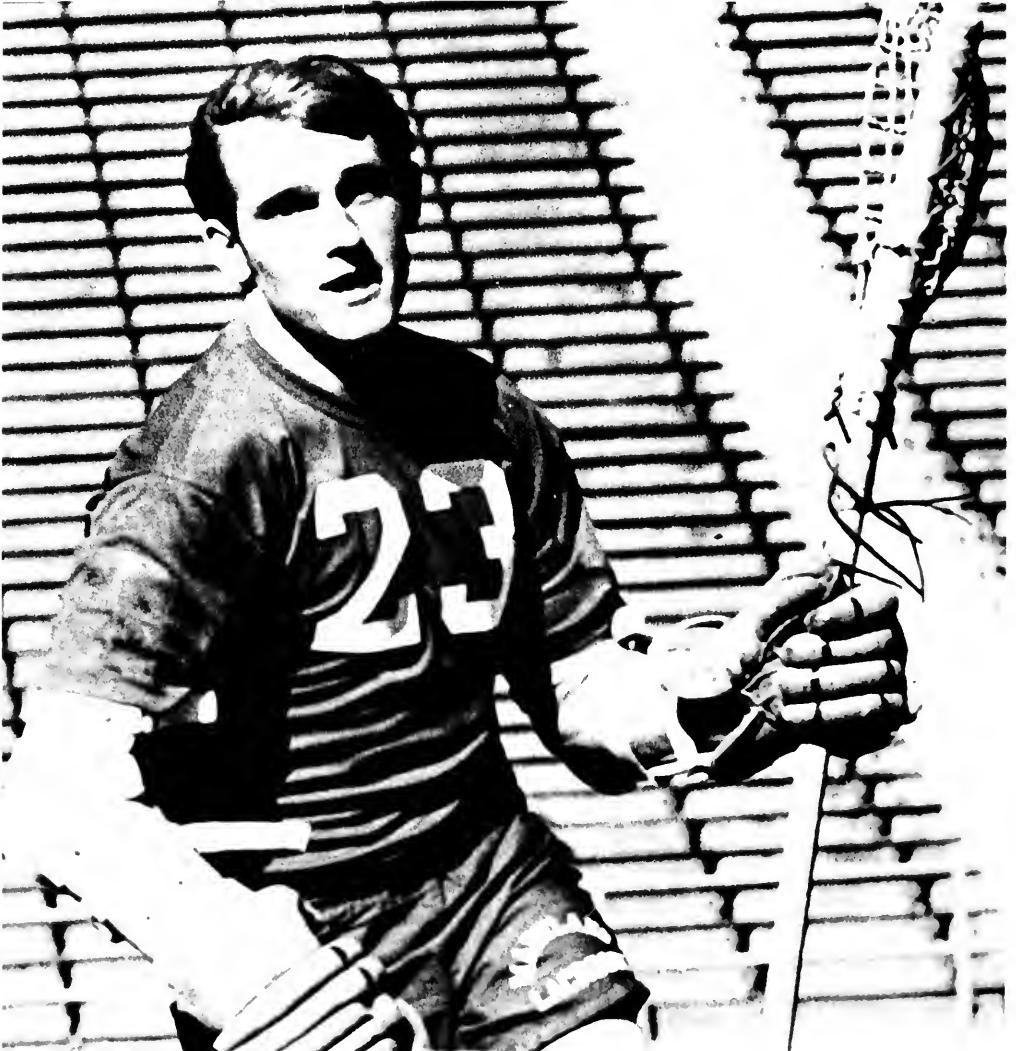
in order to attend the University are advised to consider employment in one of the dining halls. A student may earn approximately one-half of his board and room by working ten hours per week. After one successful semester the work load may be increased, at the request of the student, up to a maximum of 20 hours per week.

For positions other than food service, a student normally cannot arrange for employment until he is on campus at the beginning of a school session. Application must be made in person and the applicant should have a schedule of his classes and study

hours so that he can seek employment best suited to his free time.

College Work-Study Program

Eligible students may seek employment under provisions of Title 1-C of the Economic Opportunity Act. Qualified students may work up to 15 hours per week during the school year and full time during the summer. It is the intent of the Student Aid Committee to combine this type of assistance with scholarships and loans so that students from low-income families will be able to attend the University.



The University of Maryland is accredited by the Middle States Association of Colleges and Secondary Schools and is a member of the Association of American Universities. In addition, individual schools and departments are accredited by such groups as the American Association of Collegiate Schools of Business, the American Chemical Society, the National Association of Schools of Music, the Section of Legal Education and Admissions to the Bar of the American Bar Association, the American Council of Education for Journalism, the American Council on Pharmaceutical Education, the Council on Dental Education of the American Dental Association, the Committee on Accreditation of the American Library Association, the American Psychological Association, the Commission on Accreditation of the Council on Social Work Education, the Council on Medical Education of the American Medical Association, the Engineers' Council for Professional Development, the National Council for Accreditation of Teacher Education, and the National League for Nursing.

GENERAL EDUCATION PROGRAM

A college education implies something more than technical training in a field of specialization. In order that each graduate may gain a liberal education as well as a specialized one, the University has established a General Education requirement. This requirement consists of 34 semester hours of credit in six areas: English (9 hours), Fine Arts or Philosophy (3 hours), History (6 hours), Mathematics (3 hours), Science (7 hours), and Social Science (6 hours). There is a wide choice in specific courses which may be used to satisfy requirements in all of the six areas except English.

The General Education Program is designed to be spread out over the four years of college. In each of the areas, courses for which no previous college course work is prerequisite are available; at the same time, alternative advanced courses are available in most of the areas. Thus a student may (within the limits of his particular curriculum) satisfy a General Education requirement with a variety of courses at different levels. Which courses he takes will depend on his ability—as determined by advanced credit, placement examination, department evaluation, and class standing—and upon his interests and needs.

It should be emphasized that the 34 semester hours of General Education courses constitute a minimum requirement, applicable to the undergraduate students in all of the colleges of the University of Maryland.

The University is also concerned with the physical fitness of each student. Therefore, all undergraduate men and women students registered for more than eight hours of credit are required to enroll in and successfully complete two prescribed courses in Physical Education for a total of two semester hours of credit. A Health Education course of two semesters hours' credit is required of all undergraduate men and women. These courses must be taken by all students taking more than 8 hours in a semester during their first year of attendance at the University whether they intend to graduate or not.

COLLEGE REQUIREMENTS

In addition to fulfilling the General Education requirements, each student will have to meet the specific graduation requirements determined by

the faculty of his particular college. These additional course requirements will be found in each individual college section.

ACADEMIC ADVISORS

Each student is assigned a faculty advisor whose function is to aid the student in designing his program of study. The student meets with his adviser in regular conferences each semester and may arrange additional meetings on his own initiative.

Special advisors are assigned to students in the pre-professional curricula.

INTERMEDIATE REGISTRATION

The Office of Intermediate Registration (OIR) is for students who wish to transfer from one college to another within the University, but who lack the necessary 2.00 cumulative grade point average to be able to do so. A student may register in OIR, take courses applicable to the curriculum to which he wishes to transfer, and then transfer to the new college upon earning the necessary average.

Goals

The Office of Intermediate Registration recognizes that students may have difficulty in making vocational decisions. For this reason, OIR assumes the specific goals of providing for all students registered in OIR the opportunity to receive advising for curriculum choice and vocational planning.

The Office of Intermediate Registration is located in Room 215 of the North Administration Building. The telephone number is 454-2733.

INTENSIVE EDUCATIONAL DEVELOPMENT PROGRAM

The Intensive Educational Development Program is designed to provide educational and psychological support to students who enter the University of Maryland from culturally different and low socio-economic backgrounds.

Academic advisement is a critical component of the program. Students enroll in the Office of Intermediate Registration. In addition to registration, continuous group and individual sessions are held throughout the semester.

Group and individual counseling, planned and spontaneous, utilizes non-traditional methods in working with students.

Academic skills are enhanced and improved through group and individual work in the Reading and Study Skills Laboratory. Specific academic lab sessions are set up for the students' individual courses.

Tutoring is provided by a selected group of paid tutors individually and in small groups with a ratio of 1 to 4.

The program recruits and enrolls students from high schools, community agencies, and Upward Bound programs. University of Maryland students may transfer into the program during their first two years.

Students are involved in the planning, implementation, and evaluation of the program.

For further information, contact:

Coordinator, IED Program
213 N. Administration Building
University of Maryland
College Park, Maryland 20742
Telephone: 454-4646

CLASSIFICATION OF STUDENTS

No baccalaureate curriculum requires less than 120 semester hours. Actual classifications run as follows: Freshman, 1-27 semester hours; Sophomore, 28-55; Junior, 56-85; and Senior, 86 on up to at least 120.

A student may register for upper division courses when granted junior standing by his college. This shall be based upon earning a minimum of 56 academic hours toward his degree, completing such course requirements as the college may direct, and possessing the minimum required grade point average to remain in the University.

A senior at the University of Maryland who is within six hours of completing the requirements for the undergraduate degree may, with the approval of his undergraduate dean, the head of the department concerned, and the Graduate School, register in the undergraduate college for graduate courses, which may later be counted for graduate credit toward an advanced degree at this University. The student must be within seven credit hours of completing his undergraduate work and the total of undergraduate and graduate courses must not exceed fifteen credits for the semester. Excess credits in the senior year cannot be used for graduate credit unless proper pre-arrangement is made. Seniors who wish to register for graduate credit should apply to the Graduate School.

SPECIAL OPPORTUNITIES

Advanced Placement

Students entering the University from secondary school may obtain advanced placement and college credit on the basis of their performance on the College Board Advanced Placement examinations. These examinations are normally given to eligible high school seniors during the May preceding matriculation in college.

For achievement of a score of five or four on a given examination, the student will be granted Advanced Placement and the credit equivalent of two semester courses in that field; for achievement of a score of three, Advanced Placement and the credit equivalent of either one or two semester courses, depending upon the field of the examination, will be granted. A student earning a score of 2 on the English advanced placement examination will not need to take English Composition, but no credit will be given.

The program allows students a maximum of thirty hours credit, which may be used to meet major, minor, or elective requirements; or, where appropriate, General Education requirements. Included in the University's program are Advanced Placement examinations in the following areas: biology, chemistry, English, French, German, history, Latin, mathematics, physics and Spanish.

Questions about the program may be addressed to the Director of Admissions and Registrations, College Deans, or the Director of General Education. For detailed information about examinations and procedures in taking them, write to Director of Advanced Placement Program, College Entrance Examination Board, 475 Riverside Drive, New York, New York 10027.

Honors Programs

The Colleges of Arts and Science, Education, Architecture, Business and Public Administration, and Agriculture have created unusual opportunities

for the superior student through the establishment of Honors Programs.

Arts and Sciences, Secondary Education, Architecture

The College of Arts and Sciences has instituted both General Honors and Departmental Honors. General Honors, as its name suggests, enlarges the breadth of the student's generalized knowledge; Departmental Honors increases the depth of his knowledge in his major discipline. Both offer the student challenging academic experiences characterized by small sections, active student participation, and an Honors faculty that encourages dialogue. Individually guided research and independent study are important features of Honors work.

Each year a selected group of entering freshmen is invited into the General Honors Program on the basis of their high school records and standardized test scores. The General Honors student, after acceptance, must maintain a "B" average to continue in the Program.

The more than 20 Departmental Honors Programs ordinarily begin in the junior year, although a few programs begin as early as the freshman year.

By agreement, students in Secondary Education in the College of Education and in the School of Architecture may participate in the Honors Programs of the College of Arts and Sciences.

The student who completes his Honors curriculum successfully is graduated with a citation in General or Departmental Honors, or with both.

Interested high school students should write to the Director of Honors, 104 Francis Scott Key Hall, University of Maryland, College Park, Maryland 20742.

Business and Public Administration

The College of Business and Public Administration has instituted Departmental Honors Programs in Business Administration, Economics, and Government and Politics.

Agriculture

The College of Agriculture has instituted a Departmental Honors Program in Agricultural Economics.

HONOR SOCIETIES

Students who excel in scholarship and leadership may be invited to join the appropriate honor society. These include:

- *Alpha Kappa Delta (Sociology)
- *Alpha Lambda Delta
(Scholarship-Freshmen Women)
- Alpha Sigma Lambda
(Adult Education)
- Alpha Zeta (Agriculture)
- Beta Alpha Psi (Accounting)
- Beta Gamma Sigma (Commerce)
- *Chi Epsilon (Civil Engineering)
- *Eta Kappa Nu
(Electrical Engineering)
- Gamma Theta Upsilon (Geography)
- Iota Lambda Sigma
(Industrial Education)
- Kappa Delta Pi (Education)
- *Mortar Board (Women's Scholarship and Leadership)
- *Omicron Delta Kappa (Men's Scholarship and Leadership)
- Omicron Nu (Home Economics)

- Phi Alpha Epsilon (Physical Education)
- *Phi Alpha Theta (History)
- Phi Beta Kappa
(Arts and Sciences)

- Phi Delta Kappa (Education)
 - *Phi Eta Sigma
(Scholarship—Freshmen Men)
 - *Phi Kappa Phi (Senior Scholarship)
 - *Phi Sigma (Biology)
 - Phi Alpha Xi (Floriculture)
 - Phi Mu Epsilon (Mathematics)
 - *Pi Sigma Alpha (Political Science)
 - *Pi Tau Sigma
(Mechanical Engineering)
 - *Psi Chi (Psychology)
 - Sigma Alpha Eta (Speech Therapy)
 - Sigma Alpha Iota (Women's Music)
 - Sigma Alpha Omicron (Bacteriology)
 - *Sigma Pi Sigma (Physics)
 - *Tau Beta Pi (Engineering)
- *Members of Association of College Honor Societies.

LIBRARIES

The Theodore R. McKeldin Library is the general library of the University, containing reference works, periodicals, circulating books, and other materials in all fields of research and instruction. Branch libraries include the Engineering and Physical Sciences Library, the Architecture Library, the Chemistry Library, and, in downtown Baltimore City, the Health Sciences Library and the Law Library.

The libraries of the University include approximately 1,100,000 volumes and 15,000 subscriptions to periodicals and newspapers, as well as many uncatalogued government documents, phonorecords, films and film strips, etc.

Special collections include those of Richard Van Mises in mathematics and applied mechanics; Max Born in the physical sciences; Thomas I. Cook in political science; Romeo Mansueti in the biological sciences; Katherine Anne Porter; Maryland; U.S. government publications (for which the University is a regional depository); the United Nations, the League of Nations, and other international organizations; and the agricultural experiment station and extension service publications. Also featured here are maps from the U.S. Army Map Service; collections of rare materials in medicine, dentistry, pharmacy, and nursing; the files of the Industrial Union of Marine and Shipbuilding Workers of America; the Wallenstein collection of musical scores; and research collections of the American Bandmasters Association, the National Association of Wind and Percussion Instructors and the Music Educators National Conference. In addition, the collections include microfilm productions of government documents, rare books, early journals, and newspapers.

Other Area Resources

The College Park campus is in a region rich in research collections. In the Washington area are the Library of Congress, the National Archives, the Folger Library, the National Library of Medicine, the National Agricultural Library, and various academic and special libraries. In the Baltimore area, in addition to the University's own libraries at UMBC and on the professional campus, are the Enoch Pratt Free Library and the Maryland Historical Association Library. The Maryland Hall of Records is located in Annapolis.

RESEARCH FACILITIES

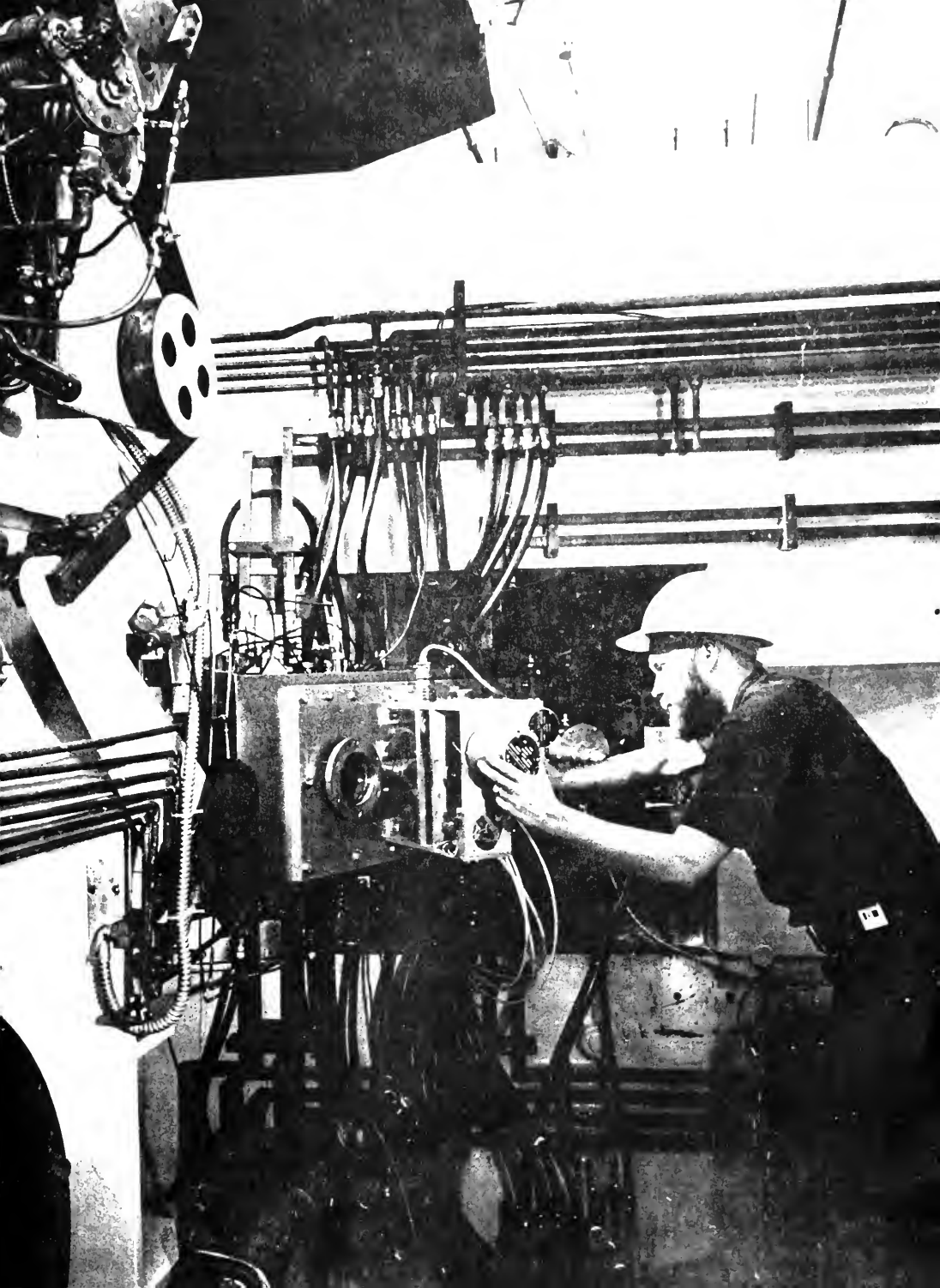
The research programs at the University derive their existence and vigor from a faculty comprised of internationally recognized scholars and scientists. It is an advantage for undergraduate students

to be aware of the University's research facilities as they plan their program.

In addition to fine library resources and the usual laboratory facilities for undergraduate studies, the University has developed outstanding opportunities for research in the biological, physical, and social sciences. Among the exceptional facilities are the Institute for Child Study; the Natural Resources Institute; a Computer Science Center; a laboratory for basic behavioral research on animals; Van de Graaff accelerators; a training nuclear reactor; a full-scale, low-velocity wind tunnel; a psycho-pharmacology laboratory; and laboratory models for meteorological phenomena. Collabora-

tive arrangements with many nearby government agencies permit University students and faculty to utilize their research facilities. The University owns and operates the world's longest radio telescope, located in California. A 160 MVE cyclotron for research in nuclear studies is located on the College Park campus.

Investigation in agriculture is an important aspect of University research. University farms total more than 2,000 acres. Breeding, selection in farm crops, and soil research are a part of the program. Work in these areas is augmented by X-ray equipment and an electron microscope.





A. GENERAL POLICY

The University's approach to student discipline is primarily an educative and preventive one. It assumes that discipline is properly the concern of the entire University community—the student body, the faculty, and the administration.

In order that uniform standards may be maintained, all disciplinary action concerning students or student organizations is subject to review by the Adjunct Committee on Student Discipline of the University Senate. The rules and regulations of any organization or department that wishes to establish a disciplinary unit must be submitted to the Adjunct Committee on Student Discipline and the Vice President for Student Affairs for approval or modification.

Cases involving infractions of University Rules, other than academic, which apply to all students are referred immediately to the Student Affairs Judiciary Office on the College Park Campus or to the Dean of the school in which the student is registered in Baltimore. (Graduate students are referred to the Dean of the Graduate School.) The Judiciary Office or the Dean will investigate the case and take appropriate action.

In situations involving undergraduates, the Student Affairs Judiciary Office will refer the case to one of the student judicial boards for appropriate action, according to the jurisdictional area of the various student boards and the seriousness and nature of the offense. The Student Affairs Judiciary Office may handle directly those cases it judges to involve students needing special remedial or rehabilitative action and those cases where an administrative hearing is requested by the student.

Students charged with violating University regulations are guaranteed administrative due process in the handling of the charges, the conduct of the hearings, the imposition of sanctions, and the right of appeal.

B. SUSPENSION OF A STUDENT FROM CLASS

Discipline in the classroom is the responsibility of the faculty member in charge of the class. Misbehavior of a type that interferes with the educational efficiency of a class will be considered sufficient cause for suspending a student from the class. If a student is suspended from class for disciplinary reasons, he should report immediately to the department head. The department head will investigate the incident and will report it to the academic dean and to the Student Life Judiciary Office, in order to determine whether or not past disciplinary action has been taken against the student. The department head will then write a letter to the student indicating the disposition of the case. The student will be required to present this letter to his instructor before he can be readmitted to class. A copy of this letter will be sent to the Student Life Judiciary Office.

C. SUSPENSION OF A STUDENT FROM ACTIVITIES OR UNIVERSITY FACILITIES

The individual or group of individuals in charge of any department, division, organization, building, facility or any other unit of the University (e.g., Dining Hall, Student Union, etc.) shall be responsible for student discipline within such units. The person responsible for each unit may suspend the

student or student organization from the unit. The suspended student or representative of the student organization will be referred immediately to the Student Affairs Judiciary Office. The Judiciary Office will investigate the incident and notify the student of the disposition of the case. The individual responsible for the suspension will be notified before the student or his organization can be readmitted. A file of such actions shall be kept in the Judiciary Office.

D. IDENTIFICATION CARDS

Official University of Maryland student identification cards and transaction plates are issued to all registered undergraduate and graduate students. The identification card and the transaction plate are for use only by the student to whom issued and may not be transferred or loaned to another individual for any reason. Loss of either the I.D. card or the transaction plate, or both, should be reported at once to the Office of the Vice President for Student Affairs. A replacement fee of \$3.00 for each item is required prior to the creation of authorized duplicates.

E. IMPORTANT UNIVERSITY REGULATIONS WHICH APPLY TO ALL STUDENTS

The following behavior may result in referral to the Student Affairs Office for appropriate action. Typically, disciplinary sanctions will be imposed not only for individual misconduct which demonstrates a disregard for institutional behavioral standards, but also for conduct which indicates disregard for the rights and welfare of others as members of an academic community. Such conduct may ultimately call into question the student's membership in the University community, either because he has violated elementary standards of behavior necessary for the maintenance of an educational milieu or because his continued presence at the University adversely affects the ability of others to pursue their educational goals.

1. VIOLATION OF FIRE REGULATIONS—failure to comply with evacuation procedures; tampering with fire-protecting apparatus; use or possession of fireworks or firearms; inappropriate use of open flame devices or combustible materials.

2. BEHAVIOR WHICH JEOPARDIZES THE SAFETY OR WELL-BEING OF OTHER MEMBERS OF THE UNIVERSITY COMMUNITY—This regulation is intended to safeguard the personal, social, academic, and professional rights of all members of the University community. Examples of violations would include harassment of persons acting in performance of their official duties, physical abuse of any person on or in University property, and conduct which threatens the health of other persons or interferes with their proper educational purposes.

3. UNAUTHORIZED POSSESSION, USE, OR DISTRIBUTION OF ALCOHOLIC BEVERAGES ON OR IN UNIVERSITY PROPERTY—University policy, consistent with State and County laws, restricts on-campus use of alcoholic beverages in specified areas.

4. POSSESSION, USE, OR DISTRIBUTION OF ILLEGAL DRUGS ON OR IN UNIVERSITY PROPERTY—this includes possession, use, distribution, sale, manufacture, or processing of illegal or un-prescribed narcotics, drugs, and/or hallucinogenic substances.

5. DESTRUCTION OR THEFT OF PERSONAL OR UNIVERSITY PROPERTY—Disciplinary action may include restitution to the University or to the individual(s) involved.

6. UNAUTHORIZED POSSESSION OR USE OF UNIVERSITY KEYS—Keys to rooms or buildings on the University campus may be obtained only through official channels.

7. UNAUTHORIZED USE OF BUILDING—Except for properly scheduled classes or meetings, classroom, administration, and recreation buildings are closed to general student use on holidays, Saturday afternoons, Sundays, and after 8:00 p.m. during the week. Individual students may use these buildings or facilities with written permission from a member of the faculty or the administrative staff.

8. FALSIFICATION, FORGERY, OR MODIFICATION OF ANY OFFICIAL UNIVERSITY RECORD—Identification card, absence excuses, parking stickers, transcripts, examinations, grade cards, admission applications, etc.

9. PLAGIARISM, CHEATING AND OTHER ACADEMIC IRREGULARITIES—A student who violates accepted academic procedure may be referred to the Dean of his College or to an **Ad Hoc** Committee on Academic Dishonesty. (See Irregularities in Examinations for specifics.)

10. FAILURE TO MEET FINANCIAL OBLIGATIONS TO THE UNIVERSITY—This includes refusal to pay delinquent accounts, and use of worthless checks or money orders in payment to the University for tuition, board, fees, library fines, traffic penalties, etc.

11. OBSTRUCTION OR DISRUPTION OF AUTHORIZED ACTIVITIES ON UNIVERSITY PROPERTY—Teaching, research, administration, disciplinary proceedings, public service functions, recruitment, etc.

12. VIOLATION OF UNIVERSITY HOUSING REGULATIONS—

13. VIOLATION OF UNIVERSITY CAMPUS TRAFFIC RULES AND REGULATIONS—

POLICY ON AMPLIFYING EQUIPMENT

(as adopted by University Senate, 2 June 1970 and approved by the Administration.)

1. Public address systems, loudspeakers, and other forms of sound amplifying equipment may be used in any of the following outdoor areas of the campus:
 - a. Physical education and intramural field between University Boulevard and parking area 1.
 - b. North Mall between Campus Drive and Washington-Baltimore Boulevard.
 - c. South Mall between Regents Drive and Washington-Baltimore Boulevard.
 - d. Athletic practice fields east of Byrd Stadium.
2. The use of public address systems, loudspeakers, and other forms of sound amplifying equipment must be restricted in the Central Mall area between 8 a.m. and 6 p.m. on class days in order to minimize the likelihood of disturbing classes and other academic activities. However, such equipment may be used in the Central Mall during these hours if the procedures outlined below are followed. All equipment used in Central Mall must be secured through the Office of the Director of the Physical Plant or through the S.G.A. office.
 - a. Public address systems, loudspeakers, and other forms of sound amplifying equipment (except in "b" below), must be secured from the Office of the Director of Physical Plant, South Administration Building, by requesting such equipment in writing at least twelve (12) hours in advance. Any University student or organization which fulfills the following requirements will be permitted to use the amplifying equipment.
 - (1) An individual must be currently enrolled as a student, part-time or full-time, at the University or currently employed by the University.
 - (2) Any organization or activity must have been recognized by the SGA Legislature and must at the time of the request have official recognition as a University organization or activity.
 - b. Bullhorns will be available upon surrender of the I.D. card in the SGA office and in the Office of the Director of the Physical Plant. Bullhorns secured in this manner may be used on the Central Mall without prior permission. Any individual may use only one bullhorn at a time.
3. Public address systems, loudspeakers, and other forms of sound amplifying equipment may be used in outdoor areas of the Campus other than those listed above (sections 1 and 2) by securing approval in writing at least 5 days in advance from the Facilities Use Committee by application to the Office of the Director of the Physical Plant. Approval will be granted for use of amplifying equipment in these areas only if there is a high probability that the planned activity will not disrupt or disturb other University activities or if the area has not been previously reserved. Permission will be granted to use amplifying

equipment in the vicinity of residence halls only upon specific written request of the student government of the residence halls affected.

4. Individual students or organizational representatives using amplifying equipment must accept responsibility for any complaints of disturbances or disruption received from persons in University academic and/or residence buildings.

POLICY ON DEMONSTRATIONS

(as adopted by University Senate, 2 June 1970 and approved by the Administration.)

I. GENERAL STATEMENT

- a. The University of Maryland cherishes the right of individual students or student groups to dissent and to demonstrate, provided such demonstrations do not disrupt normal campus activities, or infringe upon the rights of others.
- b. On the other hand, the University will not condone behavior which violates the freedom of speech, choice, assembly, or movement of other individuals or groups. In short, responsible dissent carries with it a sensitivity for the Civil rights of others.
- c. Accordingly, the University will take whatever steps it deems necessary to (1) protect the right of any individual or group to demonstrate and publicly proclaim any view, however unpopular; (2) protect the freedom of speech, assembly, and movement of any individual or group which is the object of demonstrations.

To achieve the foregoing objectives the following guidelines have been developed for operation at College Park.

II. GUIDELINES FOR GENERAL DEMONSTRATIONS

- a. Unscheduled demonstrations, "teach-ins," rallies, or equivalent activities may be held by recognized university organizations and activities, full or part-time students, and current employees of the University in the areas defined below provided that the activity does not interfere with any function for which that space has been reserved in advance.
 1. The Central Mall.
 2. Physical education and intramural field between University Boulevard and parking area 1.
 3. Athletic practice fields east of Byrd Stadium.
 4. North Mall between Campus Drive and Washington-Baltimore Boulevard.
 5. South Mall between Regents Drive and Washington-Baltimore Boulevard.

All activities in these areas must be conducted so as to avoid interference with the regularly scheduled functions of the library and/or classrooms adjacent to the area and in compliance with the provisions contained in 2g, 1-8.

Failure to reserve space will not invalidate

- the privilege of conducting the appropriate activity. However, in the event of two or more groups desiring to use a given space, an approved space reservation will take precedence over an unscheduled activity. If two or more groups desire a space when no reservation has been made, the first come, first served principle will apply.
- b. Recognized University organizations and activities, full or part-time students, and current employees of the University who wish to schedule a demonstration, "teach-in," rally, or equivalent activity, may request the space through the facilities reservation procedure up to 24 hours in advance. Demonstrations will be permitted in the locations outlined in 2a. above unless the space has previously been reserved or is in use for academic activities or intercollegiate athletic team practices. Demonstrations may be held at other locations on the campus subject to approval by the Vice Chancellor for Student Affairs in consultation with the Student Life Committee. Students who participate in demonstrations which have not been approved may be considered in violation of University policy. (Except as provided in 2a. above).
 - c. Demonstrations, rallies or "teach-ins" may be conducted in or adjacent to any residential building with the specific written concurrence of the student government of the unit or area concerned. Any such rallies, demonstrations or "teach-ins" which may be authorized by the appropriate student government must conform to the general procedures contained in 2g, 1-8.
 - d. Demonstrations in the form of parades on streets may be conducted with the specific approval of route and time secured 48 hours in advance from the University Public Safety and Security Office.
 - e. Although groups may sponsor or organize demonstrations, rallies, "teach-ins," or picketing activities, the fact of groups sponsorship or organization in no way relieves individuals of the responsibility for their own conduct, and each individual participating in such activities is accountable for compliance with the provisions of this policy.
 - f. Persons not members of the University student body, faculty or staff may participate in demonstrations, rallies, picketing, teach-ins or equivalent activities only upon invitation by a bonafide student, faculty or staff member. All non-students are obligated to the terms of this policy during participation in such activities. Since persons not students, faculty or staff members are not subject to University discipline procedures, failure to comply with terms of this policy may result in action under terms of appropriate Maryland law.
 - g. In addition to the above provisions, the following guidelines will apply to all demonstrations.
 1. Reasonable access to and exit from any office or building must be maintained the right of way on public streets and sidewalks will be maintained.
 2. Demonstrators will not attempt to force the cancellation or interruption of any event sponsored by a University office or by a faculty or student group or by any group authorized to use University facilities.
 3. Classes or other educational activities in classroom buildings and the library will not be disrupted.
 4. The use of public address systems, loudspeakers, etc., in the vicinity of academic and residence buildings will follow procedures set forth above.
 5. Demonstrations may be carried on inside of University buildings only as provided in Sections 2C and 4 or with approval of the Facilities Use Committee as outlined in the University General and Academic Regulations.
 6. Where an invited speaker is the object of protest, students and faculty may demonstrate OUTSIDE the building where the lecture will take place. Demonstrators who wish to enter the building must do so as members of the audience and must give the speaker a respectful hearing. Signs, placards or other paraphernalia associated with a demonstration will not be carried into the building.
 7. University property must be protected at all times.
 8. The safety and well being of members of the University community collectively and individually, must be protected at all times.
 - H. Complaints received from users of the Library or classrooms adjacent to the defined areas (2a.) will be grounds for disciplinary action against individuals and/or groups sponsoring or participating in rallies, "teach-ins" or demonstrations in these areas.

III. GUIDELINES FOR DEMONSTRATIONS IN CONNECTION WITH PLACEMENT PROGRAMS

- a. Anyone wishing to question or protest the on-campus presence of any recruiting organization should contact the Director of Placement or his representative in advance.
- b. Should any member of the University Community wish to discuss or protest the internal policies of any recruiting organization, the Director of Placement must be contacted for assistance in communicating directly with the appropriate representatives of said organization.
- c. Demonstration guidelines outlined in Section 2g, 1-8 are applicable.
- d. Demonstrations in conjunction with placement programs conducted in the Placement Service's Cumberland Hall facility or other facility shall be considered not to infringe upon the rights of others and the normal functioning of placement programs provided that demonstrations are conducted outside of the facility and do not interfere

with free and open access to Placement and Credentials Services facilities by those students, faculty, staff, and visitors who wish to conduct business within the framework of established placement programs.

IV. SPECIAL GUIDELINES PERTAINING TO THE STUDENT UNION

- a. No demonstrations, rallies, "teach-ins" or equivalent activities may be held in the lobbies or corridors of the Student Union.
- b. Demonstrations may be held in assigned rooms of the Student Union by recognized student organizations following procedures for reserving space which have been outlined by the Student Union Board.

V. GUIDELINES FOR PICKETING

- a. Legal Rights and Limitations.
Orderly picketing is a legally established form of expression which recognizes the individuals' right of free expression subject only to such reasonable limitations as are imposed by state legislation and University regulations. These limitations are intended to protect the rights of the picketer, the student body, and the public with particular concern for safety, preservation of normal academic life and order, and the protection of persons and property.
- b. Conduct of Picketers.
 1. Picketers are subject to those regulations listed above in Section II, G, 1-8.
 2. Picketers will not disrupt any University activity by making excessive noise in the vicinity of any University building.
 3. The University Health Service is off-limits to picketers because special silence and other welfare and safety factors are involved.

VI. ENFORCEMENT PROCEDURES

It is a general expectation that individuals and groups will abide by the behavioral guidelines established by this policy statement. Compliance with these minimal standards for responsible conduct is a necessary condition for maintaining a campus atmosphere in which dissent and demonstrations are viewed as important aspects of the University's educational program.

Reports of violations by undergraduate students will be referred to the Judiciary Office of the Vice Chancellor for Student Affairs and reports of violations by graduate students will be referred to the Vice President for Graduate Studies and Research. Actions taken by these offices will follow procedures set forth in this handbook.

When violations continue beyond the enforcement capabilities of the University staff, such outside assistance as is necessary may be requested. These requests will be made in accordance with policy and procedures established by the University.

DISCIPLINARY ACTIONS

DISCIPLINARY REPRIMAND

A disciplinary reprimand is written notification from a University official to a student containing a warning that repeated infractions of regulations may result in more severe disciplinary action. A record of the

writing the letter and in the Student Affairs Judiciary Office. The student's parents may be notified.

2. CONDUCT PROBATION

This action involves a period of time, not to exceed one year, in which a student is required to show a positive change in behavior. In addition, conditions and restrictions may be imposed, including revocation of specific privileges and recommendations for counseling interviews with the Judiciary Office. The student's parents may be notified. A violation of conduct probation may be the basis for more severe disciplinary action.

3. DISMISSAL FROM UNIVERSITY HOUSING

In the case of a serious violation of house rules, residence hall probation, or housing regulations, a student may be dismissed from University housing for a specified period of time. Such dismissal results in a percentage room and board refund, according to the regular University refund policy.

4. DISCIPLINARY PROBATION

This action involves a period of time, not to exceed one year, during which a student who has been involved in a disciplinary situation (or repeated violations) is given an opportunity to prove that he can become a responsible and effective member of the University community.

(a.) In deciding upon the action of disciplinary probation, a judicial board may subject the activities of the student to any one, or more, of the following conditions:

1. A student on disciplinary probation may not represent the University in any extracurricular activities such as intercollegiate athletics, debate teams, University Theatre, or band; however, he may participate in informal activities of a recreational nature sponsored by the University.

2. A student on disciplinary probation may not run for or hold office in any organization that is recognized by the Ad-junct Committee on Student Activities.

3. The student's activities may be restricted in other ways which pertain to the type of offense.

4. The student may be required to make restitution or repairs.

- a. When a student has been placed on disciplinary probation, the Office will officially notify the student of the decision and will indicate that any violation of his probationary status may result in suspension or expulsion. The Judiciary Office will inform appropriate University authorities of the disciplinary action and may notify the student's parents.

- b. If a student is found guilty by a judicial

board of any infraction of University regulations during his probationary period, the board may recommend that he be suspended or expelled from the University.

c. At the end of the probation period, the student's case will be reviewed by the Judiciary Office. If all conditions of the disciplinary action have been met satisfactorily, the student will be considered in good standing, behaviorally.

5. SUSPENSION FROM THE UNIVERSITY

A student's suspension from the University shall be for an indefinite period of time. However, the Judicial Board recommending this action must specify the date at which he subsequently may apply to the Judiciary Office for readmission, and in no case will this date be later than one year after the effective date of the suspension. The academic record of the student will not in any case affect this application for readmission after suspension for disciplinary reasons. All recommendations for suspension must be approved by the Vice Chancellor for Student Affairs. Parents are notified in all cases.

During the period of suspension, the student may not participate in any University-sponsored activity or in the activities of any recognized University organization. In addition, he will be denied all other rights and privileges which are accorded to students in good standing.

a. Suspended Suspension by Vice Chancellor for Student Affairs

1. Suspension is withheld pending careful evaluation of a student's behavior during a probationary period not to exceed one year. If the student is involved in any further offense, this suspension of disciplinary action may be summarily revoked by the Vice President and the original decision of suspension from the University enforced.

b. Deferred Suspension by Vice President for Student Affairs

This is a suspension which becomes effective after a specific future date. It is normally used near the end of a semester to avoid financial penalty that would be entailed by an immediate suspension. Probationary status will exist during this period identical to **suspended** suspension.

6. TEMPORARY SUSPENSION

When in the judgment of the Vice Chancellor for Student Affairs, or his designated representative, teaching or research activities, administrative functions, extracurricular programs, or other authorized activities on University premises are obstructed or disrupted by a student's behavior and when such behavior is continued beyond a request that it be terminated, the Vice Chancellor for Student Affairs, or his designated representative, may temporarily suspend that student for a period not to exceed seven (7) calendar days. Effective immediately, the student's activities are subject to the restrictions set forth under regular suspension.

A report of the student's behavior and of the suspension action will be forwarded to the Judiciary Office. Referral then will be made to the appropriate judicial board, which must provide a hearing for the student involved not later than (7) calendar days after the effective date of the temporary suspension. Referral and hearing procedures will be the same prescribed for any other disciplinary situation.

If the decision of the judicial board recommends disciplinary action less severe than suspension, the period of temporary suspension shall automatically terminate. If the board's decision recommends either suspension or expulsion, the temporary suspension shall continue during any period of appellate review. In either case, normal channels for appealing the board's decision will be open for use by the student involved.

If the student is found not guilty, he will be permitted to make up all academic work missed during the period of his temporary suspension.

7. EXPULSION FROM THE UNIVERSITY

This is the most serious penalty and results in a complete separation of the relations between the University and the student. Parents are informed and permanent notification appears on the student's official transcript. Expulsion must be approved by the President of the University.

APPEALS

Any disciplinary decision may be appealed to the next higher disciplinary unit. The highest board of appeal is the Adjunct Committee on Student Discipline of the University Senate. An appeal must be made through the Judiciary Office or through the Dean who is responsible for the administration of the decision being appealed. It will be forwarded to the appropriate judicial board for review. The appeal must be in writing, must indicate the basis for the appeal, and must be made within ten days of the date the student was notified of the decision which he is appealing. In hearing an appeal, the next higher disciplinary unit may affirm or reduce the original decision or may return the decision to the lower board for reconsideration.

STUDENT DISCIPLINARY RECORDS

All disciplinary actions by the judicial boards are reported to the Judiciary Office of the Vice Chancellor for Student Affairs where they will be recorded. All records of disciplinary action, except those resulting from expulsion, will remain confidential, will be segregated from the student's academic record, and will not be available to unauthorized persons on campus, or to any person off campus, without the express consent of the student involved, except under legal compulsion or in cases where the safety of persons or property is involved.

Except in cases where the student has demanded a public hearing, disciplinary action is confidential; and no member of a judicial board may disclose any information concerning the hearing, the student's prior disciplinary record, the current disciplinary action taken, or any information as to the voting. Any public release of information con-

cerning disciplinary action will be issued only by the Judiciary Office. According to a policy established by the Adjunct Committee on Student Discipline, names of students involved in disciplinary action may not be printed in campus publications and may not be made public. Any judicial board may recommend that no publicity of any nature be released by the Judiciary Office on a case if circumstances so warrant.

ALCOHOLIC BEVERAGE POLICY AND PROCEDURES

POLICY

Regulations forbid unauthorized possession, use, or distribution of alcoholic beverages on or in University property. University policy is consistent with State and County laws and restricts ON-CAMPUS use of alcoholic beverages in specified areas.

Interpretation

1. **Age**—Students under 21 years of age may not possess, consume, or distribute alcoholic beverages.
2. **LICENSING**—At this time Prince George's County will not authorize a temporary license to any student organization. This refusal is based on the impossibility of ascertaining that all members of the student organization are citizens over 21 years of age. The present policy, in fact, means that:
 - a. Individual drinking (individuals over 21) is no problem.
 - b. Events of a "Bring Your Own Bottle" nature are possible.
 - c. Events where alcoholic beverages are dispensed free to anyone over 21 are possible.
 - d. Events where donations are asked for alcoholic beverages are possible, when the donations are voluntary. (CAUTION: the providers of the beverage may in no way force a donation.)
 - e. Events dispensing alcoholic beverages for profit are prohibited. There may not be direct sale of liquor without a license, nor may there be an admission charge for the event.
3. **RESTRICTED AREAS**—Alcoholic beverages may not be possessed, consumed, or distributed in any academic facility, except where specific, written approval has been obtained for the event from the individual or department responsible for the operation of that facility. This restriction applies to all dining halls, cafeteria, classroom and office buildings, libraries, laboratories, administrative buildings, and athletic facilities.

When planning an event where alcoholic beverages will be brought in by the individual consumers, or will be given away, or where donations will be invited, the following procedures should be followed:

1. Receive written approval for the use of your facility—in the residence areas check for any local restrictions established by unit governments.
2. Secure and complete the **Registration Of A Student Social Event** form in the Student

Activities Office. (Rm. 142—Student Union)

3. Secure and complete the **Alcoholic Beverage Registration** form which names the person responsible for the event.

USE OF SPACE AND UNIVERSITY FACILITIES

1. FACILITIES USE COMMITTEE

Allocation of the use of space and supporting services is administered by the Facilities Use Committee. General regulations for the use of space is described in this section. For detailed information call campus telephone extension 2233 for referral to proper authorities for coordination of the request. Space and Service Reservation form (PP-47-R) is required in most instances. This blank may be obtained in the Department of the Physical Plant, South Administration Building, Room 3. Information regarding fees charged for use of space or services is available through this office.

Requests by University-approved student, faculty, and staff organizations:

- a. Space desired should be reserved through the office of the Director of Physical Plant in the North Administration Building except:
 - 1 Reservations for facilities in the Center of Adult Education must be made with the office of the Director of the Center, campus telephone extension 2325 or 1612.
 - 2 Reservations for facilities in the Student Union must be made with office of the Manager of the Student Union, campus telephone extension 2801.
- b. Space reservations by students are restricted to student organizations approved by the Student Life Committee.

2. REQUESTS BY OTHER THAN UNIVERSITY ORGANIZATIONS

- a. Inquiries for the use of certain facilities and program planning assistance by scientific, civic, technical, professional, governmental and industrial groups may be directed to the office of the Director of Conferences and Institutes, campus telephone extension 2322. The majority of programs of this nature are conducted in the University College Center of Adult Education.
- b. The University cannot consider itself bound to accommodate off-campus programs unless proposals have been approved by proper authorities.

3. GENERAL REGULATIONS TO BE OBSERVED IN REQUESTING OR USING SPACE

- a. All requests for the use of space should be COMPLETED five calendar days in advance of the date of the proposed meeting to permit consideration of alternate dates and to enable various University services to be coordinated. This includes, in addition to buildings, outside events held on the mall, parking lots, fields, etc.
- b. Persons, accepting the assignment of space for a meeting must accept the responsibility for the conduct of the audience; for leaving the facility secure and in a clean and orderly fashion; for any damage to University property caused by the group; for the financial obligations arising from the use of the

facility such as cleaning, repair, and use of University properties.

- c. The safety requirements of the University must be strictly observed in all matters pertaining to the use of buildings. The Supervisor of Safety in the office of the Department of Physical Plant will advise on the use of decorations, fire regulations, and safety precautions. Fire guards are required for events at which 500 or more persons are to be present.
- d. The group is responsible for closing all windows and turning off all lights at the conclusion of the meeting. If the space used is normally locked, police should be notified upon termination of meeting.
- e. Publicizing functions or meetings will be confined to bulletin boards.
- f. Any organization which fails to discharge the above responsibilities will jeopardize its privilege for using facilities for meetings in the future.
- g. The use of public address systems, loudspeakers, etc. in the vicinity of an academic building must follow procedures outlined above.

4. PARTIAL LIST OF MEETING SPACES AVAILABLE

Agriculture Auditorium, Symons Hall. Capacity 150. Reserved for large meetings.

Armory Main Floor. Capacity 3300.

This space to be coordinated with the Department of Air Science, the Director of Men's Intramurals Programs, and the Dean of College of Physical Education, Recreation and Health. No vehicles may be used or exhibited on the floor due to safety regulations. There will be no selling or serving of drinks of any kind on the main floor lobby.

Armory Lecture Hall Ar-44. Capacity 352.

Botany E-1. H. J. Patterson Hall. Capacity 300. Air Conditioned.

Botany E-201. H. J. Patterson Hall. Capacity 140. Air Conditioned.

BPA Auditorium Q-29. Capacity 506. Air Conditioned.

Center of Adult Education. Air Conditioned.

This space coordinated with the Director of the Center during any 90 day period. Programs scheduled in advance of 90 days of the date of the event are coordinated with the Director of Conferences and Institutes. This building has overnight guest rooms, meeting rooms, coffee shop, dining room and banquet facilities. Nominal charges are made for all facilities.

Central Auditorium, Skinner Building, T-21. Capacity 366. Air Conditioned.

William P. Cole, Jr. Student Activities Building. Capacity 12,005 fixed seats; with floor seats 14,000.

This space coordinated with the Director of Athletics and the Dean of the College of Physical Education, Recreation and Health.

Coliseum. Main Floor. Capacity 2,250.

This space to be coordinated with the Dean of the College of Physical Education, Recreation and Health and the Director of Intramural Program.

Dining Hall

Special arrangements for dinner groups may be made. Limited facilities available. This facility coordinated with the Director of University Food Service.

Drake Lecture Hall, C-130. Capacity 374. Air Conditioned.

Drake Lecture Hall, C-132. Capacity 132. Air Conditioned.

Fine Arts Theatre. Capacity 1350. Air Conditioned.

A basic service charge will be made to cover supporting services. Audiovisual facilities by special arrangement. Use of these facilities must be coordinated with the Department of Speech and dramatic Arts.

Fine Arts Lecture Hall, NN-214. Capacity 200. Air Conditioned.

Foreign Language, LL-12. Capacity 112.

Francis Scott Key Hall, Lecture Hall, RR-6. Capacity 262. Air Conditioned.

Physics Lecture Hall. Capacity 500. Air Conditioned.

Shoemaker Building, N-201. Capacity 226.

Shoemaker Building, N-204. Capacity 267.

Student Union

It is the University policy to assign meeting space in the Student Union Building for all student and faculty organizations, as far as it is practical to do so. This building has available a total of ten meeting rooms varying in capacity from 25 to 600. No charge will be made for any student, faculty or staff organization that wishes to meet in the Student Union Building. Special charges for dances and other extra services may be necessary. Departments desiring to schedule conferences for business or professional groups should contact the office of the Director of the Student Union concerning costs and availability of the building, campus telephone extension 2801.

Located in the building are lounges for relaxation, television room, music lounge, fine arts gallery, mimeograph, poster and plastic sign service, check cashing service, browsing library, billiards room, bowling alleys, coffee shop, newsstand, student supply store, public telephones, and the campus ticket box office.

University Chapel

East Chapel, Capacity 1,200.

West Chapel, Capacity 140.

Conference Room, Capacity 24.

Available for devotional services only. Marriages, christenings, and the like permitted. Reservations may be made with the Office of Student Life, campus telephone extension 2925.

REGULATIONS AND SERVICE FEES FOR THE USE OF UNIVERSITY PROPERTY

(Available from the Department of Physical Plant)

Items of University property such as chairs, tables, stages, platforms, decorations, flags, potted palms, pianos, and similar equipment are frequently needed by individuals or groups for meetings, social functions or other types of programs. These items are available, in limited quantities, under the conditions described below:

(a.) The use of such property is restricted to the following:

1. Student groups registered with the proper University authorities and recognized as official University organizations.
2. Faculty and staff groups whose status is recognized by the University administration.
3. Groups sponsored by the Division of Conferences and Institutes of the University College.
4. Groups sponsored by the College of Agriculture.

5. Organizations affiliated with the University of Maryland, authorized and approved by the administration.
6. Events approved by the Facilities Use Committee.
7. Individuals and groups coordinating an approved event.
- b. The use of University property is not normally available to individual students, faculty or staff members.
- c. Requests and arrangements for use of University property should be made at the time the Space Services Reservation Form, PP-47R, is submitted and indicated on the reverse side of the form. Information concerning the property requested may be obtained by calling the Service Supervisor, campus extension 3434. Organizations paying a service fee for the use of space must negotiate separately for particular items at the time the Space and Services Reservation Form is submitted.
- d. Requests for services and properties must be completed five calendar days prior to the event to give sufficient notice for arranging work.
- e. Facilities and equipment are committed in the order reservations are accepted.
- f. The University cannot assume responsibility for supplying items which are not available upon application.
- g. It shall be the responsibility of the using group to return property in good condition and/or make restitution to the University for any damage or loss occurring while assigned to the group.
- h. Service Fees: Estimates for use and set-up of property items (chairs, tables, public address systems, etc.) are available from the Service Supervisor, campus extension 3434. Estimates for general labor and tradesmen are also available from the Service Supervisor.

STUDENT ACTIVITIES

RECOGNIZED ORGANIZATIONS AND ACTIVITIES

Two types of student organizations are eligible for recognition. They are (I) Recognized Organizations and (II) Recognized Activities.

- I. Recognized Organizations
 - A. A group of students may organize by filing a constitution for recognition by SGA.
 - B. Recognized organizations may file for use of SGA funds.
- II. Recognized Activities
 - A. A group of students may form an activity without filing for constitutional approval from SGA.
 - B. An activity need merely file for recognition by SGA, submitting the purpose of the activity, its name, and responsible students and/or faculty.
 - C. An activity is not eligible for SGA funds.
 - D. Activities may be short-term organizations.
 - E. Activities may be composed of students who want to organize informally.
 - F. Responsibilities of activities are the same as those of organizations, under the General Regulations. In addition, a

non-discrimination statement must be filed with the Director of Student Activities before recognition is granted.

Recognized organizations, activities and other groups may use Student Union facilities when space is available. The priority for use of available space will be in descending order: recognized organizations, recognized activities, and other groups.

REGISTRATION OF UNIVERSITY EVENTS ON-CAMPUS UNIVERSITY EVENTS

The primary purpose of registration of on-campus university events is to facilitate the use of University facilities and better coordinate the University calendar. Thus, the only on-campus events which must be registered are those which require the use of facilities which have to be reserved through the Physical Plant Office. In these cases events must be registered with both the Activities Coordinator, Office of Student Activities (Rm. 142 Student Union Building) and the Physical Plant Office (South Administration Building).

OFF-CAMPUS UNIVERSITY EVENTS.

Broad invitation University-sponsored events held off-campus, such as class proms, must be registered with the Activities Coordinator (Rm. 142 Student Union Building).

All events both on and off-campus where there will be alcohol must be registered with the Activities Coordinator. (See following section.)

NOTE: A staff member (or members) are required at all registered social events. This staff member may be from the University Housing Office, a faculty member of graduate assistant, or a member of the administration. Parents of students may also serve in this capacity.

PROCEDURES FOR SCHEDULING LARGE EVENTS

Register date on calendar in the Office of the Activities Coordinator (Room 142, Student Union Building).

Read the section of Academic Regulations relating to Social Functions, Reservation of Space, and Advertising.

Reserve a room and arrange for its physical set-up through the Office of the Department of Physical Plant, South Administration Building (if held on campus). In some cases the room or building must first be cleared by the person in charge of that building.

Cole Activities Building	Alfred Hanlon—Ext. 2121
Armory	Frank Fellows—Ext. 2751
Ritchie Coliseum	Nick Kovalakides—Ext. 2124
Maryland Room	Mrs. Khoury—Ext. 2133
Chapel	Mrs. Fields—Ext. 2925

After this first approval, however, final approval must still be obtained from the Office of the Department of Physical Plant, South Administration Building.

CHARITABLE AND SERVICE PROJECT REGISTRATION

- A. Charitable and service project solicitation on campus is limited to recognized University Activities and organizations. Outside organizations are prohibited

from requesting contributions of funds or materials from students, student organizations, staff and/or faculty members. Requests for funds should be directed to the Campus Chest Council.

- B. Project proposals for charitable events, projects and drives, including a statement of projected expenses, must be registered with the Director, Community Service Programs (rm. 136, Student Union Building) one week in advance of the planned date of the project. Because of the nature of certain events, all charitable projects need not necessarily be limited to Campus Chest Week. The sponsoring University organization must have sufficient financial resources to provide for the possibility of an unsuccessful event. The dollar value of any prizes and trophies offered should be compatible with the expected financial return of the project.
- C. Activities and organizations may hold as many charitable fund raising events as they wish, provided these events are intra-organizational, i.e., events confined solely to the organizational membership. Events of this nature do not need to be registered.
- D. An activity or organization may hold one charitable fund raising event a semester which involves individuals other than the membership of the organization.
- E. Organizational solicitation of other groups, i.e., not individuals, for charitable contributions, is permitted pending approval by the Campus Chest Council. An accurate financial report must be submitted to the Campus Chest Council within three (3) weeks after the conclusion of the event. A statement of receipt of monies by the selected recipient of collected funds must accompany the financial statement.
- F. Organizational solicitation of University groups for materials or services is permitted, pending approval by the Campus Chest Council.
- G. Solicitation of individuals either directly or by contribution containers is prohibited.
- H. University organizations soliciting off-campus must work through existing community organizations and charities. Door-to-door solicitation must always occur in connection with national or community organizations and charities. They may offer their assistance in roadblocks to existing community organizations or charities during national or community drives. In such instances, the community must assume the responsibilities of clearing the project with the appropriate law enforcement agency.
- I. University organizations may not hold off-campus roadblocks without community sponsorship. During Campus Chest Week, Alpha Phi Omega will be responsible for the coordination of all roadblocks. They will obtain permission of the sponsored charity and approval of the police responsible for the area in

which the roadblock is to be held.

- J. On-campus roadblocks may not be held. Exceptions to the above rules may be granted by Campus Chest Council.

FUND-RAISING EVENTS REGISTRATION

A fund-raising event or money-making activity is defined as any project the primary purpose of which is the acquisition of money or real property to be used for the prime purpose of the sponsoring student organization or an agency or person of their choosing. All projects which involve ticket-selling and/or charge admission and fund-raising must be registered with the Director, Community Service Programs (Rm 136, Student Union Building), and approved by the Campus Chest Council one week prior to the event.

Each recognized student activity and student organization is allowed one campus-wide money-making activity each semester.

Direct solicitation of individuals is prohibited.

Organizations may hold an unlimited number of fund-raising events within their own membership. Such activities do not have to be registered or approved by the Department of Student Activities.

The estimated expenses of the money-raising event should not exceed the money or real property which the sponsoring organization can pledge and the funds which the SGA may reserve to it altogether with the balance of a conservative estimate of the gross receipts the Department of Student Activities places on the affair.

All professional talent, excluding professional athletics, can be sponsored only by recognized student organizations and established faculty and administrative committees. An itemized budget for the event should accompany any request for approval. All contracts must be signed by the Cultural Coordinator of the Department of Student Activities.

The following regulations govern money-making events of a "Presents" nature (presentation of professional talent). All entertainment brought into the University and performed at Cole Field House will be termed "Presents Programs" and will fall under the Department of Student Activities, specifically, the Cultural Coordinator.

1. Profits from all such student sponsored affairs shall be divided as follows:

- a. 60 per cent of the sponsoring organization's reserve fund to be used for educational programs such as leadership development, community service programs, scholarships, etc.
 - b. 20 per cent to the sponsoring organization's operating budget.
 - c. 10 per cent to the SGA Cultural Committee to be put toward the sponsoring of a cultural program free to the students.
 - d. 10 per cent to the Student Union Board toward the sponsoring of a SUB concert free to the students.
2. Four major "Presents" programs will be held during the academic year. Prime times are during the months of October, November, February and April providing there is space available on the University Calendar and suitable entertainment can be obtained.

3. The four major "Presents" programs will be sponsored by the following campus organizations:
 - University Commuters Association
 - Interfraternity Council
 - Panhellenic Council
 - Residence Halls Association
4. A fifth "Presents" program will be possible subject to the approval of the Cultural Coordinator, depending on the purpose of the program, its feasibility with reference to the University calendar and the Cultural Coordinator's schedule and available time.
5. The reserve fund accrued from such affairs must be deposited in:
 - a. A bank
 - b. A Federally insured savings and loan association
 - c. The University's endowment fund
6. After each event an itemized financial statement shall be prepared as soon as possible and placed on file in the Student Activities Office to be available to interested students.
7. Any artist or professional production or booking personnel will be contacted by the Cultural Coordinator only. Booking agents will be engaged at a flat rate to be included in the original budget.
8. A permanent list of who is to receive complimentary tickets will be developed at the start of each academic year. The sponsoring organization may give out additional tickets at its own discretion. Guests will be notified prior to each performance of the availability of complimentary tickets.

FRATERNITY RUSH REGULATIONS

1. Pledging Requirements
 - a. Any full-time male undergraduate student who is in good academic standing with the University may pledge.
 - b. An individual may pledge only two consecutive semesters. If after these two semesters a pledge does not meet the academic requirements for initiation, he shall be dropped from the fraternity roll. Repledging may occur only after he has achieved at least a 2.0 cumulative average.
 - c. Any individual who is formally pledged to a fraternity and who elects to depledge will not be eligible to pledge another fraternity until one full semester has elapsed from the date of his depledging.
 - d. Any individual who is depledged by a fraternity is immediately eligible for pledging into another fraternity provided he meets all other requirements.
2. Initiation Requirements
 - a. Any pledge who, at the time of pledging, had a cumulative average of 2.0 or above may be initiated after ten academic weeks of pledging.
 - b. Any student pledged with less than a 2.0 cumulative average must attain at least a 2.0 average during the semester he pledges.

SORORITY RUSH REGULATIONS

1. Pledging Requirements
 - a. To pledge a sorority, a girl must have at least a 2.2 numerical grade average from high school, be enrolled in the University, pay the rush fee during formal rush, not be on probation, and not be affiliated with any National Panhellenic sorority.
 - b. If a girl signs a preference card or pledge statement, she is considered pledged to that sorority whether or not she completes the pledge ceremony. The pledge period lasts for one calendar year and during this time she is ineligible to pledge another sorority.
 - c. If for some reason, the girl or the sorority breaks a pledge, the girl is not eligible to pledge any sorority or repledge until one calendar year from the date her pledge was broken.
2. Initiation Requirements
 - a. In order to be initiated into a sorority, a girl must have passed the previous semester with at least a 2.2 average for the semester and must have taken nine academic credit hours. Grades for physical education are not included.
 - b. A pledge with 56 academic credits at the beginning of her pledgship and a 2.2 average for the previous semester may be initiated after a six week period if not contrary to the national policy of the individual chapter.
 - c. A transfer student who has completed her pledgship and met the academic requirements of the previous school may be initiated and shall be counted as an active member if not contrary to the national policy of the individual chapter.

CAMPUS TRAFFIC RULES AND REGULATIONS

These regulations apply to all who drive motor vehicles on any part of the campus at College Park.

1. PURPOSE OF TRAFFIC REGULATIONS

- a. To facilitate the work of the University by providing parking space for those who need it most.
- b. To provide parking space for University visitors and guests.
- c. To protect pedestrian traffic.
- d. To assure access at all times for ambulance and fire-fighting apparatus.
- e. To control vehicular traffic on the Campus.

2. REGISTRATION OF VEHICLES:

- a. All motor vehicles, including motorcycles and scooters, operated on campus by a person associated with the University, must be registered with the University Police regardless of ownership, except as noted in Regulation 2c. All student vehicles must be registered in the name of the student who is the legal operator of the vehicle.
- b. Student vehicles must be registered for the

current academic year during the applicable registration period. A registration charge will be made for each vehicle. This charge will be in the amount of ten (\$10.00) dollars during the period September 1 thru March 31 and five (\$5.00) dollars during the period April 1 thru August 31. This charge cannot be refunded. No charge will be made for replacement registration stickers required due to damaged bumpers of a registered vehicle or because of purchase of a replacement for a registered vehicle. Remnants of stickers to be replaced must be turned in at the Motor Vehicle Registration Desk.

- c. Resident students who have completed less than 56 semester credits shall be prohibited from operating a motor vehicle on the College Park Campus, and from registering a vehicle under provisions of these regulations, except for special weekend privileges as provided in regulation 2d. This prohibition applies to any Freshman or Sophomore student residing within one (1) mile radius of the Library, providing said residence is other than that shown as student's legal residence at time of registration.
- d. Resident students who have earned less than 56 semester credits are permitted to operate a motor vehicle on the College Park Campus during the hours from 5:00 P.M. Friday to 12 Midnight Sunday, only. Vehicles operated on the Campus under provisions of this regulation must be registered in accordance with regulations 2a and 2b. Special "weekend" registration stickers will be issued. Vehicles displaying weekend stickers will be considered not registered if observed on the campus at any time other than the specified weekend period.
- e. Parking permits for faculty and staff are issued initially at the time of employment. Subsequent renewals will be scheduled at times designated by the Police Department.
- f. Only one set of parking permits for each vehicle is authorized.
- g. Vehicles are not considered officially registered until permits are affixed on front and rear bumpers.
- h. Temporary parking permits for visiting groups and for special reasons and conditions are available. Requests should be made to the Campus Police Motor Vehicle Registration Section—Telephone Ext. 4242.
- i. Parking permits must not be transferred to any vehicle other than the one for which they were originally issued.
- j. Parking permits must not be defaced or altered in any manner.

3. TRAFFIC REGULATIONS:

- a. All motor vehicles are subject to University traffic regulations while on the University Campus. The University assumes no responsibility for loss or damage to private property.
- b. All traffic and parking signs must be obeyed.
- c. It is impossible to mark with signs all areas of University property where parking is pro-

hibited. Parking or driving is definitely prohibited on grass plots, tree plots, construction areas, or any place which will mar the landscaping of the campus, create a safety hazard, or interfere with the use of University facilities.

- d. All regulations must be observed during Registration and Examination periods, except as may be otherwise indicated by official signs. During final Examination periods and the Summer School session, registered vehicles may park in any numbered parking area except Areas 5, 9, and 20.
- e. Operation of any motor vehicle in such a manner as to create excessive noise or smoke, or operation of any vehicle which is in an unsafe condition, will result in revocation of parking permit and issuance of a Maryland State Summons for violation of Article 66½ Annotated Code of Maryland.
- f. Pedestrians shall have the right-of-way at all times.
- g. The maximum speed on campus roads is 20 miles per hour. During changes of classes and in areas of pedestrian traffic cars must be driven more slowly.
- h. Vehicles, including motorcycles and motor scooters, must be parked in assigned areas only. Certain parking areas are restricted to Faculty and Academic Staff at all times. This restriction is indicated on the official sign at the entrance to the area. In all other parking areas, unrestricted parking for any vehicle registered on the Campus is permitted from 5:00 P.M. to 12:00 Midnight, Monday thru Thursday; and from 5:00 P.M. Friday to 12:00 Midnight Sunday.
- i. Any motor vehicle parked in violation of University traffic regulations or abandoned on Campus is subject to removal and impounding at the expense of the owner or operator. (See Regulation 4c.)
- j. Specific spaces in parking areas shall not be reserved or marked for any department or individual.
- k. If an unregistered vehicle is used as an emergency substitute for a registered vehicle, it must be parked in the regularly assigned area and an immediate report made to the Motor Vehicle Registration section ext. 4242.
- l. In parking areas which have marked spaces and lanes, a vehicle must be parked in one space only, leaving clear access to adjacent spaces, and without blocking driving lanes or creating a hazard for other drivers.
- m. Parking is not permitted at crosswalks.
- n. Parking or standing is prohibited on all campus roads at all times.
- o. In cases where individuals are permitted to register more than one vehicle for parking on the campus, only one of these vehicles may be parked in the assigned area at any time.
- p. Metered parking spaces must be used in accordance with requirements as stated on official signs.
- q. Curbed recesses are reserved for VISITORS and GUESTS between the hours of 8:00 A.M. and 5:00 P.M., Monday through Friday.

- r. The fact that a vehicle is parked in violation of any regulation and does not receive a violation notice does not mean that the regulation is no longer in effect.

4. TRAFFIC INFORMATION:

- a. The Office of the Campus Police is located in the Service Building and may be reached on University campus telephone ext. 3555.
- b. The Police Cashier's Office and the Motor Vehicle Registration Section are in the Service Building, campus telephone Ext. 4242.
- c. The term abandonment, as it relates to automobiles parked on property owned or leased by the University of Maryland shall mean any one or more of the following conditions:
- (1) Any vehicle which has not been moved for thirty (30) days and whose owner or other claimant the University is unable to locate.
 - (2) Any vehicle which has not been moved for thirty (30) days and whose identified owner or other claimant refuses to move it.
 - (3) Any vehicle on which current license plates are not displayed and which has not been moved for ten (10) days.
 - (4) Any vehicle which has not been moved in seven (7) days due to an inoperative condition caused by the removal of necessary parts or a wrecked condition.

5. PENALTIES

- a. Any person connected with the University who operates an unregistered vehicle on the Campus, or who registers such a vehicle in any way contrary to the provisions of these regulations, will be subject to payment of a fifteen (\$15.00) dollar penalty in addition to the penalty for any other regulation violation connected therewith.
- b. Violations of any campus traffic regulation other than improper registration or overtime meter parking will result in penalty of three (\$3.00) dollars for each violation.
- c. Overtime parking in an metered space will result in penalty of one (\$1.00) dollar.
- d. Violations are payable within ten (10) calendar days from date of issue at the office of the Police Cashier in the General Services Building and an additional penalty of \$2.00 will be imposed for failure to settle violations on time.
- e. Visitors and Guests notices issued to University visitors must be returned in person on date issued to the Office of the University Police at the Service Building or to the University official visited; otherwise, a State Warrant may be issued. When returning notices to University official visited, the notice form must be signed, in the space provided, by the individual to whom issued. **These violation notices may be voided at the discretion of the University Police.**
- f. Violations involving an unregistered vehicle owned by a member of the immediate family of a student may be charged to the student's account unless settled by the individual receiving the ticket, in accordance with stated

- privileges granted to Visitors and Guests.
- g. Motor Vehicle privileges will be revoked by action of the Campus Police in accordance with the following conditions:
- (1) When a student has accumulated at least three (3) violations on the record, he (she) will lose motor vehicle privileges for a period of four (4) weeks.
 - (2) When a student has accumulated an additional two (2) violations on the record for a total of five (5), he (she) will lose motor vehicle privileges for a period of sixteen (16) weeks.
 - (3) In each case the student will be required to remove the registration stickers and turn in remnants of the stickers to the Motor Vehicle Registration Section.
 - (4) When the prescribed period of time for loss of motor vehicle privileges has passed, the student will be required to pay the regular fee for re-registration.
 - (5) All conditions described in Items 1, 2, 3, & 4 apply to all vehicles registered by any student.
- h. Persistent violators of traffic regulations will be referred to the Judiciary Office for appropriate action.

6. APPEALS

An Appeals Board composed of a minimum of three students who are members of the Student Traffic Board meets regularly to consider appeals from students charged with violations. Students wishing to appeal a violation will first register his intent to appeal to the Police Cashier in the Service Building, thence to the Judiciary Office, Room 218, North Administration Building where the date and time for the appeal will be furnished the appellate. Traffic tickets must be appealed within (10) calendar days from the date of issuance. Overtime parking meter violations are not subject to appeal.

7. PARKING AREAS FOR STUDENTS

- Area 1—West of Activities Building between Stadium Drive and Campus Drive
- Area 2—North of Denton Hall Dorm Complex
- Area 3—Southwest Corner of Campus
- Area 4—North of Heavy Research Laboratory
- Area 7—East of U.S. No. 1, at North Gate
- Area 10—East of U.S. No. 1, North of Fraternity Row
- Area 11—East of Asphalt Institute Building
- Area DD—East of Space Sciences Building
- Area E—Adjacent to Engineering Buildings
- Area EE—North of Engineering Laboratory Building
- Area F—Adjacent to Fire Service Extension Building
- Area G—Between Silvester Hall and Skinner Building
- Area GG—North of Adult Education Center Building
- Area H—Adjacent to Symons Hall and Holzapfel Hall
- Area HH—Adjacent to H. J. Patterson Hall
- Area I—Rear of Molecular Physics Building
- Area J—East of Annapolis Hall

- 8. PARKING AREAS FOR FACULTY, STAFF AND ASSIGNED RESIDENT STUDENTS ONLY**
- Area 5—Adjacent to Family Housing Units
 - Area 6—North of Dining Hall No. 5
 - Area 9—Vicinity of Cambridge Hall Dorm Complex
 - Area 12—South of Allegany Hall
 - Area 14—Loop Roads Front and Rear of Houses on Fraternity Row
 - Area 15—Rear 7402 Princeton Avenue
 - Area 17—Special Parking for use of Center for Adult Education
 - Area 20—Rear of Administration Building
 - Area A—West End of BPA Building
 - Area AA—West of Fine Arts and Education Classroom Building
 - Area B—Adjacent to Computer Science Center
 - Area BB—East end of practice field
 - Area C—Adjacent to Turner Laboratory (dairy)
 - Area CC—Barn area
 - Area D—Rear of Journalism Building and Rear of Foreign Languages Building
 - Area K—Adjacent to General Service Building
 - Area KK—Southeast corner of Stadium & Regents Drive

- Area L—Administration-Armory Loop
- Area M—Adjacent to Infirmary
- Area N—Rear of J. M. Patterson Hall
- Area O—Rear of Chemical Engineering Building
- Area P—Southwest of Wind Tunnel Building
- Area Q—Rear of Jull Hall
- Area R—Circle in front of Administration Building at Byrd Stadium and adjacent to Preinkert Field House
- Area S—Special, Food Service
- Area T—North of Engineering Laboratory Building
- Area TT—Service Area West of Physics Building
- Area U—Rear of McKeldin Library
- Area UU—North end 3 Lot
- Area V—Open area between Building DD and Building EE
- Area W—Between Skinner Building and Taliaferro Hall
- Area X—Rear of Chemistry Building
- Area Y—West of Chapel
- Area YY—West of Cumberland Hall
- Area Z—Between Student Activities Building and Student Union





The University reserves the right to change any provision or requirement at any time within the student's period of residence.

GENERAL EDUCATION REQUIREMENTS

A college education implies something more than an adequate technical training in the student's field or specialization. In order that each graduate with a Bachelor's degree may gain a liberal education as well as a specialized one, the University has established a General Education Requirement. This requirement consists of 34 semester hours of credit in six general fields. There is a wide choice in specific courses which may be used to satisfy requirements in all six of the fields except English. Physical Education and Health requirements for all students are taken in addition to this 34-hour group of courses.

1. The General Education courses are as follows:

In **English** (9 hours): Engl. 1—Composition or Engl. 21—Honors Composition; Engl. 3 and 4—World Literature.

In **Fine Arts or Philosophy** (3 hours), three-credit courses in five departments are available, as follows: ART COURSES: 10—Introduction to Art; 60 or 61—History of Art; 62—African Art; 65 or 66—Masterpieces of Painting; 67 or 68—Masterpieces of Sculpture; 70 or 71—Masterpieces of Architecture. DANCE COURSES: 32—Introduction to Dance; 182 or 183—History of Dance; 184—Theory and Philosophy of Dance. MUSIC COURSE: 20—Survey of Music Literature. DRAMATIC ART COURSES: 16—Introduction to the Theatre; 114—The Film as an Art Form. PHILOSOPHY COURSES: 1—Introduction to

Philosophy; 41—Elementary Logic and Semantics; 45—Ethics; 52—Philosophy in Literature; 53—Philosophy of Religion; 56—Philosophy of Science; 147—Philosophy of Art; 152—Philosophy of History; 154—Political and Social Philosophy.

In **History** (6 hours), any combination of history courses (except state history) for which the student is eligible.

In **Mathematics** (3 hours), any course carrying credit of three or more hours for which the student is eligible will satisfy this University requirement. (Note, however, that some curricula require higher-numbered sequences than those for which the student is eligible at the time of his admission; while other sequences may be open **only** to students registered in specified curricula.) Students in science curricula will usually satisfy this requirement automatically.

In **Science** (7 hours), students are required to take one course in a physical science and one course in a biological science; one of these must be a laboratory (4-hour) course. The physical sciences for this purpose are Astronomy, Chemistry, Geology, and Physics; biological sciences are Biology, Botany, Entomology, and Zoology. Students whose curricula include seven or more hours of physical or biological science are not required to take additional courses to meet this distribution requirement. The non-science student may register for a basic course or any higher course for which he is eligible by placement, prerequisite, and class standing.

In **Social Science** (6 hours), two courses may be chosen from nine fields: Agricultural Economics 40—Environment and Human Ecology; Anthropology 1—Introduction to Anthropology; Economics 31—Principles of Economics, or Economics 37—Funda-

mentals of Economics; General Education 60—Introduction to Interdisciplinary Urban Study; Geography 1—Introduction to Geography; Government and Politics 3—Principles of Government and Politics, or Government and Politics 101—International Political Relations; Psychology 1—Introduction to Psychology; Radio and Television 24—Mass Communication in the Twentieth Century; or Sociology 1—Introduction to Sociology. The two courses must be in different fields.

2. It should be emphasized that the 34 semester hours of General Education courses constitute a University requirement, applicable to all students receiving a Bachelor's degree from the University of Maryland. Individual colleges within the University may add to, though they may not reduce, these requirements. For example, students in the College of Arts and Sciences pursuing a B.A. or B.S. degree are required to take a total of twelve hours of Mathematics and Science. College requirements may also specify one or more courses among the options. For example, students in the College of Business and Public Administration satisfy part of the Social Science requirement by taking Economics 31 in the sophomore year.

3. In certain of the six fields, the student's level of placement (by examination or departmental evaluation) may modify the requirement.

In general, appropriate Honors or pre-Honors courses may replace General Education courses for eligible students. For example, students with high SAT verbal scores may substitute ENGL 021—Honors Composition—for the ordinary requirement of ENGL 001. Honors and pre-Honors equivalents for General Education courses are specified in the several college catalogs.

4. The General Education Program is designed to be spread out over the four years of college. No General Education course requires credit in any prior college course as a pre-requisite. Thus, a student may (within limits of his particular curriculum) satisfy a General Education requirement in each category with any designated course for which he is eligible by placement examination, department evaluation, and class standing. Most courses numbered 1 to 10 may be taken by freshmen; most courses between 11 and 99 require sophomore (or honors) standing. Courses at the 100 level are normally for juniors or seniors; that is, they require that a student have earned 56 hours of college credit while in good academic standing. Exceptions are as explicitly stated in the catalogs of the several colleges.

Special note for foreign students

The foreign student is required to take a special classification test in English before registering for the required English courses. He may be required to take Foreign Language 1 and 2—English for Foreign Students—before registering for English 1.

PHYSICAL EDUCATION

All undergraduate men and women students who are registered for more than eight semester hours of credit are required to enroll in and successfully complete two prescribed courses in physical education for a total of two semester hours of credit. The successful completion of these courses is required for graduation. These courses must be taken by all eligible students during the first two semesters of attendance at the University, whether they intend to graduate or not. Men and women who have reached their thirtieth birthday are exempt from these

courses. The thirtieth birthday must precede the Saturday of registration week. Students who are physically disqualified from taking these courses must enroll in adaptive courses for which credit will be given. A student who has 56 transferred academic credits will not be required to register for physical education. Students with military service may receive credit for these courses by applying to the Director of the Men's Physical Education Program.

Students majoring or minoring in physical education, recreation, or health education may meet these requirements by enrolling in special professional courses.

HEALTH EDUCATION

All freshmen students are required to complete satisfactorily one semester of Health Education (Hlth. 5) for graduation. Students who have reached their thirtieth birthday and students majoring in nursing are exempt from this requirement.

Additional Information

Questions about any aspect of the program may be addressed to the advisors, college deans, or the Director of General Education.

AIR SCIENCE INSTRUCTION

(Air Force ROTC)

The University of Maryland offers an entirely voluntary program of Air Science instruction which is designed for students interested in an Air Force Commission. Both a 2-year and a 4-year program are offered.

1. The 2-year program consists of a six-week Field Training Session conducted on an Air Force Base in the summer prior to the student's junior year, followed by four semesters of the Professional Officer Course (Advanced Course). The 2-year program is also open to graduate students from the College Park Campus, provided such students have a minimum of four semesters remaining in the University at the time of enrollment in the 2-year AFROTC program.

2. The 4-year program consists of four semesters of the General Military Course (Basic Course) followed by four semesters of the Professional Officer Course (Advanced Course). Students in this program must attend a 4-week Field Training Program after completing their junior year of college and prior to commissioning. Only students in the 4-year program are eligible to compete for full scholarships.

3. The Curriculum:

General Military Course—Freshman Year, ARSC 11 and ARSC 12; Sophomore Year, ARSC 21 and ARSC 22. In the first two years, cadets meet academic classes once per week. In addition, they receive one hour of Corps Training each week.

Professional Officer Course—Junior Year, ARSC 101 and ARSC 102; Senior Year, ARSC 103 and ARSC 104. The courses for the junior and senior years are entitled "The Growth and Development of Aerospace Power," and "The Professional Officer," respectively. They require three class hours, plus one hour of Corps Training per week.

4. The AFROTC College Scholarship Program provides scholarships for selected cadets each year in the four-year AFROTC program. Those se-

lected receive money for tuition, laboratory expenses, incidental fees, and an allowance for books for up to eight semesters. In addition, they receive non-taxable retainer pay of \$50 per month. One must be in the program at the University of Maryland before he can apply for this scholarship.

5. All students in the 2-year and 4-year program enrolled in the Professional Officer Course but not receiving full scholarships will receive \$50 a month retainer pay for a maximum of \$1,000 for the two-year period. Students also receive nominal pay (plus quarters and subsistence) while attending either the 4-week or the 6-week Field Training Session.

6. To be accepted into the Professional Officer Course the student must: complete the General Military Course or the 6-week Field Training Session; pass the Air Force Officer Qualification Test; be physically qualified; enlist in the Air Force Reserve; be in good academic standing; meet age requirements; possess the necessary qualities of leadership and citizenship. Successful completion of the Professional Officer Course and a Bachelor's degree are the prerequisites for a commission as a second lieutenant in the United States Air Force.

7. Students who have prior military service or ROTC training with the Army, Navy, Marine Corps, Coast Guard, or Air Force will be evaluated and allowed appropriate credit toward meeting the requirements for the General Military (Basic) Course. Professional Officer Course (Advanced) credits are transferable.

Attendance at Air Science classes is mandatory. Excuses for class or drill absences will not be recognized except in cases of sickness, emergencies, or University business covered by University excuses. All unexcused absences operate to reduce the term grade. Excessive absences and/or misconduct will be cause for dismissal.

8. Qualified seniors who elect to become Air Force pilots receive a free 36½-hour flight instruction program. Cadets are instructed by competent civilian instructors. This training enables them to earn their private pilot's license before graduating from college.

REQUIREMENTS FOR ADMISSION

Admission from a secondary school is based upon evidence indicating the applicant's probable success in the program of his choice at the University. The applicants for admission are required to have the results of the Scholastic Aptitude Test (SAT) submitted to the Counseling Center of the University.

The Scholastic Aptitude Test is given several times each year at test centers throughout the State. Specific information and applications are obtainable from high school counselors.

RESIDENTS OF MARYLAND

A graduate of an accredited secondary school in Maryland whose secondary record and SAT scores indicate probable success in the University will be admitted provided that his program has included the subjects required for the college and curriculum which he wishes to enter, and provided that he has a satisfactory general recommendation from his secondary school as to his character and ability.

OUT-OF-STATE APPLICANTS

To be eligible for consideration for admission, the graduate of an accredited out-of-state secondary school should have attained college certification grades in his college preparatory subjects, such grades to be not less than one letter grade higher than the passing grade.

TRANSFER STUDENTS

A student must be in good standing as to scholarship and character to be eligible for transfer to the University. A student transferring to the University from another collegiate institution shall be required to have a cumulative grade-point average of "C" in all previous college work. Advanced standing is assigned to a transfer student from an accredited institution under the following conditions: (1) A minimum of one year of resident work or not less than 30 semester hours (including the meeting of all University and curricular requirements) is necessary for a degree; (2) the University reserves the right to make the assignment of transfer credit conditional upon the student's making a satisfactory record during his first semester at the University; (3) The University reserves the right to revoke advanced standing if the transfer student's progress is at any time unsatisfactory.

SPECIAL STUDENTS

Applicants over 21 years of age who qualify for admission but who do not desire to work toward a baccalaureate degree may be admitted as special students. These students are ineligible to matriculate for a degree until they have submitted all required documents. Permission from the dean of the various schools and Colleges of the University is often needed in order to enroll as a special student.

Special students who have received a baccalaureate degree are advised that no credit earned while enrolled as special students may be applied at a later date to a graduate program. These post-baccalaureate students may enroll for courses at the 100 to 199 level for which they possess the necessary prerequisites but may not enroll in courses restricted to graduate students only.

REGISTRATION

1. Instructions concerning registration are given in the **Schedule of Classes** issued at the beginning of each semester.

2. Students who do not complete their registration, including payment of bill, on regular registration days will be required to pay a late registration fee of \$20.00. Only in exceptional cases will a student be permitted to enter a class later than one week after the beginning of instruction.

3. Changes in registration may be made only with the written permission of the student's dean. After the first week there is a fee of \$5.00 for every change in registration. The formal change in registration approved by the dean must be filed in the Office of the Registrar to complete the transaction. Unless this is done, no credit will be given for an added course, and a failure will be recorded for a dropped course. A student dropping a course without permission from the dean will be subject to discipline.

4. An official class list for each course being offered is issued each semester to the appropriate department by the Office of the Registrar. No

student is permitted to attend a class if his name does not appear on the class list. Instructors report to the academic dean any student who neglects to attend class. At the end of the semester, the Office of the Registrar issues to each department official grade cards. The instructors mark the final grades on the grade cards, sign the cards, and return them to the Registrar.

5. Within seven days after the opening of the semester each student must file a schedule of his classes in the Office of the Registrar.

6. A student who desires to transfer from one college to another must petition, on a special form, the dean of the college from which he wishes to be transferred. The transfer is effected when the request, properly approved by both deans concerned, is filed in the Office of the Registrar. Students who are on academic probation and students who have less than a 2.0 average are referred to Section A of "Minimum Requirements for Retention and Graduation."

7. No change to another college or curriculum is permitted other than at stated registration periods or during the first week of a semester.

8. A student transferring to another college will consult with his new dean regarding the adjustment of his records. A record of this adjustment must be filed in the Office of the Registrar. The dean's record will be transferred to the office of the college to which the student is transferring.

9. Courses taken in University College or at another institution concurrent with regular registration on the campus at the University may not be credited without approval in advance by the dean of the college from which the student expects a degree. The same rule applies in summer school, to off-campus registrations or registrations in the summer school of another institution.

DEGREES AND CERTIFICATES

The University confers the following degrees: Bachelor of Arts, Bachelor of Music, Bachelor of Science, Bachelor of Science in Nursing, Bachelor of Science in Pharmacy, Bachelor of Architecture, Master of Arts, Master of Arts in American Civilization, Master of Business Administration, Master of Education, Master of Music, Master of Science, Master of Library Science, Master of Social Work, Doctor of Dental Surgery, Doctor of Education, Doctor of Medicine, Doctor of Philosophy, Doctor of Musical Arts, Doctor of Business Administration, and Juris Doctor.

Students in specified two-year curricula may be awarded certificates.

No baccalaureate degree will be awarded to a student who has had less than one year of resident work in this University. The last thirty semester credits in any curricula leading to a baccalaureate degree must be taken in residence at the University. Candidates for the baccalaureate degree in combined curricula at College Park and Baltimore must complete a minimum of thirty semester credits at College Park.

The requirements for graduation vary according to the character of work in the different colleges and schools. Full information regarding specific college requirements for graduation will be found in the various college divisions of this catalog.

Each candidate for a degree or certificate must file a formal application for it with the Office of the

Registrar. This must be done by the end of the third week of the semester or the second week of the summer session at the end of which he expects to graduate.

CREDIT UNIT AND LOAD

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

In order for an undergraduate student to complete most curricula in the designated amount of time, his semester credit load must range from 12 to 19 hours, so that he would complete from 30 to 36 hours each year toward his degree. A student registering for less than 12 hours or more than 19 hours per semester must have the special approval of his dean.

EXAMINATIONS

1. A final examination shall be given in every undergraduate course. Exceptions may be made with the approval of the head of the department and the dean. In order to avoid basing too much of the semester grade upon the final examination, additional tests, quizzes, term papers, reports and the like should be used to determine a student's comprehension of a course. The order of procedure in these matters is left to the discretion of departments or professors and should be announced to a class at the beginning of a course. All final examinations must be held on the examination days of the Official Final Examination Schedule. No final examination shall be given at a time other than that scheduled in the Official Examination Schedule without written permission of the Department Head.

2. To expedite arrangements for commencement, final grades of undergraduate candidates for degrees are based on evaluations available at the time grades are required to be submitted.

3. A file of all final examination questions must be kept by the head of each department.

4. The head of each department is responsible for the adequate administration of examinations in courses under his jurisdiction. The deans should present for consideration the matter of examinations in staff conferences from time to time and investigate examination procedures in their respective colleges.

5. Every examination shall be designed to require for its completion not more than the regularly scheduled period.

6. A typewritten, mimeographed or printed set of questions shall be placed in the hands of every examinee in every test or examination requiring at least one period, unless the dean of the college has authorized some other procedure.

7. Each instructor must safeguard his examination questions and all trial sheets, drafts and sten-cils.

8. Each instructor should avoid the use of examination questions which have been included in recently given examinations and should prepare examinations that will make dishonesty difficult.

9. Only clerical help approved by the department head shall be employed in the preparation or

reproduction of tests or examination questions.

10. Proctors must be in the examination room at least ten minutes before the hour of a final examination. Provisions should be made for proper ventilation, lighting, and a seating plan. At least one of the proctors present must be sufficiently cognizant of the subject matter of the examination to deal authoritatively with inquiries arising from the examination.

11. Books, papers, etc., belonging to the student, must be left in a place designated by the instructor before the student takes his seat, except in such cases where books or work sheets are permitted.

12. Students should be seated at least every other seat apart, or its equivalent, i.e., about three feet. Where this arrangement is not possible some means must be provided to protect the integrity of the examination.

13. "Blue books" only must be used in periodic or final examinations, unless special forms are furnished by the department concerned.

14. If mathematical tables are required in an examination, they shall be furnished by the instructor. If textbooks are used, this rule does not apply.

15. Proctors must exercise all diligence to prevent dishonesty and to enforce proper examination decorum, including abstention from smoking.

16. Where an instructor must proctor more than 40 students, he should consult the head of his department concerning proctorial assistance. An instructor should consult his department head if in his opinion a smaller number of students for an examination requires the help of another instructor.

17. No student who leaves an examination room will be permitted to return, except in unusual circumstances, in which case permission to do so must be granted by the proctor prior to the student's absence.

18. All conversation will cease prior to the passing out of examination papers, and silence will be maintained in the room during the entire examination period.

19. Examination papers will be placed face down on the writing desks until the examination is officially begun by the proctor.

20. Examination papers will be kept flat on the writing desk at all times.

IRREGULARITIES IN EXAMINATIONS

1. In cases involving charges of academic irregularities or dishonesty in an examination, class work, or course requirements by an undergraduate student, the instructor in the course shall report to his instructional department head any information received and the facts within his knowledge. If the head of the instructional department determines that there is any sound reason for believing that academic dishonesty may be involved, he shall refer the matter to the dean of the college or school. The dean will then confer with the dean of the student's college or school and will check the Judiciary Office records to determine if the student has any record of prior offenses involving academic dishonesty. The dean will then consult with the student involved, and if the alleged academic dishonesty is admitted by the student and is his first offense of this nature, the dean may

authorize the department head to dispose of the charges, limiting the maximum penalty to disciplinary probation and a grade of "F" in the course, provided the penalty is accepted by the student in writing. In such case the department head will make a written report of the matter, including the action taken, to the dean of the student's college or school and to the Judiciary Office.

If the case is not disposed of in the above manner, the dean of the instructional department will appoint an **ad hoc** Committee on Academic Dishonesty consisting of one member from the faculty of the college or school administered by the dean as chairman, one undergraduate student, and one member from the faculty of the student's college or school appointed by the dean of that college or school. If the student's dean and the dean administering the instructional department are the same, a second member of the faculty of the college or school concerned is appointed.

The dean of the instructional department will refer the specific report of alleged academic dishonesty to this **ad hoc** committee and the committee will hear the case. The hearing procedures before this committee will in general conform to those required for student judicial boards. The committee may impose the normal disciplinary actions and/or impose a grade of "F" in the course.

The chairman of the committee will report its actions to the dean of the student's college or school and to the Judiciary Office. The dean of the instructional department will advise the student in writing of the disciplinary action of the committee, and also advise him of his right to file an appeal to the Adjunct Committee on Student Discipline.

The student may file his appeal in accordance with the normal procedures to the Adjunct Committee with the dean of the instructional department and the latter will forward it to the chairman of the Adjunct Committee. The chairman of the Adjunct Committee will notify the student in writing of the time, date, and place of the hearing.

2. In cases involving charges of academic irregularities or dishonesty in an examination, class work, or course requirements by a graduate student, the above procedure will be followed except that:

- a. The head of the instructional department will refer the matter to the Vice President for Graduate Studies and Research.
- b. The **ad hoc** Committee on Academic Dishonesty will be appointed by the Vice President for Graduate Studies and Research and will consist of two members of the Graduate School faculty, one serving as chairman, and one graduate student.

MARKING SYSTEM

1. The following symbols are used for marks: A, B, C, and D—Passing; F—Failure; I—Incomplete. At the Graduate level, the grade of D is failure.

In computing scholastic averages, numerical values are assigned marks as follows: A—4; B—3; C—2; D—1; F—0.

A mark of X will be used on records of off-campus adult students in those cases where such a student has ceased to attend a class without an official withdrawal. A mark of X indicates no record, no prejudice, is terminal, and may not be

later changed as in the case of the incomplete mark of I.

2. Mark A denotes superior achievement; B, good; C, fair; and D, passing. However, a mark of D does not represent satisfactory progress toward a degree.

3. A student with a mark of F has failed in the course and must repeat the entire course in order to receive credit for it. "Credit by examinations" cannot be given for a course in which the student has previously earned a grade of F or WF. In case of failure in a required course a student must enroll again in that subject the first time it is offered, unless excused by the dean.

4. An instructor may change a grade already submitted to the Registrar only on certification, approved by his department head and dean, that he made an actual mistake in computing or recording the grade.

5. In case a failure is incurred in an elective subject, the student may be permitted to make a substitution provided the head of the department in which the student is majoring and the student's dean approve. A record of this approval must be filed in the Office of the Registrar.

6. The mark of "I" (incomplete) is exceptional. It is to be given only to a student whose work in a course has been qualitatively satisfactory, when, because of illness, or other circumstances beyond his control, he has been unable to complete the requirement. In no case will the mark "I" be recorded for a student who has not completed the major portion of the work of the course. In cases where this mark is given, the student may not re-register for the course until the "I" is removed by completing work assigned by the instructor. Work must be completed by the end of the next semester in which the subject is again offered and the student is in attendance at the University, or the mark becomes F. When a student receives a terminal grade, he may repeat the course as provided for any course where repeats are authorized. Exceptions to the time period cited above may be granted by the student's dean on the written request of the student if circumstances warrant further delay. An "I" cannot be removed through the technique of earning "credit by examination."

7. It is the student's responsibility to request appropriate action for the removal of the "I".

8. It is the responsibility of the instructor and department head concerned to return the appropriate supplementary grade report promptly upon the completion of the work.

9. It is the responsibility of the student's dean to inform the Registrar and instructor of the delay granted in accordance with Section 6, above.

10. For information about repeating courses, see "Minimum Requirements for Retention and Graduation."

PASS-FAIL OPTION

1. Eligible undergraduates may register for a maximum of 18 semester hours of credit under the pass-fail option between the time they have earned 30 academic hours at the University of Maryland and graduation. No more than one such course may be taken during a semester or summer session. Only courses which are designated in advance of

registration periods by the offering department are available for selection under the pass-fail option.

2. In order to be eligible for the pass-fail option in registration a student must have completed 30 or more semester hours of credit at the University of Maryland. Transfer students must have completed a minimum of 15 semester hours of academic credit at the University and have a total of 30 semester hours on their records. Part-time students matriculated for a degree are eligible: special students are not. A student must have a cumulative grade-point average of 2.00 to be eligible for the pass-fail option. Students who are registered in O.I.R. may not elect the pass-fail option.

3. No course which is used to fulfill requirements for a major, the requirements of a field of concentration, specific courses designated as degree requirements, or the general education program may be selected under the pass-fail option. Such selection is limited to free elective courses.

4. Students registering in a course under the pass-fail option are required to complete all regular course requirements and will be evaluated according to normal procedures. The final course grade will be recorded either as a passing or a failing grade. If the course is passed, credit toward graduation is earned; however, the course is not included in grade average. If the course is failed, no credit is awarded but the failing grade is included in computation of averages.

5. A student's pass-fail option for a course must be designated at the time of registration. This status may not be changed after the end of registration. If the demand for a course exceeds its capacity, letter-graded students will be given preference over pass-fail students in enrollment. Further information is available through advisors.

CREDIT FOR EXAMINATION FOR UNDERGRADUATE STUDIES

1. Credit towards the bachelor's degree may be established by examination under the following conditions:

The applicant must have completed at the University of Maryland at least 12 semester credits with an average grade of C or higher before making application for an examination to establish credit. Deans of the present degree-granting colleges on the College Park campus may waive this regulation for entering freshmen who wish to use the examination to establish credit based on previous training.

2. The total amount of credit that can be established by examination cannot exceed 20 semester credits. "Credit by examination" cannot be given for a course in which the student has previously earned a grade of F, D, I or WF.

3. Usually credit by examination will not be accepted for any part of the final 30 semester credits which must be completed in residence. However, if permission is granted in advance by the dean, and a record of the credit is filed in the Office of the Registrar prior to the student's final semester in residence, 6 semester hours of the final 30 may be established by examination. However, in no case does this permission waive the minimum residence requirement of 30 semester credits.

4. The fee for an advanced standing examination is \$5.00 per semester credit hour.

5. A grade of C or higher must be obtained in order to establish credit by examination.

6. A foreign student may not establish credit by

examination in freshman or sophomore courses of his native language.

7. The instructor must certify on the report on the examination submitted to the Office of the Registrar that copies of the examination questions and the student's answers have been filed in the office of the dean of the college in which the course is offered.

8. Applications for examinations to establish credit must be approved on an individual course basis, and approval will not be granted at the same time for examinations in a sequence of courses.

9. Approval to take an examination in any course will depend upon the student's having established credit in all prerequisites, or equivalent, and received the approval of the head of the department and the dean concerned.

10. The grades for credits earned by advanced standing examinations are not used in computing the student's average.

JUNIOR STANDING

1. A student is permitted to register for upper division courses when granted Junior Standing by his college. This permission shall be based upon earning a minimum of 56 academic hours toward his degree, completing such course requirements as the college may direct, and possessing the minimum required grade point average to remain in the University.

2. Exceptional students having completed forty-eight (48) semester hours of academic credits and having the approval of the department involved will be permitted to enroll for sufficient upper division courses to complete a normal program. That is, such students must carry lower division courses to total fifty-six (56) semester hours of academic credits and the remainder may be in courses numbered in the 100 range.

DEGREE REQUIREMENTS

1. A baccalaureate degree will not be awarded to a student who has had less than one year of resident work in this University. The last thirty semester credits of any curriculum leading to a baccalaureate degree must be taken in residence at the University of Maryland.

In the case of veterans and students engaged in a program of adult education, a portion of the final 30 semester hours may be completed at other institutions upon the approval of the Vice-President for Academic Affairs, the dean of the college, and the head of the department.

Candidates for degrees in combined programs must complete at least 30 semester credits at College Park.

The minimum residence required for a baccalaureate degree is 30 semester hours; nothing stated below modifies in any way this basic requirement. Included in these 30 semester hours will be a minimum of 15 semester hours in advanced courses, including at least 12 semester hours required in the major field (in curricula requiring such concentration). All candidates for degrees should plan to take their senior year in residence since the advanced work of the major study normally occurs in the last year of the undergraduate course. At least 24 of the last 30 credits must be done in residence; i.e., a student who at the time of his graduation will have completed 30 semester hours in resi-

dence may be permitted to do not more than 6 semester hours of his final 30 credits of record in another institution or to include not more than 6 semester hours of credit earned by advance standing examination, provided he secures permission in advance from his dean. The student must be enrolled in the college from which he plans to graduate when registering for the last 15 credits of his program. These requirements apply also to the third year of pre-professional combined degree programs. Record of this permission must be filed in the office of the Registrar prior to the student's final semester in residence.

While many University curricula require more semester hours than 120 (exclusive of the basic General Military Course AFROTC, Health 005, and the required program in Physical Education) no baccalaureate curriculum requires less than 120 semester hours with the same exclusions as have been cited.

A student who wishes to earn a second baccalaureate degree in the University is required to complete the additional studies regularly prescribed for that degree, involving at least one year's additional residence and the earning of at least 30 additional credits.

2. A general C (2.0) average is required for graduation in all colleges.

3. An average mark of C (2.0) is required for graduation. The C average is computed on the basis of the academic courses required by each student's curriculum. **The average of transfer students and of those seeking combined degrees is computed only on the courses taken in residence in the University and in satisfaction of the non-professional curricular requirements of the college granting the degree.** An over-all average is also computed to include all academic courses taken in the University as a basis for the award of honors and for such other uses as may be deemed appropriate.

4. Applications for diplomas must be filed with the Office of the Registrar during the registration period, or not later than the end of the third week of classes of the regular semester or at the end of the second week of the summer session, at the end of which the candidate expects to receive his degree. Application filed after the third week of classes of a regular semester or Friday of the second week of a Summer Session will be retained until the next semester (session) when degrees will be awarded. He must at this time be registered in the college from which the degree is sought or, if in the University College, have the approval of the dean of the college concerned. Responsibility for knowing and meeting all degree requirements for graduation in any curriculum rests with the student. Not later than the close of his junior year, the student should check with the proper authorities to ascertain his standing in this respect. For this purpose the student should be sure to preserve the copy of the semester grade report issued by the Registrar's office at the close of each semester.

5. Candidates for degrees must attend a convocation at which degrees are conferred and diplomas are awarded.

ATTENDANCE

1. The University expects each student to take

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

2. In certain courses in-class participation is an integral part of the work of the course. A few examples would be courses in public speaking and group discussion, courses emphasizing conversation in foreign languages, certain courses in physical education, and certain laboratory sessions. Each department shall determine which of its courses fall in this category. It shall be the responsibility of the instructor in such courses to inform each class at the beginning of the semester that in-class participation is an integral part of the work of the course and that his absences will be taken into account in the evaluation of his work in the course.

3. Laboratory meetings require special preparation of equipment and materials by the staff. A student who is not present for a laboratory exercise has missed that part of the course and cannot expect that he will be given an opportunity to make up this work later in the term.

4. Special provision for freshmen: The freshman year is a transitional year. Absences of freshmen in the basic freshman courses will be reported to the student's dean when the student has accumulated more than three unexcused absences.

5. Excuses for absences (in basic freshman courses and in courses where in-class participation is a significant part of the work of the course) will be handled by the instructor in the course in accordance with the general policy of his department and college.

6. Examination and tests: It is the responsibility of the student to keep himself informed concerning the dates of announced quizzes, tests, and examinations. An instructor is not under obligation to give a student a make-up examination unless the student can present evidence that his absence was caused by illness or by participating in University activities at the request of University authorities. A make-up examination, when permitted, is given at the convenience of the instructor, but must not interfere with the student's regularly scheduled classes.

SCHOLARSHIP HONORS

Honors for excellence in scholarship are awarded to not more than one-fifth of the graduation class in each college. (The computation does not include grades for courses taken during the last semester of registration before graduation.) "High Honors" are awarded to the upper half of the group; "Honors" to the lower half. To be eligible for this recognition, a total of at least two years of residence (60 se-

mester hours) is required. No student with an average less than B (3.0) will be considered.

DEFICIENCY REPORTS

1. Reports of unsatisfactory work (less than C) will be made only for freshmen in the basic freshman courses. It will be the obligation of all students to assume full responsibility for their academic progress without depending upon receiving official warning of unsatisfactory work.

2. Reports of unsatisfactory work for freshmen in the basic freshman courses will be submitted to the student's dean at the end of the seventh week of the semester.

DISMISSAL OF DELINQUENT STUDENTS

The University reserves the right to request at any time the withdrawal of a student who cannot or does not maintain the required standard of scholarship, or whose continuance in the University would be detrimental to his or her health, or to the health of others, or whose conduct is not satisfactory to the authorities of the University. Specific scholastic requirements are set forth in the Minimum Requirements for Retention and Graduation.

WITHDRAWALS FROM THE UNIVERSITY

1. If a student desires or is compelled to withdraw from the University for any cause at any time during the academic year, he should secure an application for withdrawal from his dean's office, obtain the proper signatures as indicated on the form, and file it in the Registrar's office. If a student withdraws from the University after the first eight weeks of the semester, the instructor in each course indicates on the class card whether the student was passing or failing at the time of withdrawal. The report is made part of the student's permanent record.

2. In the case of a minor, withdrawal will be permitted only with the written consent of the student's parent or guardian.

3. A student who fails to withdraw in the required manner will not be entitled to an honorable dismissal, will forfeit his right to any refund to which he might otherwise be entitled, and will receive marks of failure in all courses being carried.

4. The effective date for withdrawals, as far as refunds and grades are concerned, is the date the blank is filed in the Office of the Registrar.

5. Further information on withdrawal from the University may be found in "Minimum Requirements for Retention and Graduation."

READMISSION AND REINSTATEMENT

1. A student who withdraws from the University must apply to the Director of Admissions for reinstatement.

2. A freshman who is dismissed for scholastic reasons from the University at the end of his first semester and who desires to seek reinstatement is referred to Section A of "Minimum Requirements for Retention and Graduation."

3. A student who has been dropped for scholastic reasons may appeal in writing to the Secretary of the Admissions Petition Board, Office of

Admissions for reinstatement. The Committee is empowered to grant relief for just cause.

4. No student on academic probation shall be allowed to register for more than sixteen (16) semester hours (including the basic General Military Course AFROTC and required courses in P. E. and Health). The student on academic probation should normally carry at least twelve (12) academic semester hours in order that he may solve his academic probation in one semester.

5. A student who has been dropped from the University for scholastic reasons, and whose petition for reinstatement is denied, may again petition after a lapse of at least one semester.

6. Applicable courses taken at another institution by a student in the first semester after his academic dismissal from the University shall not be considered for transfer credit until the student has returned to the University and removed his academic probation.

MINIMUM REQUIREMENTS FOR RETENTION AND GRADUATION

The provisions in this plan apply to undergraduates at College Park, including the day-time, on-campus students of University College. These provisions do not generally apply to undergraduate students enrolled prior to the summer session, 1965, to graduate students nor to students registered in the professional schools at Baltimore.

SECTION A: Minimum requirements

A. 1 At the end of each grading period—defined as each regular semester—the Office of the Registrar computes each student's cumulative grade point average (the number of earned quality points divided by the number of attempted semester hours hereinafter designated and referred to as "attempted hours" or "hours attempted"). Based on this cumulative grade point average the Office of the Registrar imposes the academic actions prescribed in the following table:

Total Hours Attempted	Cumulative Grade Point Average resulting in	
	Academic Dismissal	Academic Probation
1-5		
6-20	Below 0.35	Below 1.35
21-35	" 1.35	" 1.65
36-50	" 1.65	" 1.80
51-65	" 1.80	" 1.90
68-80	" 1.90	" 2.00
81 and over	" 1.95	" 2.00

A.2 Regardless of his cumulative grade point average, however, no student shall be dismissed at the end of any grading period during which he was registered for and completed at least twelve (12) semester hours with an average of 2.00 or better.

A.3 A minimum cumulative grade point average of 2.00 is an essential part of the several requirements for a bachelor's degree as outlined in college divisions of this catalog. Any student whose cumulative grade point average falls within the range which results in Academic Probation in accordance with the table of section A.1 is informed that he is not making satisfactory progress toward his degree and must assume responsibility for any future dismissal which may occur.

A.4 Any student whose cumulative grade point average falls within the range which results in Academic Dismissal in accordance with the table of section A.1 loses his eligibility to re-register at the University.

A.5 Any student who is not eligible to re-register following Academic Dismissal should consult the Secretary of the Admissions Petition Board concerning procedure for reinstatement. This Board is empowered to grant relief for just cause.

A.6 A student who enters the University with acceptable transfer credits is subject to these scholastic standards at the level of attempted hours determined by adding the number of hours of transfer credits assigned to him by the Office of Admissions and the dean of the college in which he is enrolled to the number of hours attempted at Maryland. His cumulative average is based solely on the number of hours attempted at Maryland and the grades received for these attempted courses.

A.7 When a course is repeated all attempts are included in the computation of the cumulative grade point average through inclusion in both the total quality points earned and the total hours attempted. If a student repeats a course for which he has already earned a passing grade, the subsequent attempt shall not increase his total hours earned toward a degree.

A.8 Exceptions are allowed for courses taken during a freshman's first semester and subsequently repeated. In such cases, the original first semester grades of these repeated courses and their corresponding credit hours will not be included in the computation of the student's cumulative grade point average or in his total of attempted hours, provided these repetitions of first semester courses occur before the student has earned 56 semester hours. For the purpose of this section a first semester freshman shall be a student registered for the first time in college level educational courses and thus experiencing his first contact with academic education beyond the senior high school level. However, a student whose first college experience is through part-time registration or through the summer session will be considered as a first semester freshman until he has registered in and completed a minimum of nine semester hours in college level work. All college registrations will be counted whether or not they are applicable to the student's program.

A.9 A student beginning or within his last thirty (30) credit hours necessary for graduation who has been retained in college under section A.2 but who would be unable to graduate because of an insufficient cumulative grade point average due to an earlier single semester of failing grades may be granted waiver of those failing grades. Provided such student satisfies all other college and university requirements for the degree, the above grades of failure and their corresponding attempted credit hours may be disregarded in the computation of his final cumulative grade point average. To accomplish this the approval of the student's academic dean together with the written recommendation of the head of the department in which the student is majoring must be transmitted to the Office of the Registrar with the necessary adjustments which are to be made in recomputing the student's cumulative average.

A.10 Physical activity courses required of all students, non-credit courses, and orientation courses are not considered in computing cumulative grade point averages. All other courses are considered for computation except those courses specifically designated not applicable by the dean of the college in which the student is enrolled.

A.11 In the computation of the cumulative grade point average a grade of "I" is not to be included as hours attempted. When the grade of "I" is removed for a passing grade or the mark becomes F in conformance with academic regulations, an appropriate corrective entry will be made in the cumulative grade point average by the Office of the Registrar.

A.12 Any student who withdraws from all courses receiving no grades or grades of W, WX, WP, or WF is not eligible for re-registration at the University except by application for reinstatement through the Office of Admissions. Withdrawal grades are not included in the computation of grade point averages or in the determination of the level of total hours attempted.

SECTION B: Regulations for transfer of students from one college to another and change of curriculum within a college.

B.1 A student with a 2.00 average or better in those courses applicable to his proposed new curriculum may transfer from one college in the University to another but only at such times as are specifically designated for this purpose. On a special form, he must first obtain a signed release and his complete academic record from the dean of the releasing college before submitting them to the dean of the college to which he wishes to transfer. When the dean of the receiving college accepts the student by signing the transfer form, the student must then deposit this form with the Office of the Registrar to complete the transfer.

B.2 In all transfer cases the dean of the receiving college shall indicate what courses in the student's previous academic program are not applicable in the new program and he shall notify the Office of the Registrar of the adjustments which are to be made in computing the student's cumulative average.

B.3 The Office of Intermediate Registration (OIR) serves those students who wish to change colleges but have less than 2.00 averages, in those courses applicable to their new college curricula. Any such student who is entitled to re-register in the University will be accepted by OIR after securing his release from his former college dean. The Director of Intermediate Registration will be responsible for notifying the Office of the Registrar what courses in the student's previous academic program have been declared not applicable by the prospective receiving dean.

B.4 The cumulative average required of a registrant in OIR shall be that given in the table of section A.1 for the attempted hours applicable to the new curriculum to which the student anticipates transferring. If at the end of a student's first grading period in OIR his cumulative average entitles him to remain in the University, he shall be permitted to transfer to his new college. However, upon the recommendation of both the Director of Intermediate Registration and the dean of

the new college, the student who is eligible to remain in the University may be permitted to register for an additional semester or summer session in OIR.

B.5 When a student changes from one department to another within a college he must secure, in the appropriate space on the permit-to-register card, the signature of the dean before filing the card with the Registrar. An individual college may use additional forms for internal control if it so desires. Where the change within a college is from a program to an unrelated program, the dean of the college may exercise the option of adjusting the student's record. The dean is responsible for providing the Registrar's office with a written statement of the adjustments to be made in computing the student's cumulative average.

SECTION C: Regulations concerning dropping of courses, and withdrawals from the University.

C.1 A student may drop a course without an F grade during the first three weeks of classes with the approval of the student's advisor and dean. A student may drop a course without an F grade after the first three weeks of classes only upon written approval of the dean of the student's college. Such authorization shall be granted by the dean only under extraordinary circumstances; unsatisfactory scholarship in itself will not be considered an extraordinary circumstance. The written authorization must state the reasons and shall be filed with the Registrar. In order to drop a course, or courses, for medical reasons and without the grade of F, the student must present to the dean of his college, through the University's infirmary, acceptable proof that such reasons have caused his continuous absence from all classes for which he is registered for a period of two weeks or more (exclusive of holidays). Any request to drop a course for medical reasons must be presented to the student's dean within one week of the student's return to class attendance.

The selection of courses to be dropped shall be at the discretion of the student's dean.

In the case of accidental injury incurred after the start of the term, and which incapacitates the student relative to his performance in a particular course, the dean of the student's college shall use his discretion in recommending the dropping of the course without the grade of F. Where accidental injury does not necessitate the absence of the student from all classes for a period of two weeks or more, the request to drop a particular course must be made within one week of the injury, or within one week of the return to classes following the injury. A first-semester freshman may drop a course without an F grade during the first eight weeks of classes with the approval of the student's adviser and dean. For the purpose of this section a first semester freshman shall be a student registered for the first time in college level educational courses and thus experiencing his first contact with academic education beyond the senior high school level. However, a student whose first college experience is through part-time registration or through the summer session will be considered as a first semester freshman until he has registered in and completed a minimum of nine semester hours in college level work. All college registrations will be counted whether

or not they are applicable to the student's program.

Courses may not be changed from credit to audit after the third week of classes.

C-2 A student withdrawing from the University during the first eight weeks of classes shall be given a grade of WX in his courses. A student withdrawing after this time shall receive a grade WP in each course in which his work has been passing and a grade of WF in any course in which his work has not been passing. A student withdrawing after the last day of instruction shall be given a grade of F in any course in which he has not been doing passing work.

SECTION D: General regulations concerning academic probation, academic dismissal, and reinstatement.

D.1 When a student is placed on academic probation or released from academic probation, the action shall be entered on the face of the student's official record.

D.2 A student who is reinstated after academic dismissal shall be admitted on academic probation. The same conditions of probation may be imposed on any student who seeks admission by transfer from another university or college and whose record at the previous school warrants this action. (Admissions of such a student is permitted

only in unusual cases and after a review by the Petition Board.)

D.3 Any appeal from the regulations governing academic probation or academic dismissal shall be directed to the Petition Board which shall be empowered to grant relief in unusual cases, if the circumstances warrant such action.

**SECTION E: Students enrolled prior to June 1965
TERMINATION**

Students enrolled in the University prior to June 1965 and who have remained in continuous attendance must abide by the provisions of Academic Probation Plan. (See earlier issues of University General and Academic Regulations.) Students initially enrolled in the University prior to June 1965 who do not fulfill the above conditions of continuous attendance but who have remained in continuous attendance following their most recent re-admission or reinstatement will also abide by the provisions of the Academic Probation Plan, provided the most recent readmission or reinstatement was prior to June 1970. Students enrolled prior to June 1965 whose continuous attendance is interrupted for any reason and who are readmitted or reinstated for a session or semester beginning with June 1970 will be readmitted or reinstated under the provisions of Minimum Requirements for Retention and Graduation.



VICE CHANCELLOR FOR STUDENT AFFAIRS

The Office of the Vice Chancellor for Student Affairs coordinates activities within the academic community which serve to complement the scholarly pursuits of the classroom and enable the student to gain maximum value from his college experience.

Some of the various administrative areas for which the Vice Chancellor of Student Affairs is responsible are: University Health Services; Counseling Center; Placement and Credentials Services; Student Aid; International Education Services and Foreign Student Affairs; University Housing; Student Union; Student Life and Programs (including fraternities and sororities); Judiciary Office; Food Service, Office of Intermediate Registration (OIR); Intensive Educational Development; Cultural Study Center; and Religious Programs.

HEALTH CENTER

The Health Center is primarily charged with aiding the student in maintaining his physical well-being in order that he may pursue his studies as effectively as possible. This includes the review of all pre-entrance physical examination reports to aid the student in his participation in the required physical education classes or in other areas where special problems might arise. Students are invited to visit the Health Center before or during registration time to review these reports with a staff member.

Routine Services

The Health Center provides the following services:

1. Treatment, or preventive measures, for acute and short term illnesses and surgical emergencies.

2. Certain laboratory procedures
3. Infirmary rest for minor or short term illnesses and injuries
4. Allergy hyposensitization and certain disease immunizations arranged through the student's physician
5. Psychiatric services, including short term counseling with students who request to see the psychiatrist, and consultation and evaluation functions in connection with Health Center physicians or the Counseling Center

The Health Center refers most chronic and major illnesses or injury effects to family and local physicians and specialists. No dental care is furnished at the Health Center, but medication to allay pain and instruction for oral hygiene is given.

The Health Center sanitarian promotes the campus environmental health through routine inspection and subsequent recommendations in the areas of food handling, water and air pollution problems, living accommodation, and sewage disposal.

Emergency Services

During regular University sessions, emergency physician care is available on weekday evenings at the Infirmary and by telephone call (454-3444 or 454-3445) to Health Service. During extended school vacation periods or between regular sessions, the physician may be called through the campus telephone operator (454-3311) for emergencies occurring on the campus.

Emergency ambulance service is provided through the Branchville Volunteer Rescue Squad by call to 3333 on campus phones or 864-1122 from outside phones. For patients who do not require ambulance service, but who cannot come to the In-

firmly in their own transportation, the Campus Police may be summoned for assistance at 3555.

In addition to student emergencies, the Health Service will treat, or prepare for transfer to a hospital, any campus employee injured on the job. An employee or visitor with acute illness who cannot be taken directly to his own physician or hospital may also be seen at the Health Service.

Accident Insurance

Commercial Contract Accident or Accident and Sickness Group Insurance is available to students through the University on an optional basis for a nominal fee and is highly recommended for those who do not already have this type of coverage. All foreign students are required to have this or an equivalent form of insurance. This insurance may only be purchased at the time of registration.

Health Service Hours

The University Health Service hours for routine care during regular semesters and summer school are:

Monday through Friday 8:00 a.m. to 11:45 a.m. and 1:00 p.m. to 5:00 p.m.

Semi-emergency or appointment care is available:

Monday through Friday 6:00 p.m. to 10:00 p.m.

Saturday 9:00 a.m. to 11:00 a.m.

Sundays and Holidays 10:00 a.m. to 11:00 a.m.

Twenty-four hour nursing care is available during school sessions.

COUNSELING CENTER

The aim of the Counseling Center is to enable students to be optimally productive; to better understand themselves, their assets and liabilities; and to be able to resolve their problems and deal with important decisions. The services of the Center are available to all students.

Counseling

Counselors meet with students in individual or group counseling interviews to assist them with educational, vocational and personal problems. Where appropriate, the counselor may arrange for students to take certain tests of ability, interest, personality, etc., which provide information valuable in counseling.

Occupational Information

Students may browse in the Center library and view displays of occupational and educational information. They may be interested in listening to the tape-recorded introduction to career information.

Reading and Study Skills Laboratory

The Laboratory offers students individualized programs designed to improve their learning skills. They may work on improved reading speed and comprehension, vocabulary building, taking of lecture notes, spelling, examination skills, and handwriting. Special workshops are offered in improving writing skills and reducing examination fears. A library of tutor-texts and tape recorded lectures is available for review of fundamentals in science, language, logic, and mathematics courses. There is a special program for high school students.

Consultation

The Counseling Center also serves as an agency which students, faculty members, parents and others may use for discussing any concerns which they may have regarding the progress or general welfare of students at the University.

Child Evaluation and Parent Consultation

This community service, on a nominal fee basis, is provided for parents of children in the age range

of 5 to 14 regarding concern for their children's achievement or behavior. It is not restricted to University-connected individuals.

Other Functions

Other functions include the freshman testing program, orienting new students to the Center's services, conducting the annual census studies of the student body, and data processing consultation and services. The staff is available for speaking engagements before various student and community groups. The Center also serves as a facility for the professional training of counselors.

To help you understand the Counseling Center, here are a few of the problems with which students have been concerned. One or two of these illustrations may touch on concerns which you might have at one time or another.

What kinds of vocations am I best fitted for?

I'd like some help in choosing a major.

I wish I had more confidence in myself.

I just can't make the grades I'd like to have.

I feel sort of alone—pretty much out of things.

My dates and I don't seem to get along.

My parents and I don't get along.

Where can I find some information about occupations?

What can I learn from those Freshman Entrance

Tests that will help me in college?

I can't seem to concentrate when I study.

How much should I expect of myself?

I read and comprehend fairly well, but I would like to improve further.

Is my vocational goal a realistic one for me?

I worry too much about things (drugs, sex, failure, etc.).

My note-taking and spelling are holding me back.

I can't see how some of the courses which I am taking are going to help me in the future.

To Arrange an Appointment

Students need only call or come to the Center to request an appointment. The Center's receptionist will arrange a brief conference with one of the counseling staff. This conference allows the Center to determine how to be of maximum help to the student, to answer any questions he may have about the Center and its operations, and to make additional appointments when the student and counselor feel it is appropriate.

About 25 per cent of all University students make use of Counseling Center services during their years of enrollment. There is no fee for University undergraduates or graduate students. Non-students receive counseling, testing, and educational skills services for a nominal fee as staff time allows.

The Counseling Center is located in the Shoemaker Building, just behind the Chapel. Telephone: 454-2931.

STUDENT UNION

The Student Union serves as the extra-curricular hub of the campus, with facilities and services to meet the needs of individual students or campus groups. Whether for a meeting, weekend dance, popular entertainment, featured speaker, or a quiet place in which to visit, the Student Union serves all.

General Hours:

Monday-Thursday 7:00 a.m.—11:00 p.m.

Friday and Saturday 7:00 a.m.—Midnight.

Sunday 2:00 p.m.—11:00 p.m.

No solicitations are permitted in the building.

Amusements

The sub-basement is the amusement center of the Student Union and is completely air-conditioned, attractively decorated, and is furnished with all the conveniences of modern commercial establishments.

Sixteen tenpin bowling lanes are open from 8:00 a.m. to midnight Monday thru Saturday, and from 2:00 p.m. to 10:00 p.m. Sunday and holidays for a charge of 45 cents per game. Shoes and lockers may be rented and bowling equipment is sold. The Games Area Manager and a fully trained staff are always available for instruction at all skill levels.

There are also twelve billiard tables and two shuffleboard tables in the sub-basement. These tables may be rented for one dollar per hour and sixty cents per hour, respectively.

Full length motion pictures are shown in the second-floor ballroom on weekends. Tickets are sold at the ticket booth in the main lobby one half hour before each show. A Film Series is presented on Tuesdays.

Hours for performances

Tuesday 7:00 and 9:00 p.m.

Friday and Saturday 7:00 and 9:00 p.m.

Sunday 7:30 p.m. only

Services, Facilities, and Equipment

- (a) Services-Duplicating, mimeograph, ditto, and offset.
- (b) Signs and Posters-Embosograf, engraving, tapewriter and plastic tags, nameplates, small signs.
- (c) Space Reservation-Display cases and meeting rooms for campus organizations, Room 132.
- (d) Dining and Catering-Telephone extension 2805.
- (e) Equipment—Movie equipment and public address system rental services, to be used in the building—Information Desk, Room 132.
- (f) Check Cashing—\$20.00 maximum cashed 9:00 a.m. to 3:30 p.m. weekdays at the Information Desk, Room 132. There is a small service charge.
- (g) Box Office—Tickets to various campus events and activities.

Other Facilities

TICKET BOOTH AND BOX OFFICES. Tickets to various campus events and activities.

PIANO PRACTICE ROOMS. A key may be obtained at Main Information Desk on I.D. card trade.

LIBRARY. Browsing and study room, Room 214.
TELEPHONE BOOTHS. Campus and pay phones on basement and first levels.

LOUNGES. On the first and second floor for studying and relaxing.

FINE ARTS ROOM. Art displays and exhibits.

PRIVATE ROOMS. Available for dining and meetings. Apply Room 132.

LOST AND FOUND. For items lost and recovered within the building. Located in the basement. Apply at Desk.

CAFETERIA AND SNACK BAR. Located in the basement. Extension 2805.

BULLETIN BOARDS. For posting of miscellaneous notices and signs.

TELEVISION ROOM. Located on first floor.

SMOKE SHOP. Cigarettes, candy, books, magazines, and miscellaneous articles.

AUDITORIUM. Stage and motion picture facilities. Capacity 230 people.

BALLROOM. For movies, large dinners, dances, and meetings.

Equipment

Inquire at Information Desk to rent the following:

Portable and permanent blackboards, speakers lecterns, sound motion picture equipment (two 16-mm projectors), slide projection equipment, pianos, portable banquet tables, portable coat racks, floor and table microphones and public address systems, chess, checkers and playing cards. Trade for I.D. card at Information Desk.

Student Supply Store

Located in the basement of the Student Union, the supply store sells a variety of miscellaneous items as well as all books and materials needed for classes.

GENERAL STORE HOURS. Monday through Friday 8:30 a.m.-4:30 p.m.

JUDICIARY OFFICE

The University Judiciary Office effects discipline of the undergraduate students. Under the framework of a judiciary program which emphasizes personal growth and development, the aims of judicial actions are largely educative and preventive. Judiciary Office staff members review all reports of alleged misconduct, contact those individuals involved, and in most instances schedule the case for hearing by a student judicial board.

Staff members are available from 8:30 a.m. to 4:30 p.m. Monday through Friday to discuss any aspect of a disciplinary situation with the student charged, witnesses, or those bringing the charges.

PLACEMENT AND CREDENTIALS SERVICES

The primary objective of the Placement Service is to assist students in their career exploration—whether they seek information concerning careers in government, education, business, industry, or intend to pursue graduate study or fulfill military obligations. Especially helpful to underclassmen is the placement library, which contains an extensive collection of graduate and professional school bulletins, information on financial aid for graduate study, job listings in various fields (including some summer employment and non-degree job information), general career information, and reference materials on nearly 1000 major employers.

Placement advice is available to any senior, graduate student, or alumnus of the University who is seeking full-time employment.

Credentials service is available for College of Education seniors interested in teaching and for graduate students applying for teaching, administrative, or research positions in schools and colleges.

The office and the library of the Placement and Credentials Services are located in Cumberland Hall Basement.

SPACE RESERVATIONS FOR UNIVERSITY FACILITIES

University space and supporting service facilities

ties are in constant demand by many people and organizations. This requires regulations that will provide a fair assignment of available resources (space). The Facilities Use Committee administers space and supporting services.

For referral to proper authorities for coordination of requests, call campus telephone extension 2233.

INTERNATIONAL EDUCATION SERVICES AND FOREIGN STUDENT AFFAIRS

The Office of International Education Services and Foreign Student Affairs provides a wide variety of services for foreign students to assist them in making proper adjustment to the requirements of American university and community life and deriving the greatest possible benefit from their experience in the United States. Assistance is given with admission procedures, English language testing, housing, orientation, emergency loans, employment, immigration regulations. The Office sponsors special educational, cultural, and social opportunities.

Regulations Affecting Foreign Students

Foreign students are subject to the same regulations that govern the academic life and personal conduct of American students enrolled in the University. In addition, foreign students are required:

1. To have a **medical examination** at the University Health Service before completing registration procedures.
2. To obtain approved **hospital-medical insurance** in addition to paying the University infirmary fee required of all students.
3. To attend the **special orientation program** for new foreign students enrolling for the first time in September or February. (This program is held the weekend prior to registration.)

Foreign students are also subject to special regulations of the U.S. Immigration Service and the U.S. Department of State which establish the conditions under which students may enter the United States and remain in this country for the purpose of pursuing studies. The Office of International Education Services and Foreign Student Affairs has the responsibility for advising students on these and other matters, as well as for issuing documents needed to maintain proper immigration status.

The following regulations should be kept particularly in mind by students holding an "F" or "J" visa

1. **Permission for temporary stay** in the United States is valid for only one year at a time and must be reevaluated from one month to two weeks prior to the date of expiration.
2. **A full course of study** must be maintained.
3. **Employment off campus** during the academic year may not be engaged in without the prior approval of the Immigration Service in the case of "F-1" students, or the permission of the sponsor designated in the Exchange-Visitor Program in the case of "J-1" students. The same regulations govern the securing of **practical training**.

Permission for **off-campus summer employment** or **on-campus employment during the academic year** may be granted by the Director of International Education Services and Foreign Student Affairs on this campus.

Under no circumstances may the wife or dependent with an "F-2" visa classifica-

tion accept employment. The wife or dependent with a "J-2" classification may request the Immigration Service for permission for employment if the financial resources of the "J-1" student principal are not adequate for the support of the wife or dependent.

4. An **annual address report** must be made to the Immigration Service during the month of January by immigrant as well as non-immigrant students (except those with "A" or "G" classification). Address report cards are available during the month of January **only** at U.S. post offices.

Information, forms, and assistance in making necessary arrangements for complying with the regulations mentioned above are available at the Office of International Education Services and Foreign Student Affairs. Information regarding the filing of income tax returns may also be secured from the same office.

CULTURAL STUDY CENTER

The Cultural Study Center was established for the purpose of studying minority and other student cultural subgroups at the University of Maryland. Research will cover the socio-economic background and psychological development of the particular students, as well as their experiences on campus, which includes admissions, attrition, academics, adjustments, and problems of student life. Initially, the Center is developing data that bear on the interface between black and white cultures, on and off campus, and that point to changes that can be made at the University.

The Center is serving as a clearing house of research dealing with black culture and is establishing a modest library.

The Center has an advisory board consisting of black college and high school students, faculty and administrators, government officials, and members of the black community reflecting diverse viewpoints. University of Maryland Eastern Shore, a predominantly black institution, also participates on the board.

The Cultural Study Center is located in Shoemaker Building, telephone 454-2931.

STUDENT LIFE AND PROGRAMS

Over three hundred officially recognized special interest clubs, civic groups, service, professional and recreational organizations, religious clubs and musical groups are available at College Park. These organizations serve the important function of encouraging the development of leadership, integrity and citizenship skills.

Channels for student activities include six student communications and publications media, over a dozen musical groups, the various social organizations, athletics and the Student Government Association.

Assisting in the coordination of many such groups is the Department of Student Activities. Staff members provide activities counseling, advising, organizational coordination, leadership training, and personal development programs. The office is located in the Student Union Building, Rooms 136-142, telephone 454-2827.

The Student Activities Department staff consists of six full-time professionals. These people occupy the following positions:

Director of Student Activities—Rm. 140 Student Union

Director of Orientation—Rm. 140 Student Union
Director of Greek Affairs—Rm. 142A Student Union

Director of Cultural Affairs—Rm. 103 Student Union

Director of Community Service Programs—Rm. 142B Student Union

Educational Programming Specialist—Rm. 136 Student Union

Student Government Association

The Student Government Association consists of three parts: Executive, Legislative and Judicial. The Executive branch acts as a coordinator of student activities and services at Maryland. The Legislative branch is responsible for investigating and providing solutions for problems concerning students. The Judicial branch of SGA protects student rights and punishes those who violate University rules.

Under the Student Government Association are numerous committees which organize the affairs and activities of the student body. Membership is open to all interested students and applications may be secured from the SGA Office, Rm. 104 in the Student Union. SGA Committees include: Cultural Committee, Finance Committee, Homecoming, International Club, Placement Committee, Free University Committee, and Student Union Board.

The Student Government Association's Cultural Committee, University Theatre, and musical groups present a broad program of musical, cultural, and dramatic programs. Programs to be presented on the campus in 1970-71 by the SGA Cultural Committee are: New York Pro Musica, Ferrante and Teicher, Charlie Byrd Quintet, Howard Roberts Chorale, Pearl Lang Dance Group, *Hamlet* with Dame Judith Anderson, Noh Theater of Japan, Don Redlick Dance Company and Paul Winter Contemporary Consort. The National Symphony presents a series of four concerts during the year. Contemporary entertainment is presented throughout the year by various student organizations.

University Theatre will present the following major productions: "*Man of La Mancha*," "*Shakespeare 70*," "*Amphitryon 38*," "*Does a Tiger Wear a Necktie?*," and "*The Doctor In-Spite-of Himself*."

PACE (People Active in Community Effort)

College students throughout the United States today are increasingly seeking a means of becoming involved in activity that has a direct relevance to problems and issues facing our domestic communities.

University of Maryland students and faculty have taken action in the creation of strong, dynamic community service volunteer programs. PACE is the organization that serves as the coordinating organ for such programs as "Volunteers for Mental Health" and "Upward Bound."

A staffed office located in Rm. 101 Student Union is maintained as the focal point for all projects. Telephone: 454-4275.

Greek System

The Interfraternity and Panhellenic Councils are the governing bodies for the Greek system, which consists of 45 fraternity and sorority houses. It is the objective of the houses to encourage individual members in the development of values, maturity, academic and intellectual potential, and leadership ability.

A varied program is carried out by the Greek system annually, often to the benefit of the entire

student body as well as fraternity and sorority members. The IFC Presents, held each spring and fall, brings talent such as Bob Hope and Bill Cosby to capacity crowds. The IFC Ball, one of the few remaining formal events of the year, is held during semester break and features well-known entertainers and bands. Retreats are held each semester and are designed to study in depth, problems facing the system and the University or to provide leadership training.

University Commuters' Association

The University Commuters' Association offers the commuter many opportunities to become involved in campus life and provides unity to the large group of students who commute from nearby apartments and homes.

The Commuters' Den and the UCA Office are located in the basement of the Student Union. The Den serves as a convenient place for commuters to eat, chat with friends, or just relax between classes, away from the bustle of the large campus.

Associated Women Students

The Associated Women Students (AWS) is the governing body for women students on the University of Maryland campus. All full-time women students are members of the organization.

AWS program and policy are administered by three councils: The Executive Council, President's Council and Panhellenic Council. AWS is an active affiliate of the Inter-collegiate Association of Women Students, the national women's student government organization.

Annually, AWS sponsors educational programs like the Sex Symposium, Drug Symposium, Women's Week and Bridal Fair. These programs include informative lectures often by nationally known speakers, discussions, films or displays.

Aside from the various programs that AWS initiates, this organization is concerned with forming and modifying women's regulations. During the past years, AWS has liberalized and eliminated many of the rules for women students, especially those dealing with curfews. The self-imposed curfew system has now been extended to include all women students.

University Information Center

The University Information Center is operated by the Student Activities Department to provide information about University programs, services, and facilities.

The Center is open from 10:00 a.m. to 1:00 p.m. Monday through Friday and is located in the Student Union Main Lobby, Room 111.

Student Publications

Student publications produced regularly include the *Diamondback*, *Terrapin*, *Calvert Review*, *Argus*, *The Greek*, *M-Book*, and the *Course Guide*.

Any publication or pamphlet published by a student organization or group must be approved in advance by the Adjunct Senate Committee on Student Publications and Communications.

Registration of University Events

The Activities Coordinator (Rm. 142 Student Union) is responsible for the registration of certain University events.

New Student Organizations

Any student or group wishing to organize a University-recognized club or activity should make an appointment with the Director of Student Activities

who will explain the procedure for formal recognition by the Student Government Association and the Adjunct Committee on Student Activities of the Faculty Senate.

Calendar Registration

The SGA Calendar of Events is the publication through which events can be publicized on a campus-wide, semester basis. These events must be registered in Room 136 Student Union by May 30 for inclusion in the Fall calendar and by January 15 for the Spring calendar.

Charitable and Service Projects

The Campus Chest is a student charitable organization composed of representatives of many University groups. Through a variety of fund-raising activities, these groups collect money to be distributed by Campus Chest to various charitable causes. For University groups interested in organizing charitable and service projects, see Student Activities.

Religious Programs

The religious community at the University of Maryland presents a diversity of tradition through the several chaplaincies on campus. A cooperative ministry is carried out by these chaplaincies. In a number of instances during the year the Protestant, Roman Catholic, and Jewish chaplaincies jointly sponsor activities and programs of mutual interest and concern. All of the groups maintain active religious and social programs for their students.

Offices for most of the Protestant chaplains are located in the University Chapel. The Roman Catholic and Jewish groups maintain their own centers off campus.

ATHLETICS

The University of Maryland Athletic Department, under the direction of Director Jim Kehoe, fields varsity teams in football, soccer, and cross country in the fall; basketball, swimming, wrestling, and indoor track during the winter; and baseball, golf, tennis, lacrosse, and outdoor track in the spring. Freshmen schedules also prevail in football and basketball. Maryland is a member of the Atlantic Coast Conference, which also includes Clemson, Duke, North Carolina, North Carolina State, South Carolina, Virginia, and Wake Forest. The University won the Carmichael Cup, symbolic of top overall athletic performance in the ACC, this past year for the seventh time out of the nine years the title has been in existence. Maryland's ACC Championships in 1969-70 were provided by the wrestling, cross country, indoor track, outdoor track, baseball, and swimming teams.

The Men's Intramural Department provides competition in touch football, horseshoes, tennis, and

cross country during the fall; basketball, bowling, weight lifting, swimming, badminton, table tennis, volleyball, and wrestling in the winter; and foul shooting, softball, soccer, golf, and track during the spring months. All regularly enrolled full-time male undergraduates are eligible to participate by submitting entry blanks before posted deadlines. Blanks may be obtained from Intramural Director Nick Kovalakides. His office is located in Reckord Armory. Interested students are urged to stop by the office to obtain a copy of the intramural handbook.

MOTOR VEHICLES

Parking facilities at the University are extremely limited and are primarily intended for use by commuting students. Most parking areas are located on the periphery of the campus and are usually five or six blocks away from residence halls and classroom buildings.

Freshman and sophomore resident students are not permitted to register motor vehicles on campus; however, they may obtain on-campus weekend parking privileges. Any freshman or sophomore (i.e., a student who has earned fewer than 56 academic credits) who needs a motor vehicle for work, or for any other purpose, should consider making off-campus living arrangements.

Motor scooters, motorcycles, motor-bikes, or bicycles are not permitted inside any residence hall. They must be parked in those outside areas specifically marked for them.

COMMISSIONS FOR THE VICE CHANCELLOR FOR STUDENT AFFAIRS

In the interest of trying to draw on collaborative efforts and to improve various segments of campus life, the Vice Chancellor of Student Affairs several years ago established a series of commissions. The commissions are task-oriented groups who identify problem areas, study them, gather relevant information, and then make periodic proposals for change to the Vice Chancellor. The Commissions typically have twelve members—half of the members are students, one-fourth are Student Affairs staff, and one-fourth are faculty.

The areas of student life with which the commissions concern themselves are the following:

- Commission I: Transition to the University
- Commission II: Transition from the University
- Commission III: Residential Campus Life
- Commission IV: Commuter Campus Life
- Commission V: Student-Faculty Relationships
- Commission VI: Student-Administration Relationships
- Commission VII: Student-Student Relationships
- Commission VIII: Campus Facilities
- Commission IX: Black Students

Interested individuals are requested to contact the Coordinator of the Commissions by calling 2931 or 2925.





The residence halls are divided into five geographical areas: Cambridge; Denton; Ellicott; Hill; and Mobile. Assistant Directors of Housing are responsible for the development of an educational atmosphere within the individual areas, supervision of the staff personnel, and coordination of area activities.

The residence hall staff is composed of Resident Directors, Head Residents, Graduate Residents, and Resident Assistants. They are responsible for fostering sound educational and social environment in the hall. They perform such functions as assisting in program development, consulting with individual students, and advising student government, house judiciary, and student committees.

The University Housing Office, including the offices of the Director and Associate Directors of Housing, is located at 300 North Administration Building. Assistant Directors of Housing for each residential area maintain offices within that area.

RESIDENCE HALLS GOVERNMENT

Residence halls government has three main functions: (1) to provide for the comfort and safety of the student; (2) to provide social, cultural, athletic, and intellectual programs for the enjoyment and development of the student; and (3) to provide opportunities for students to gain leadership experience.

All resident students are members of the residence hall student government and as members may be asked to pay a **voluntary fee** at the time they enter the hall. These house activities fees are established by a majority vote of the students in each hall and are collected by student officers. Each

Area Council assesses by majority vote of the Council the amount per person which is to be paid to the Area Council.

AREA GOVERNMENTS OR COUNCILS

Each Council is composed of all residence halls presidents of that area. The purpose of the area government is to stimulate intellectual, cultural, social, and athletic interaction on an area-wide basis.

RESIDENCE HALLS ASSOCIATION

The Residence Halls Association serves as the student government coordinating body for all residence halls. It is composed of the presidents and elected representatives of all of the Area Councils. The officers of the Residence Halls Association are nominated and elected by the residence halls presidents.

RESIDENCE HALL CONTRACT

The residence halls contract is for the entire academic year (except for students entering the residence halls in the Spring Semester, when it is for one semester only). Release from contract is permitted only under extenuating circumstances or upon withdrawal from the University.

Only unmarried, full-time undergraduate students may live in the residence halls, due to space limitations.

The University reserves the right to: (1) change the room assignment of a student or request him to move to different accommodations and (2) inspect residence hall student rooms in accordance with the room inspection policy.

Group living requires that students conform to certain standards of conduct. Any student who fails to observe these standards may be referred for disciplinary action including possible dismissal from the residence.

The following shall constitute grounds for termination of the contract by the University: default in payments, withdrawal from the University, academic dismissal, disciplinary dismissal (violation of University and/or residence hall rules and regulations), or conduct on the part of the student by which the removal of that student from the residence halls would be in the best interest of the other residents. The University will give the student a written notice stating the date of termination of the contract.

All students who live in the residence halls must also board at the University Dining Halls. Special arrangements may be made for Jewish resident students who observe the Jewish dietary laws to eat at the Hillel Dining Hall instead of the University Dining Halls.

Room and board contracts begin with the first day of registration and include the last day of each semester.

The residence halls are closed during the Thanksgiving, Christmas, between semesters, and Spring recesses. Students must make their own arrangements for housing accommodations at these times. Designated residence halls may remain open during these periods if there is sufficient need.

FOOD SERVICE

The purpose of the University Food Service is to provide nutritionally balanced and tastefully prepared meals, served in an atmosphere that engenders good will, trust and cooperation between student and management.

The Dining Halls

The University of Maryland Food Service operates five dining halls for resident students who have purchased board contracts. The Dining Halls serve cafeteria style, and self-bussing of trays is required.

By taking student preferences into consideration, menus are planned accordingly. Also, dining halls are made available for special student functions.

Meal Hours

Monday-Friday	Saturday	Sunday	During Finals
Breakfast 7:00-9:30	7:30-9:30	9:00-11:00	7:00-9:30
Lunch 10:45-1:15	11:30-1:00	11:30-1:20	10:45-1:15
Dinner 3:45-6:15	4:30-6:00	2:00-4:15	3:30-6:30

Pre-exam study day and holidays—Saturday hours will prevail.

Removal of food, drink, or other Food Service property from the dining halls is prohibited.

Dining Hall contracts go into effect on the first day of registration and continue through the last day of exams. The dining hall is closed on Thanksgiving recess, Christmas recess, between semesters and Easter recess. Dining halls are open during all other holidays.

Guests are always welcome in the dining halls. Should a student wish to bring a guest, tickets may be purchased from the manager of each dining hall.

BOARD AND LODGING REFUNDS

The charges for room and board are refundable when the student officially withdraws from the Uni-

versity or when he is given permission by the appropriate officials of the University to move from the residence halls and/or to discontinue dining hall privileges. Students authorized to withdraw from the residence halls will receive a Room Refund on a pro rata weekly basis computed from the date the student turns in his room key to his staff member and properly clears his room. Room and/or board refunds cannot be made after the fourteenth week of the semester. The Food Service Identification Card or the remaining partial board tickets must be surrendered at the Auditor's Office in the South Administration Building on the day of withdrawal before any refund will be processed. A service charge equal to ten percent of the total semester charge will automatically be deducted from all room and board refunds.

Students are expected to withdraw in person, unless illness or emergency conditions make this impossible. See Appendix E for withdrawal procedures.

GUESTS IN RESIDENCE HALLS

Students must register overnight guests with the residence hall staff member in advance of their arrival. It is the responsibility of the student host to have his guest sign the Guest Registration form.

The host must receive advance permission for use of a student bed from the student whose room and bed will be used. This student will also sign the Guest Registration form in order to signify that his permission has been given.

Any student who has been dismissed from University Housing for disciplinary reasons may not be a guest in the residence halls.

PERSONAL PROPERTY: LOSS, THEFT, AND INSURANCE

The University cannot accept responsibility for the damage, theft, or loss of money, valuables, or any personal property. If there is a loss, it should be reported immediately.

Neither the State nor the University provides any insurance coverage on property owned by students, faculty, staff, or employees.

Most standard dwelling and contents Fire Insurance Policies and Homeowners' Policies that insure personal property provide an extension of coverage up to ten percent of the amount of insurance carried on household contents while this personal property is located elsewhere from the usual place of residence. Therefore, students whose parents carry insurance on their household effects should check their policy to be certain that it covers personal property brought to the residence halls.

ROOM ASSIGNMENT

Residence hall room assignments are initially made on a random basis. Subsequent room assignments are based on individual preference in accordance with priorities established by the residents of each hall (class rank, length of occupancy, academic standing, leadership, etc.).

Roommate and hall preferences are not honored in the assignment of new students. Requests for room changes within the same Residence Hall will be considered during the second week of classes. Hall and roommate preferences are honored for students returning to the Residence Halls after their first academic semester.

ROOM INSPECTION

Rooms may be inspected by staff members and student representatives to maintain sanitary standards which protect the safety, health, and well-being of other residents and to insure that University property is properly maintained.

The residence hall staff member will be accompanied by a student representative during inspections. Personal possessions of occupants will not be examined. When possible, inspections will be conducted when at least one of the occupants of the rooms is present.

OPEN HOUSE PROGRAM

The open house program provides opportunities for coeducational activities in residence halls and allows increased opportunity for students to develop personal responsibility and maturity. Male and female students and other guests may utilize facilities of the residence hall during a time period specifically established for such a program.

1. The open house program in each residence hall is approved and the hours are established by a $\frac{3}{5}$ majority vote of the total membership of the unit. Each residence hall unit shall vote by secret ballot on existing hours at the beginning of each semester. Either expansion or shortening of the hours may be brought before the unit for consideration by a petition of $\frac{1}{4}$ the students of the residence hall unit. Planning, scheduling, and evaluating of the open house program is a cooperative effort of students and staff members.
2. The maximum hours within which open houses may be held are:

Sunday through Thursday	12:00 Noon—12:00 Midnight
Friday and Saturday	12:00 Noon— 1:30 A.M.

Certain designated halls may hold open house within the following hours:

Sunday through Thursday	8:00 A.M.—12:00 Midnight
Friday and Saturday	8:00 A.M.— 1:30 A.M.

3. The president of the hall will record the days and hours as adopted by the Unit and submit them to the staff member for posting. It is preferable that days and hours be consistent for the entire residence hall when all facilities are open and available.
4. The host or hostess should meet the guest in the lobby of the hall and escort that guest to the lounge, study room, recreation room, or student room. The host or hostess must assume responsibility for the behavior of the guest.
5. An announcement should be made prior to the beginning and ending of the open house period.

OFF-CAMPUS HOUSING

The Off-Campus Housing Office maintains an active file of off-campus rooms, apartments and houses. This file is available on a self-service basis to all persons associated with the University.

University policy prohibits landlords listed by this office from discriminating because of race, religion, ethnic group, or national origin. Please report any instances of such discrimination to the Human Relations Officer.

Special help is available for those students and faculty having difficulty in finding housing. Please feel free to ask for assistance.

The University does not assume any responsi-

bility for the inspection, supervision, cleanliness, or operation of off-campus housing.

RESIDENCE HALLS REGULATIONS

In addition to the University regulations stated elsewhere, the following regulations concerning safety, sanitation, and individual freedom have been established with the welfare of each student in mind.

1. Open flame devices such as lighted candles, lanterns, stoves, torches, etc. must not be used within the residence halls.
2. Electrical appliances and extension cords are not approved for use within the residence halls unless it is established that they do not overload electrical circuits and create a fire hazard.
3. As a fire-preventive measure, students are requested to use metal wastebaskets and to use ashtrays that permit a cigarette to be held in a ridged device in the center.
4. Each time a building alarm sounds, regardless of cause, every person must leave the building immediately by the shortest route. Elevators are not to be used because of possible power failure.
5. Animals or pets are not permitted in the residence halls.
6. Cleanliness and sanitation are essential in the use of residence hall kitchens. Foods should be stored under proper refrigeration in covered containers, and should be discarded if not used within a short period.
7. No soliciting is permitted in the residence halls without special written permission from the Assistant Director of Housing for that area.
8. The removal of or relocation of residence halls property is not permitted unless authorized by the appropriate Assistant Director of Housing.

The residents acting through governmental unit voting may desire to establish additional standards of conduct.

SPECIAL REGULATIONS FOR RESIDENT WOMEN

Responsibility for formulation, review and revision of women's rules and regulations lies with the Associated Women Students.

All women living in residence halls and sorority houses are subject to the regulations set forth by AWS.

CLOSING HOURS

Closing hours for all women's residence halls are:

Sunday through Thursday	12:00 Midnight
Friday and Saturday	1:30 A.M.

Women may leave or return to the residence hall or sorority house after the closing hours. When entering or exiting, however, the main or designated door of the living unit must be used.

After the closing hour, women will be admitted by Student Identification Card to the residence hall

by the Night Receptionist on duty. Sorority women will be issued keys for use in entering their living units.

A guest of a resident woman will have no curfew. She may enter the residence hall or sorority house after the closing hour provided she is accompanied by her hostess.

SIGNING IN AND OUT

Signing in and out aids the staff member in locating a student in case of an emergency or in delivering an important message and is a highly recommended procedure. However, signouts are optional and are required only when leaving for University vacation or semester break.

Once a student signs out for vacation or break, she will not be permitted to re-enter her residence until it is officially re-opened.

Note: In those cases where parents express to the Vice President for Student Affairs their written objections, participation in the self-limited hours program will be withheld.

MONDAY NIGHT LIVING UNIT MEETINGS

Residence hall and sorority house meetings will be held on Monday nights. Each living unit will determine the meeting time by a vote at the beginning of the year. Residence hall meetings should not conflict with sorority meetings.

WITHDRAWAL PROCEDURES

Students withdrawing from the University and the residence halls follow steps 1 through 10 below.

Students withdrawing from the residence halls but remaining in the University follow steps 1, 7, and 9 below.

Students withdrawing from the University (with no housing or board contracts) follow steps 2, 3, 4, 5, 6, 8, and 10.

1. Discuss withdrawal with staff member or Assistant Director of Housing.
2. Obtain from the Dean of the college the form, Application for Withdrawal from the University.
3. Complete, sign, and if under 21, have parents sign the application.
4. Have academic Dean sign the application.
5. Return all University property to the appropriate departments (books to the Library; athletic equipment to the Athletic Department, obtaining breakage deposits when appropriate; military equipment to the Military Science Department, etc.)
6. Report to the Office of the Vice President for Student Affairs, North Administration Building, for an exit interview and to surrender Transaction Plate and University Identification Card should be surrendered here.
7. Submit Food Service Identification Card (full board contract) or unused Food Service tickets (partial board contract) to the Office of the Auditor, Room 201, South Administration Building. Auditor submits receipt for return of Food Service Identification Card or unused Food Service Tickets to Business Office. No Board refund can be processed if a student does not submit his Food Service Identification Card or unused Food Service Tickets to the Auditor.
8. Submit the completed Application for Withdrawal from the University to the Office of the Registrar for final clearance.
9. Check with residence hall staff member for proper room clearance and key return. No room refund can be processed if a student does not properly clear with residence hall staff member.
10. Report for financial clearance to Office of the Cashier, South Administration Building.





HONORS

SCHOLARSHIP HONORS—Final honors for excellence in scholarship are awarded to one-fifth of the graduating class in each College. "HIGH HONORS" are awarded to the upper half of this group; "HONORS" to the lower half. To be eligible for honors, a student must complete at least two years of resident work (60 semester hours) at the University with an average of B (3.0) or higher.

MILTON ABRAMOWITZ MEMORIAL PRIZE IN MATHEMATICS—A prize is awarded annually to a junior or senior student majoring in mathematics who has demonstrated superior competence and promise for future development in the field of mathematics and its applications.

THE AGRICULTURAL DEVELOPMENT FUND—A limited number of scholarships are available to students enrolled in the College of Agriculture.

THE ALCOA FOUNDATION TRAFFIC AND TRANSPORTATION AWARD to an outstanding senior student majoring in transportation.

ALPHA CHI SIGMA AWARD—The Alpha Rho Chapter of the Alpha Chi Sigma Honorary Fraternity offers annually a year's membership in the American Chemical Society to the senior majoring in Chemistry or Chemical Engineering whose average has been above 3.0 for three and one-half years.

ALPHA LAMBDA DELTA AWARD—Presented to the senior member of the group who has maintained the highest average for three and a half years. She must have been in attendance in the institution for the entire time.

ALPHA LAMBDA DELTA SENIOR CERTIFICATE AWARD—Senior members of Alpha Lambda Delta, honorary scholastic society for women, who have maintained an average of 3.5, receive this certificate.

ALPHA ZETA MEDAL—The Professional Agricultural Fraternity of Alpha Zeta awards annually a medal to the agricultural student in the freshman class who attains the highest average in academic work.

AMERICAN ASSOCIATION OF UNIVERSITY WOMEN ANNUAL GRADUATE PRIZE.

AMERICAN INSTITUTE OF AERONAUTICS AND ASTRONAUTICS AWARD—Free memberships in the Institute for one year and cash prizes for the best paper presented at a Stu-

dent Branch meeting and for the graduating aeronautical senior with the highest academic standing.

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS AWARD—A certificate, pin, and magazine subscription are awarded to the junior member of the Student Chapter who attained the highest overall scholastic average during his freshman and sophomore years.

AMERICAN INSTITUTE OF CHEMISTS AWARD—Presented for outstanding scholarship in chemistry and for high character.

AMERICAN SOCIETY OF CIVIL ENGINEERS AWARD—The Maryland Section of the American Society of Civil Engineers awards annually the first year's dues of an associate membership in the Society to a senior member of the Student Chapter on recommendation of the faculty of the Department of Civil Engineering.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS AWARD—Presented to the Senior member who contributed most to the local chapter.

AMERICAN SOCIETY FOR TESTING MATERIALS—A student membership prize is awarded to an engineering senior in recognition of superior scholastic ability and demonstrated interest in engineering materials and their evaluation.

APPLEMAN-NORTON AWARD IN BOTANY—The Department of Botany offers a scholarship award of \$100 in honor of Emeritus Professors C. O. Appleman and J. B. S. Norton to a senior major in Botany who is considered worthy on the basis of demonstrated ability and excellence in scholarship. The scholarship is awarded by the Committee on scholarships upon the recommendation of a committee of the faculty of the Department of Botany.

ASSOCIATED WOMEN STUDENTS AWARDS—Presented for outstanding achievement, character, and service to the University.

DAVID ARTHUR BERMAN MEMORIAL AWARD—This award is offered by the family of David Arthur Berman to the highest ranking junior in the Department of Chemical Engineering who is also a member of Tau Beta Pi.

DINAH BERMAN MEMORIAL MEDAL—The Dinah Berman Memorial Medal is awarded annually to the sophomore who has attained the highest scholastic average of his class

in the College of Engineering. This medal is given by Mr. Benjamin Berman.

B'NAI B'RITH AWARD—The B'nai B'rith Women of Prince Georges County present a Book Award for excellence in Hebrew Studies.

BUSINESS EDUCATION AWARD OF MERIT to a student in Business Education in recognition of outstanding achievement as a student.

CITIZENSHIP PRIZE FOR MEN—President Emeritus H.C. Byrd of the Class of 1908, annually presents this award to the member of the senior class who, during his collegiate career, has most nearly typified the model citizen and who has done most for the general advancement of the interests of the University.

CITIZENSHIP PRIZE FOR WOMEN—This prize is presented annually as a memorial to Sally Sterling Boyd, by her children, to that member of the senior class who best exemplifies the enduring qualities of the pioneer woman. These qualities typify self dependence, courtesy, aggressiveness, modesty, capacity to achieve objectives, willingness to sacrifice for others, strength of character, and those other qualities that enabled the pioneer woman to play such a fundamental part in the building of the nation.

THE CARROLL E. COX GRADUATE SCHOLARSHIP AWARD in Botany to the outstanding graduate student in the Department of Botany during the last year.

BERNARD L. CROZIER AWARD—The Maryland Association of Engineers awards a cash prize of twenty-five dollars to the senior in the College of Engineering who, in the opinion of the faculty, has made the greatest improvement in scholarship during his stay at the University.

VIRGINIA DARE AWARD—The Virginia Dare Extract Company awards annually a plaque and \$25.00 to the outstanding student in ice cream manufacturing with an overall good standing in dairy.

THE DANFORTH FOUNDATION AND THE RALSTON PURINA AWARDS—The Danforth Foundation and the Ralston Purina Company of St. Louis offer two summer awards to outstanding men students in the College of Agriculture, one for a student who has successfully completed his junior year, the other for a student who has successfully completed his freshman year. The purpose of these awards is to bring together outstanding young men for leadership training.

The Danforth Foundation and the Ralston Purina Company of St. Louis offer two summer awards to outstanding Home Economics women students, one to a junior and one to a freshman. The purpose of these is to bring together outstanding young women for leadership training.

THE DELMARVA TRAFFIC CLUB AWARD to a junior student majoring in transportation whose residence is on the Maryland Eastern Shore.

DELTA DELTA DELTA MEDAL—This sorority awards a medal annually to the woman who attains the highest average in academic work during the sophomore year.

DELTA GAMMA SCHOLARSHIP AWARD—This award is offered to the woman member of the graduating class who has maintained the highest average during three and one-half years at the University.

DELTA SIGMA PI SCHOLARSHIP KEY—This award is offered to a member of the graduating class who has maintained the highest scholastic average for the entire four-year course in the College of Business and Public Administration.

NATHAN L. DRAKE AWARD—Presented by the Alpha Rho Chapter of Alpha Chi Sigma to the most promising student who is majoring in chemistry and has completed the sophomore year.

EDUCATION ALUMNI AWARD—Presented to the outstanding senior man and senior woman in the College of Education.

GENERAL ELECTRIC COMPANY prize to the outstanding first year graduate student in physics and to the outstanding first year graduate student in astronomy.

GODDARD MEDAL—The James Douglass Goddard Memorial Medal is awarded annually to the resident of Prince Georges County born therein, who makes the highest average in his studies and who at the same time embodies the most manly attributes. The medal is given by Mrs. Anne G. Goddard James of Washington, D.C.

CHARLES B. HALE DRAMATIC AWARDS—The University Theatre recognizes annually the man and woman members of the senior class who have done most for the advancement of dramatics at the University.

HAMILTON AWARD—This award is offered by the Hamilton Watch Company to the graduating senior in the College of Engineering who has most successfully combined proficiency

in his major field of study with achievements—either academic, extra-curricular, or both—in the social sciences or humanities.

THE HASKINS AND SELLS FOUNDATIONS, INC., AWARD to the senior student in the College of Business and Public Administration concentrating in accounting who has demonstrated excellent ability in this field of study.

HOME ECONOMICS ALUMNI AWARD—Presented to the student outstanding in application of home economics in her present living and who shows promise of carrying these into her future home and community.

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERING AWARD—The Washington Section of the Institute of Electrical and Electronics Engineers defrays the expenses of a year's membership as an associate in the Institute for the senior doing the most to promote Student Branch activities.

JOE ELBERT JAMES MEMORIAL AWARD—Gold watch annually awarded to the graduating senior in horticulture on basis of scholarship and promise of future achievement.

LEIDY CHEMICAL COMPANY AWARD to an outstanding student majoring in chemistry.

MARYLAND-DELAWARE PRESS ASSOCIATION ANNUAL CITATION—Presented to the outstanding senior in journalism.

MARYLAND COOPERATIVE MILK PRODUCERS SCHOLARSHIP—A scholarship award of \$500 is provided to a College of Agriculture student enrolled in a curriculum relating to the dairy industry.

MARYLAND RECREATION AND PARKS SOCIETY AWARD to an outstanding senior majoring in recreation.

MEN'S LEAGUE AWARD to the male senior who gave the most to sports.

MEN'S LEAGUE CERTIFICATES—Offered for outstanding achievement, character, and service to the University.

MEN'S LEAGUE CUP—This award is offered by the Men's League to the graduating male senior who has done the most for the male student body.

MOTOR FLEET SUPERVISORS AWARD to a student majoring in transportation in the College of Business and Public Administration.

NATIONAL SOCIETY OF FIRE PROTECTION ENGINEERS AWARDS—Presented to the most outstanding senior and sophomore in the Fire Protection curriculum.

NOXZEMA CHEMICAL COMPANY SCHOLARSHIP AWARD to an undergraduate student in chemistry.

OMICRON NU SORORITY MEDAL—This honorary sorority awards a medal annually to the freshman woman in the College of Home Economics who attains the highest scholastic average during the first semester.

PHI BETA KAPPA JUNIOR AWARD—An award to be presented to the junior initiate into Phi Beta Kappa who has attained the highest academic average.

PHI BETA KAPPA—LEON P. SMITH AWARD—The award of the Gamma of Maryland Chapter of Phi Beta Kappa is presented to the graduating senior with the highest cumulative scholastic average whose basic course program has been in the liberal studies.

PHI CHI THETA KEY—The Phi Chi Theta Key is awarded to the outstanding graduating senior woman in the College of Business and Public Administration on the basis of scholarship, activities, and leadership.

PHI DELTA KAPPA AWARD—Presented to an outstanding man in the graduating class of the College of Education.

PHI SIGMA AWARDS for outstanding achievement in the biological sciences to an undergraduate student and a graduate student.

PI DELTA EPSILON NATIONAL MEDAL OF MERIT AWARDS—Offered by the National Council of Pi Delta Epsilon to the outstanding senior woman and the outstanding senior man in Journalism activities.

PI DELTA EPSILON AWARD for outstanding service to communications in the field of broadcasting.

PI DELTA EPSILON AWARD for outstanding service to communications in the field of Business.

PI DELTA EPSILON AWARD to the outstanding freshman in the field of communications.

PI DELTA EPSILON AWARD for outstanding service to communications in the field of editorial journalism.

PI TAU SIGMA AWARD—An annual handbook award to the most outstanding sophomore in mechanical engineering on the basis of scholastic average and instructors' ratings.

PILOT FREIGHT CARRIERS, INC., AWARD to the senior

student in the College of Business and Public Administration who has majored in Transportation and who has demonstrated competence in this field of study.

PUBLIC RELATIONS SOCIETY OF AMERICA—The Baltimore Chapter of PRSA presents an annual citation to the outstanding senior majoring in public relations.

SIGMA ALPHAOMICRON AWARD—This award is presented to a senior student majoring in Microbiology for high scholarship, character and leadership.

THE SIGMA CHAPTER, PHI DELTA GAMMA AWARD To an outstanding woman who has completed requirements for the doctoral degree.

DR. LEO AND RITA SKLAR GENERAL HONORS AWARDS—Dr. Leo Sklar, A&S '37, and his wife, Rita Sklar, annually fund four awards for excellence in the General Honors Program of the College of Arts and Sciences. These awards are given to the Outstanding Student in the General Honors Program (\$400.00), the Outstanding General Honors senior (\$300.00), the Outstanding General Honors junior (\$300.00), and the Outstanding General Honors sophomore (\$300.00).

ALGERNON SYDNEY SULLIVAN AWARD—The New York Southern Society, in memory of its first president, awards annually medallions and certificates to one man and one woman of the graduating class and one non-student who evince in their daily life a spirit of love for and helpfulness to other men and women.

TAU BETA PI AWARD—The Maryland Beta Chapter of Tau Beta Pi Association, national engineering honor society, awards an engineer's handbook to the junior in the College of Engineering who during his sophomore year has made the greatest improvement in scholarship over that of his freshman year.

WALL STREET JOURNAL STUDENT ACHIEVEMENT AWARD—Awarded annually to the graduating senior who has maintained the highest scholastic achievement in the field of financial administration. The award consists of a silver medal embedded in clear plastic and one year's subscription to the Wall Street Journal.

THE ARTHUR YOUNG AND CO. FOUNDATION, INC. AWARDS to exceptional senior students concentrating in accounting who are registered in the College of Business and Public Administration.

AIR FORCE ROTC AWARDS

AFROTC ANGEL FLIGHT AWARD to the outstanding member of the AFROTC Angel Flight.

AIR FORCE TIMES AWARD to the senior cadet at each detachment who has distinguished himself by contributing materially to constructive public attention for the corps of cadets.

ALUMNI CUP to the outstanding flight in the corps of cadets.

AMERICAN LEGION AWARDS to outstanding senior and junior cadets who have demonstrated military excellence and scholastic achievement.

ARMED FORCES COMMUNICATIONS AND ELECTRONICS ASSOCIATION AWARD to the outstanding senior cadet majoring in electrical, electronics or communications engineering.

ARNOLD AIR SOCIETY AWARD to the advanced cadet selected by the Arnold Air Society as the cadet who has contributed the most to the advancement of AFROTC through activities of the Arnold Air Society.

COBLENTZ MEMORIAL CUP to the outstanding group in the corps of cadets.

DISABLED AMERICAN VETERANS GOLD CUP to the senior cadet who has displayed outstanding leadership, scholarship, and citizenship.

DISTINGUISHED AFROTC CADET AWARDS to those seniors who possess outstanding qualities of leadership and high moral character and who meet the prescribed standings in their academic and military studies.

GENERAL DYNAMICS AWARD to the sophomore cadet displaying outstanding leadership and scholarship qualities and who has been selected for the Professional Officer Course.

GOVERNOR'S CUP to the outstanding squadron in the corps of cadets.

NATIONAL DEFENSE TRANSPORTATION ASSOCIATION AWARD to the outstanding senior cadet majoring in transportation.

RESERVE OFFICERS ASSOCIATION AWARDS to the outstanding junior and senior in the corps of cadets.

SOCIETY OF AMERICAN MILITARY ENGINEERS AWARDS to a junior and a senior cadet displaying outstanding scholastic achievement and leadership and majoring in the field of engineering.

SONS OF THE AMERICAN REVOLUTION MEDALS—To a two-year and a four-year cadet displaying outstanding aptitude for the military.

ATHLETIC AWARDS

ATLANTIC COAST CONFERENCE AWARD—A plaque is awarded each year to a senior in each conference school for excellence in scholarship and athletics.

THE ALVIN L. AUBINOE BASKETBALL TROPHY—This trophy is offered by Alvin L. Aubinoe for the senior who has contributed most to the squad.

THE ALVIN L. AUBINOE FOOTBALL TROPHY—This trophy is offered by Alvin L. Aubinoe for the unsung hero of the current season.

THE ALVIN L. AUBINOE TRACK TROPHY—This trophy is offered by Alvin L. Aubinoe for the senior who has contributed most to the squad during the time he was on the squad.

JOHN T. BELL SWIMMING AWARD—To the year's outstanding swimmer or diver.

LOUIS W. BERGER TROPHY—Presented to the outstanding senior baseball player.

WILLIAM P. COLE, III, MEMORIAL LACROSSE AWARD—This award, offered by the teammates of William P. Cole, III, and the coaches of the 1940 National Champion team, is presented to the outstanding midfielder.

THE GEORGE C. COOK MEMORIAL SCHOLARSHIP TROPHY—Awarded annually to a member of the football team with the highest scholastic average.

JOE DECKMAN-SAM SILBER TROPHY—This trophy is offered by Joseph H. Deckman and Samuel L. Silber to the most improved defense lacrosse player.

GEARY F. EPPLEY AWARD—Offered by Benny and Hotsy Alperstein to the graduating male senior athlete who, during his three years of varsity competition, lettered at least once and attained the highest over-all scholastic average.

HALBERT K. EVANS MEMORIAL TRACK AWARD—This award, given in memory of "Hermie" Evans, of the Class of 1940, by his friends, is presented to graduating senior trackman.

HERBERT H. GOODMAN MEMORIAL THROPHY—This trophy is awarded to the most outstanding wrestler of the year.

CHARLES LEROY MACKERT TROPHY—This trophy is offered by William K. Krouse to the Maryland student who has contributed most to wrestling while at the University.

MARYLAND RING—The Maryland Ring is offered as a memorial to Charles L. Linhardt, of the Class of 1912, to the Maryland man who is adjudged the best athlete of the year.

CHARLES P. MC CORMICK TROPHY—This trophy is offered by Charles P. McCormick to the senior letterman who has contributed most to swimming during his collegiate career.

ANTHONY C. NARDO MEMORIAL TROPHY—This trophy is awarded to the best football lineman of the year.

EDWIN POWELL TROPHY—This trophy is offered by the Class of 1913 to the player who has rendered the greatest service to lacrosse during the year.

SILVESTER WATCH FOR EXCELLENCE IN ATHLETICS—A gold watch, given in honor of former president of the University, R. W. Silvester, is offered annually to "the man who typifies the best in college athletics."

TEKE TROPHY—This trophy is offered by the Maryland Chapter of Tau Kappa Epsilon Fraternity to the student who during his four years at the University has rendered the greatest service to football.

ROBERT E. THEOFELD MEMORIAL—This trophy is presented by Dr. and Mrs. Harry S. Hoffman and is awarded to the golfer who most nearly exemplifies the competitive spirit and strong character of Robert E. Theofeld, a former member of the boxing team.

MUSIC AWARDS

ASSISTANT DIRECTOR'S AWARD to the outstanding member of the Symphonic Band.

DIRECTOR'S AWARD to the concert band member who demonstrated the most improvement in musicianship during the year.

KAPPA KAPPA PSI AWARD to the most outstanding band member of the year.

SIGMA ALPHA IOTA ALUMNAE AWARD for outstanding musical performance.

SIGMA ALPHA IOTA DEAN'S HONOR AWARD for service and dedication.

SIGMA ALPHA IOTA HONOR CERTIFICATE to the senior with the highest scholastic average.

SIGMA ALPHA IOTA LEADERSHIP AWARD based on personality, student activities, fraternity service, and scholarship.

TAU BETA SIGMA AWARD to the outstanding band sorority member of the year.

Awards are presented to the members of the University Bands, the University Orchestras, and the Men's and Women's Glee Clubs who serve faithfully throughout the year.

STUDENT GOVERNMENT AWARDS

Keys are awarded to the members of the Executive Committee of the Student Government Association, Men's League, Association of Women Students, and other organizations who faithfully perform their duties throughout the year.





Regulations and procedures for the awarding of scholarships are formulated by the Committee on Financial Aids. The Board of Regents of the University authorizes the award of a limited number of scholarships each year to deserving students. Applicants are subject to the approval of the Director of Admissions, insofar as qualifications for admission to the University are concerned. All recipients are subject to the academic and non-academic regulations and requirements of the University.

The recipient of the scholarship or grant is expected to make at least normal progress toward a degree, as defined by the Academic Regulations.

The Committee reserves the right to review the scholarship program annually and to make adjustments in the amount and recipients of awards in accordance with the funds available and scholastic attainment.

Some of the types of scholarships, grants, and loan funds available are:

ENDOWED AND ANNUAL SCHOLARSHIPS AND GRANTS

AFROTC COLLEGE SCHOLARSHIP PROGRAM—This program provides scholarships for selected cadets each year in the four-year AFROTC program. Those selected receive money for full tuition, laboratory expenses, incidental fees, and an allowance for books for up to eight semesters. In addition, they receive non-taxable pay of \$50 per month. One must be in the program at the University of Maryland before he can apply for this scholarship.

AIR FORCE WARRANT OFFICERS ASSOCIATION STUDENT AID PROGRAM—Scholarship aid has been made available by the Air Force Warrant Officers Association for worthy male or female undergraduate or graduate students in good standing, with preference given to children of Air Force Warrant Officers or other military personnel.

ALBRIGHT SCHOLARSHIP—The Victor E. Albright Scholarship is open to graduates of Garrett County high schools who

were born and reared in that county.

ALCOA FOUNDATION TRAFFIC SCHOLARSHIP—An award of \$500 is given to an outstanding junior student majoring in Transportation in the College of Business and Public Administration.

ALPHA PHI OMEGA (EPSILON MU CHAPTER) SCHOLARSHIP—This scholarship is awarded annually to a freshman student having a background in the Boy Scouts of America.

ALUMNI SCHOLARSHIPS—A limited number of scholarships are made possible through the gifts of alumni and friends to the Alumni Annual Giving Program of the Office of Endowment and Gifts.

ALUMNI ASSOCIATION OF MONTGOMERY COUNTY SCHOLARSHIPS—A limited number of scholarships are available to residents of Montgomery County.

ALUMNI ASSOCIATION OF THE SCHOOL OF PHARMACY SCHOLARSHIPS—The Alumni Association of the School of Pharmacy of the University of Maryland makes available annually scholarships to qualified pre-pharmacy students on the basis of character, achievement and need. These scholarships are open only to residents of the State of Maryland. Each scholarship not exceeding \$500 per academic year is applied to expenses at College Park.

ALUMNI BAND SCHOLARSHIP—A limited number of awards to freshmen are sponsored by the University of Maryland Band Alumni Organization. Recipients are recommended by the Music Department after a competitive audition held in the spring.

ETHEL R. ARTHUR MEMORIAL SCHOLARSHIP—This memorial scholarship fund has been established by Irving J. Cohen, M.D. At least one \$250 award is made each year by the Scholarship Committee. A preference is given to students from Baltimore.

ALVIN L. AUBINOE STUDENT AID PROGRAM—Scholarship grants up to \$500 per school year to students in engineering, preferably those studying for careers in civil engineering, architecture or light construction.

BALTIMORE PANHELLENIC ASSOCIATION SCHOLARSHIP—A scholarship is awarded annually by the Baltimore Panhellenic Association to a student entering the junior or senior class, who is an active member of a sorority, who is outstanding in leadership and scholarship and who needs financial assistance.

BALTIMORE SUNPAPERS SCHOLARSHIP IN JOURNALISM—The Board of Trustees of the A. S. Abell Foundation, Inc., contributes funds to provide one or more \$500 scholarships to students majoring in editorial journalism.

BAYSHORE FOODS, INC. SCHOLARSHIP—A grant of \$500 is made available annually by J. McKenny Willis and Son., Inc., Grain, Feed and Seed Company of Easton, Maryland, to an outstanding student in vocational agriculture in Talbot County who will matriculate in the College of Agriculture.

BLACK AND DECKER MANUFACTURING COMPANY SCHOLARSHIP—A scholarship of \$500 per year is provided for a Maryland resident who promises to teach Industrial Arts or Vocational-Industrial Education in Maryland for two years after graduation.

BORDEN AGRICULTURAL SCHOLARSHIP—A Borden Agricultural Scholarship of \$300 is granted to that student in the College of Agriculture who has had two or more of the regularly listed courses in dairying and who, upon entering the senior year of study, has achieved the highest average grade of all other similarly eligible students in all preceding college work.

CAMPUS CHEST SCHOLARSHIP—A full tuition scholarship is made available by the Campus Chest Council of the University.

GEORGE C. COOK SCHOLARSHIP—A full scholarship is made available by the Maryland Educational Foundation in memory of the late George C. Cook. Preference shall be given to students interested in a career in business administration or marketing.

DR. ERNEST N. CORY SCHOLARSHIP—This memorial award is made annually to an outstanding junior or senior recommended by the College of Agriculture, preferably one majoring in Entomology.

DAIRY TECHNOLOGY SCHOLARSHIP AND GRANTS—The Dairy Technology Society of Maryland and the District of Columbia provides a limited number of scholarships and grants-in-aid for students majoring in Dairy Products Technology.

DOUGLAS AIRCRAFT COMPANY SCHOLARSHIP—An \$800 scholarship to be awarded to an outstanding and deserving senior student in aeronautical, electrical, or mechanical engineering in this order of preference. Preference is given to students who indicate a willingness to accept employment in California.

EXEL SCHOLARSHIP—A substantial grant for endowed scholarships was made by Deborah B. Exel.

FMC CORPORATION SCHOLARSHIP—An annual award of \$500 is made available for a senior in Chemical Engineering.

ANNE ARUNDEL COUNTY VOLUNTEER FIREMEN'S ASSOCIATION GRANT—This tuition and fees grant is awarded to a high school graduate who will enroll in the Fire Protection Curriculum in the College of Engineering. The award is normally for four years.

BALTIMORE COUNTY VOLUNTEER FIREMAN'S ASSOCIATION GRANT—This tuition and fees grant is awarded to a student who will enroll in the Fire Protection Curriculum in the College of Engineering. The award is normally for four years.

LADIES AUXILIARY TO THE MARYLAND STATE FIREMEN'S ASSOCIATION GRANT—This \$750 grant is awarded to an outstanding high school graduate who will enroll in the Fire Protection Curriculum in the College of Engineering. The award is normally available for four years.

MARYLAND STATE FIREMEN'S ASSOCIATION GRANT—A tuition and fees scholarship is awarded annually to an outstanding high school student who enrolls in the Fire Protection Curriculum of the College of Engineering. This scholarship is for four years.

PRINCE GEORGES COUNTY VOLUNTEER FIREMEN'S ASSOCIATION GRANT—An annual tuition and fees scholarship is awarded to an outstanding high school student who enrolls in the Fire Protection Curriculum of the College of Engineering.

FOOD FAIR STORES FOUNDATION SCHOLARSHIPS—Several scholarships are available for \$250 per academic year.

VICTOR FRENKIL SCHOLARSHIP—A scholarship of \$250 is granted annually by Mr. Victor Frenkil of Baltimore to a student from Baltimore City in the freshman class of the University.

FUTURE NURSES CLUBS SCHOLARSHIP—A limited number of \$300 scholarships are made available by the Fu-

ture Nurses Clubs of Maryland which are sponsored by the Women's Auxiliary of the Medical and Chirurgical Faculty of Maryland and the Maryland League of Nursing. These scholarships are available to freshmen students from Maryland preparing for nursing.

GAMMA PHI BETA ALUMNI SCHOLARSHIP—Two annual scholarships are available to teachers employed in the teaching field. The awards pay tuition costs of graduate course designed for training teachers of gifted children.

GENERAL MOTORS SCHOLARSHIP—This scholarship is granted annually to an outstanding individual entering the freshman year.

GODDARD MEMORIAL SCHOLARSHIP—Several scholarships are available annually under the terms of the James and Sarah E. R. Goddard Memorial Fund established through the wills of Morgan E. Goddard and Mary Y. Goddard.

ROSE L. GRANT SCHOLARSHIP—At least \$500 each year is made available to be awarded by the Scholarship Committee.

JOHN WILLIAM GUCKEYSON MEMORIAL SCHOLARSHIP—A scholarship of \$100 is granted annually by Mrs. Hudson Dunlap as a memorial to John William Guckeyson, an honored Maryland alumnus.

THE STALEY AND EUGENE HAHN MEMORIAL SCHOLARSHIP FUND—Annual awards of \$500 are made by Mr. and Mrs. Walter J. Hahn in memory of their sons to aid outstanding agricultural students from Frederick County.

JAMES HARTIN ENGINEERING SCHOLARSHIP AND DONALD PETER SHAW MEMORIAL SCHOLARSHIP—These two scholarships of \$300 each are made available annually by Mr. and Mrs. David C. Hartin. The first is awarded to a male student in the College of Engineering and the second to a male student in any college other than Education, or to a female student in Nursing. These awards will be made to worthy students who are helping to earn their own college expenses.

HASKINS AND SELLS FOUNDATION, INC. AWARD—A scholarship of \$500 is provided for an exceptional senior student majoring in accounting in the College of Business and Public Administration.

WILLIAM RANDOLPH HEARST FOUNDATION SCHOLARSHIPS—These scholarships are made available through a gift of the Baltimore News American, one of the Hearst newspapers, in honor of William Randolph Hearst. Scholarships up to \$1000 are awarded annually to undergraduates pursuing a program of study in journalism. Scholarships up to \$1000 are awarded annually for graduate study in history.

ROBERT MICHAEL HIGGINBOTHAM MEMORIAL AWARD FUND—This Fund has been endowed by Mr. and Mrs. Charles A. Higginbotham in memory of their son who was killed in Vietnam. Annual awards are made to promising junior students majoring in mathematics.

THE A.M. HOFFMAN MEMORIAL GRANT—This gift of \$250 per year is normally awarded as a supplement to some other type of student aid to a student with exceptional need. A preference is given to students from Montgomery County. The gift is made available by Mr. and Mrs. David B. Schwartz.

INTERFRATERNITY COUNCIL SCHOLARSHIP—Two awards of \$250 each are available to members active in fraternity and interfraternity affairs. Recipients are selected by the Office of Student Aid upon recommendations from the presidents of their respective houses and the President of the IFC.

THE INTER-STATE MILK PRODUCERS' COOPERATIVE, INC. SCHOLARSHIP—A scholarship of \$300 is made available to a student in agriculture in honor of Raymond Marvel, Past-President of the cooperative.

IOTA LAMBDA SIGMA (NU CHAPTER) SCHOLARSHIP—This \$200 scholarship is awarded annually to a male student in the Industrial Education curriculum. The student must be a resident of the State of Maryland and signify his intention of teaching in Maryland.

KAPPA KAPPA GAMMA NURSING SCHOLARSHIP—This \$100 Scholarship is made available annually by the Gamma Psi chapter of the Kappa Kappa Gamma Sorority to a worthy student preparing for a career in nursing.

PAUL H. KEA MEMORIAL SCHOLARSHIP FUND—This fund was established by the Potomac Valley Chapter of the American Institute of Architects in memory of Paul H. Kea, a highly respected member of the chapter.

VENIA M. KELLER GRANT—The Maryland State Council of Homemakers' Clubs makes available this grant of \$100 which is open to a Maryland young man or woman of promise who is recommended by the College of Home Economics.

KELLY-SPRINGFIELD TIRE COMPANY GRANT—Annual awards totaling \$4200 are made to engineering students upon

the recommendation of the College of Engineering. This gift is made available by The Kelly-Springfield Tire Company, Cumberland, Maryland, a subsidiary of The Goodyear Tire and Rubber Company of Akron, Ohio.

KIWANIS SCHOLARSHIP—The J. S. Ray Memorial Scholarship covering tuition is awarded by the Prince Georges Kiwanis Club to a male resident of Prince Georges County, Maryland, who, in addition to possessing the necessary qualifications for maintaining a satisfactory scholarship record, must have a reputation of high character and attainment in general all-around citizenship.

KIWANIS CLUB OF LAUREL SCHOLARSHIP—An annual award of \$400 is made available to be awarded by the Scholarship Committee to needy students, preferably from the Laurel area.

SAMUEL J. LEFRAK SCHOLARSHIP—A scholarship in honor of Geary F. Eppley, Dean of Men Emeritus, has been established by an alumnus Mr. Samuel J. Lefrak, President of the Lefrak Organization, Forest Hills, New York. The award of \$1000 is made to a deserving sophomore who excels in both athletics and scholarship, to be used during his last two years at the University.

LEIDY CHEMICAL FOUNDATION SCHOLARSHIP—A scholarship of \$500 is granted annually to a graduate or undergraduate student preparing for a career in the general field of chemistry.

CHRISTIAN R. AND MARY F. LINDBACK FOUNDATION SCHOLARSHIP—The Trustees of the Christian R. and Mary F. Lindback Foundation provide an annual gift to the University, one-half of which is given for scholarships in agriculture and one-half for awards to the faculty for distinguished teaching.

HELEN ALETTA LINTHICUM SCHOLARSHIP—These scholarships, several in number, were established through the benefaction of the late Mrs. Aletta Lintthicum, widow of the late Congressman Charles J. Lintthicum, who served in Congress from the Fourth District of Maryland for many years.

LIONS INTERNATIONAL SCHOLARSHIP—An award of \$500 is available to a freshman who competes in the Lions Club (District 22-C) Annual Band Festival. A recipient is recommended by the Music Department after a competitive audition in the spring.

LOUGHBOROUGH LIONS CLUB SCHOLARSHIP—A scholarship providing tuition and fees is awarded to a graduate of Bethesda-Chevy Chase, Walt Whitman or Walter Johnson High Schools. The recipient is selected by the University on the basis of character and financial need.

THE M CLUB GRANTS—The M Club of the University of Maryland provides each year a limited number of awards.

MARYLAND AND VIRGINIA MILK PRODUCERS ASSOCIATION SCHOLARSHIP—A scholarship of \$500 is awarded annually in the College of Agriculture, preferably to a student preparing for a career in the dairy industry.

MARYLAND PHARMACEUTICAL ASSOCIATION SCHOLARSHIP—The Maryland Pharmaceutical Association makes available annually scholarships to pre-pharmacy students on the basis of character, achievement and need. Each scholarship not exceeding \$500 per academic year is used in partial defrayment of fees and expenses at College Park. These scholarships are open only to residents of the State of Maryland.

MARYLAND STATE GOLF ASSOCIATION SCHOLARSHIP—A scholarship of \$500 is provided annually by the Maryland State Golf Association to be awarded to a student enrolled or planning to enroll in an undergraduate program in Agronomy. He must have an interest in golf turf work and a preference will be given to a student who has worked on a golf course.

EUGENE E. AND AGNES F. MEYER SCHOLARSHIPS—A number of scholarships are made available each year to promising students with preferential consideration to children of persons employed in public service.

MORTAR BOARD SCHOLARSHIP—The Mortar Board Scholarship is awarded annually to a woman student on the basis of scholastic attainment, and need.

LOREN L. MURRAY AND ASSOCIATES SCHOLARSHIPS—This fund has been created to provide scholarships for Maryland residents who are admitted to the College of Education.

DR. RAY A. MURRAY SCHOLARSHIP—This award, sponsored by Maryland Chapter No. 32 of the National Institute of Farm and Land Brokers, is to be made to a worthy sophomore in the Department of Agricultural Economics, College of Agriculture.

NOPCO SCHOLARSHIP—Two scholarships at \$250 each are provided for students in the College of Agriculture by the Nopco Chemical Company.

OLNEY ROTARY CLUB SCHOLARSHIP PROGRAM—Scholarship awards are made available annually for deserving students who are graduates of the high schools in the area served by the Olney Rotary Club of Olney, Maryland.

PENINSULA HORTICULTURAL SOCIETY SCHOLARSHIP—The Peninsula Horticultural Society provides annually a \$200 scholarship to the most deserving junior or senior student, a resident of Maryland from the Eastern Shore counties, who is majoring in Horticulture or related subjects.

PHI BETA KAPPA SCHOLARSHIP—A scholarship is awarded to the student who at the end of the junior year has attained the highest cumulative average in liberal sources and whose basic course program is in liberal studies.

PHI ETA SIGMA SCHOLARSHIP—A limited number of \$100 scholarships are available to young men entering the sophomore class and who have achieved an academic average of 3.5 or higher during the freshman year.

DOUGLAS HOWARD PHILLIPS MEMORIAL SCHOLARSHIP—This scholarship fund has been endowed by Mr. and Mrs. Albanus Phillips, Jr. in honor of their son who met his untimely death in the spring before he was scheduled to attend the University, in order that worthy young male graduates of Cambridge, Maryland High School may have the opportunity he missed.

PILOT FREIGHT CARRIERS, INC., AWARD—A \$500 award is made to a senior student in the College of Business and Public Administration who has majored in transportation.

PURCHASING MANAGEMENT ASSOCIATION OF BALTIMORE, INC., SCHOLARSHIP—An annual award of \$500 is given annually to a junior or senior student in the College of Business and Public Administration preparing for a career in business administration or business management.

ENSIGN RICHARD TURNER REA MEMORIAL SCHOLARSHIP—This scholarship fund has been established by Captain and Mrs. Richard F. Rea in honor of their late son who gave his life while on active duty in the U.S. Coast Guard. Two scholarships up to \$500 each are awarded annually to students in Engineering.

READ'S DRUG STORES FOUNDATION SCHOLARSHIPS—The Read's Drug Stores Foundation contributes annually several scholarships to pre-pharmacy students on the basis of achievement, character and need. Each scholarship not exceeding \$500 per academic year is applied to the fees and expenses at College Park. Recipients must be residents of the State of Maryland.

MARY ELIZABETH ROBY MEMORIAL SCHOLARSHIP—An endowed scholarship has been established by the University Park Republican Women's Club. Limited awards are made to women entering the junior or senior years who are studying in the field of political science. A preference is given to residents of Prince Georges County.

VIVIAN F. ROBY SCHOLARSHIPS—This endowed fund was established through a bequest to the University of Maryland by Evalyn S. Roby in memory of her husband, class of 1912, to provide undergraduate scholarships to needy boys from Baltimore City and Charles County.

DR. FERN DUEY SCHNEIDER GRANT—A \$100 grant is available to a foreign woman student enrolled in the College of Education, who has completed at least one semester in residence at the University. Funds for the grant are contributed by the Montgomery and Prince Georges County Chapters of the Delta Kappa Gamma Society.

F. DOUGLASS SEARS INSURANCE SCHOLARSHIP—Scholarships for Maryland students preparing for careers in the insurance industry are made available annually from a fund established by friends and associates of former State Insurance Commissioner F. Douglass Sears.

SEARS ROEBUCK FOUNDATION SCHOLARSHIPS—A limited number of grants from the Sears Roebuck Foundation are available for students in the College of Home Economics.

SOUTHERN STATES COOPERATIVE SCHOLARSHIPS—Two scholarships are awarded each year to sons of Southern States members—one for outstanding work in 4-H Club and the other for outstanding work in FFA. The amount of each scholarship is \$300 per year and will continue for four years.

ADELE H. STAMP SCHOLARSHIP—This scholarship of \$250 is awarded annually to a sophomore who is an active sorority member or pledge, who is outstanding in leadership and scholarship and who needs financial assistance. Funds for this scholarship are provided by the University of Maryland Panhellenic Association.

JANE G. S. TALIAFERRO SCHOLARSHIP—Under the

terms of the will of the late Jane G. S. Taliaterra who bequested a portion of her estate to the University of Maryland to provide scholarship aid to worthy students.

TAU BETA PI SCHOLARSHIP FUND—A limited number of scholarships are made available each year to worthy engineering students by members and alumni of Maryland Beta Chapter of Tau Beta Pi Association, Inc., national engineering honor society.

UNIVERSITY WOMEN'S CLUB, INC. MEMORIAL SCHOLARSHIP FUND—A scholarship of \$150 is awarded each year to a junior or senior woman student on the basis of academic record, financial need, and qualities of leadership and character. The funds are contributed by the Memorial Fund Committee of the University Women's Club of Washington, D.C.

JOSEPH M. VIAL MEMORIAL SCHOLARSHIP IN AGRICULTURE—Scholarships totaling \$600 per year are made available by Mr. and Mrs. A. H. Seidenspinner to be awarded upon the recommendation of the College of Agriculture.

WESTERN ELECTRIC SCHOLARSHIP—Two scholarships are awarded to students in the College of Engineering. The amount of the scholarship covers cost of tuition, books and fees not to exceed \$800 nor to be less than \$400.

WESTINGHOUSE AIR ARM DIVISION SCHOLARSHIP—The Westinghouse Electric Corporation has established a scholarship to encourage outstanding students of engineering and the physical sciences. The scholarship is awarded to a sophomore student and is paid over a period of three years in six installments of \$250. Students in electrical or mechanical engineering, engineering physics or applied mathematics are eligible for the award.

WOMEN'S CLUB OF BETHESDA SCHOLARSHIP—Several scholarships are available to young women residents of Montgomery County. Recipients must be accepted in the College of Education or the College of Nursing.

NICHOLAS BRICE WORTHINGTON SCHOLARSHIP—A \$500 memorial scholarship is made available to a student in the College of Agriculture by the descendants of Nicholas Brice Worthington, one of the founders of the Agricultural College.

THE ARTHUR YOUNG AND CO. FOUNDATION, INC. SCHOLARSHIP—The Arthur Young and Co. Foundation, Inc., makes available a scholarship of \$750 for an exceptional senior student concentrating in accounting.

STUDENT LOANS

NDEA STUDENT LOANS—Loan funds are available under provision of the National Defense Education Act. The borrower must sign a note for the loan and agree to interest and repayment terms established by the University. Repayment of the loan begins nine months after the borrower ceases to be a full-time student and must be completed within ten years thereafter. No interest is charged on the loan until the beginning of the repayment schedule. Interest after that date is to be paid at 3 percent per annum.

If the borrower becomes a full-time teacher (elementary, secondary or college), ten percent of the loan can be cancelled for each year of teaching, not to exceed 50 percent of the loan. However, if the teaching involves handicapped

students or is in a predominantly low income area school, fifteen percent annual cancellation is allowed to the full amount of the loan.

CATHERINE MOORE BRINKLEY LOAN FUND—Under the will of Catherine Moore Brinkley, a loan fund is available for worthy students who are natives and residents of Maryland.

KEA STUDENT LOAN FUND—A loan fund has been established by gifts from Mr. and Mrs. Paul H. Kea. The purpose of the fund is to make non-interest bearing loans of an emergency nature to students who are helping to earn the expenses of their education.

JOSEPH W. KINGHORN AND MORLEY A. JULL FUNDS—Memorial trust funds have been established in honor of Joseph W. Kinghorn, first graduate of the University of Maryland Poultry Department. These funds are available as loans to students enrolled in the Poultry Department.

EDNA B. MC NAUGHTON MEMORIAL LOAN FUND—This fund has been established by Mrs. W. B. Clayton in memory of Edna B. McNaughton, who initiated and developed the program in Early Childhood Education at the University of Maryland. Priority is given to students enrolled in this program.

PHI DELTA GAMMA LOAN FUND—This fund has been established under essentially the same terms and conditions as the NDEA loans. Recipients must be recommended by the Sigma Chapter of the Phi Delta Gamma Sorority.

JAN STEVEN AND SIDNEY RAPKE MEMORIAL LOAN FUND—This fund has been established in memory of Jan Steven Rapke by his parents. Short-term, interest free loans are available to students in good standing to meet personal emergencies as they arise. It is the wish of the donors that the fund be administered with a minimum of formality.

UNITED STUDENT AID FUNDS—Loans up to \$1,000 per year are available from many banks to students at the University. Maximum interest on such loans is 7 per cent simple. Monthly installments are usually not less than \$25 nor more than \$100. Repayment begins ten months after the student ceases to be a full-time student.

SIEGFRIED E. WEISBERGER, JR. MEMORIAL FUND—A memorial trust fund has been established in honor of Siegfried Weisberger, Jr., a Freshman student in Agriculture in 1958-59. Under terms of this loan, students in Agriculture may borrow money without interest for short term needs.

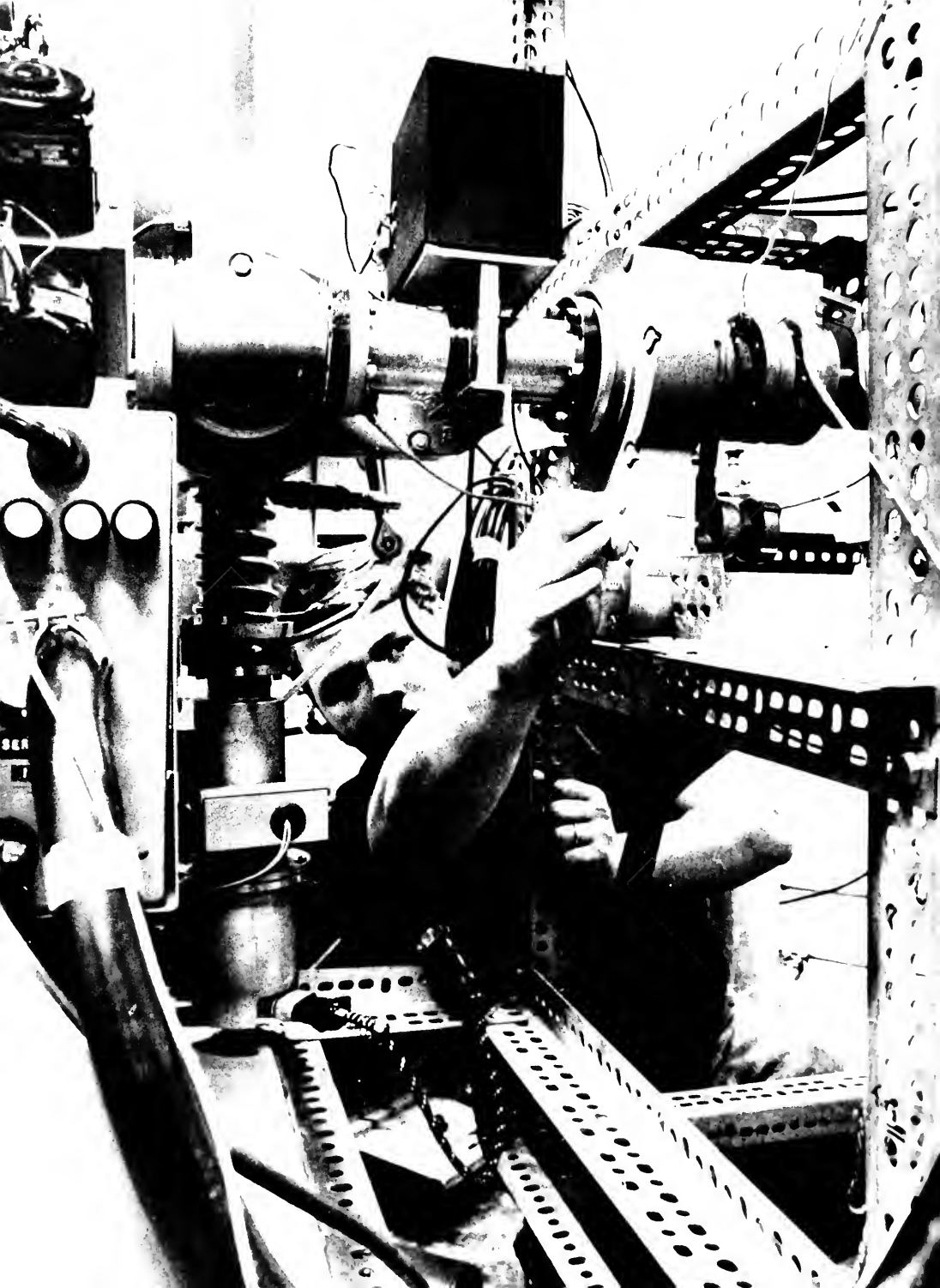
PART-TIME EMPLOYMENT

UNIVERSITY EMPLOYMENT—The University offers dining hall and dormitory workshops permitting selected Maryland residents to earn part or all of their board and room. Other jobs on campus pay hourly rates according to the skill and education required.

OFF-CAMPUS EMPLOYMENT—A file of off-campus part-time jobs is maintained. Most of these are with local stores and business firms.

COLLEGE WORK-STUDY PROGRAM—Part-time employment during the school year plus full-time employment during the summer may be combined with scholarships and loans to provide educational opportunities to qualified students.





THE COLLEGES and SCHOOLS

This section of the Catalog provides information for undergraduates concerning the University of Maryland's schools and colleges. Included in this section are the individual college requirements and policies for particular programs of study. Each college has a general statement of purpose or role within the University; the organizational structure of the college; the undergraduate programs including specific requirements for admission and graduation in addition to the all-University requirements listed in the General Information Section of the Catalog; a description of degree programs; and course descriptions.

Courses numbered from 001 to 099 are open to undergraduate students who meet the stated prerequisite and curriculum requirements.

Courses numbered from 100 to 199 are open to juniors and seniors with the stated prerequisites. Under some conditions, second-semester sophomores may register for 100-level courses with the Dean's approval. Graduate students may take 100-level courses for credit, subject to departmental and Graduate School regulations.

Courses numbered 200 and above are for graduate students only, except in exceptional cases approved by the Dean of the college and the Dean of the Graduate School.

THE COLLEGE OF AGRICULTURE offers educational programs with a broad cultural and scientific base. Students are prepared for careers in Agricultural related sciences, technology, and business.

The application of advanced knowledge to the solution of some of man's most critical problems concerning adequate amounts and quality of food, and the quality of environment in which he lives, are important missions of the College.

This original Division of the University of Maryland at College Park was chartered in 1856. The College has a continuous record of leadership in education since that date. It became the beneficiary of the Land-Grant Act of 1862. Since that time, there has been a merger with the University of Maryland in Baltimore and continuous growth with additions of other Colleges and Departments at College Park.

The College of Agriculture continues to grow and develop as part of the greater University Complex, providing education and research activities enabling man to use his environment and natural resources to best advantage while conserving basic resources for future generations.

ADVANTAGES OF LOCATION AND FACILITIES:

Educational opportunities in Agriculture are enhanced by the nearby location of several research units of the Federal Government. Of particular interest is the Agricultural Research Center at Beltsville and the U. S. Department of Agriculture Headquarters in Washington, D. C. The National Agricultural Library is an important resource for information at the Beltsville location.

Related Research Laboratories of the National Institutes of Health, Military Hospitals, NASA, and the National Bureau of Standards are in the vicinity.

Interaction among faculty, students, and personnel in these agencies is encouraged. Many teaching and research activities are conducted with the cooperation of scientists and professional people in Government positions.

Instruction in the basic sciences and cultural, social and economic engineering principles is carried out in well designed classrooms and laboratories on the campus. The application of basic principles to practical situations is demonstrated for the student in numerous ways. New buildings, with well designed laboratories, have been provided for both the Plant and Animal Sciences in recent years.

Modern greenhouses are available for breeding and propagation of a wide variety of plant work on the control of weeds and improved cultural practices.

Herds of dairy and beef cattle, and swine and flocks of poultry and sheep are kept on the campus for teaching and research purposes.

Several operating farms, located in central Maryland and on the Eastern Shore support the educational programs in Agriculture by providing locations where important crops, animals and poultry can be grown and maintained under practical and research conditions. These farms add an important dimension to the courses offered in Agriculture. Data from these operations and from cooperating producers and processors of agricultural products are utilized by students interested in economics, teaching, engineering and conservation, as they relate to Agriculture, as well as by those concerned with biology or management of agricultural crops and animals.

GENERAL INFORMATION

The College of Agriculture offers programs lead-

ing to a wide variety of rewarding careers. These curricula prepare the student for useful, informed citizenship, with a basic understanding of science in general, and with a concentration on the science and business of agriculture in particular. All four-year programs lead to the Bachelor of Science degree.

Today's agriculture is a highly complex and extremely efficient industry which includes supplies and services used in agricultural production, the production process itself, and the marketing, processing and distribution of products to meet the consumers' needs and wants.

Instruction in the College of Agriculture includes the fundamental sciences and emphasizes the precise course information that its graduates must employ in the industrialized agriculture of today, and helps develop the foundation for their role in the future. Course programs in specialized areas may be tailored to fit the particular needs of the individual student.

Previous training in agriculture is not a prerequisite for matriculation. Careers for men and women with rural, suburban, or urban backgrounds are available in agriculture and its allied industries.

Graduates of the College of Agriculture have a broad base for careers and continued learning after college in business, production, teaching, research, extension, and many other professional fields.

REQUIREMENTS FOR ADMISSION

The requirements for admission to the College of Agriculture are the same as those of the University. An applicant is required to have graduated from high school and completed a minimum of: English 4 units; mathematics, preferably algebra 1 unit; history or social science 1 unit; and natural science 1 unit. A foreign language is not required for entrance; however, two or more units are desirable.

For students entering the College of Agriculture it is recommended that his high school preparatory courses should include: English 4 units; mathematics 3 units; biological and physical sciences 3 units and history or social sciences 2 units. Four units of mathematics should be elected for students entering Agricultural Engineering or Agricultural Chemistry.

JUNIOR STANDING

To earn junior standing a student must complete 56 credit hours of academic work and attain the required grade point average.

REQUIREMENTS FOR GRADUATION

Each student must complete at least 120 credit hours in academic subjects with a minimum g4ade point average of 2.0 (C). University requirements in health and physical education must be satisfied, in addition.

HONORS PROGRAM

Honors programs are approved for majors in Agricultural Economics and Botany. The objective of the honors programs is to recognize superior scholarship and to provide opportunity for the excellent student to broaden his perspective and to increase the depth of his studies.

These programs are administered by Departmental Honors Committees and supervised by the College Committee on Honors. Students in the Col-

lege of Agriculture, who are in the top 20 per cent of their class at the end of their first year, may be considered for admission into the Honors Program. Of this group up to 50 per cent may be admitted.

Sophomores or first semester juniors will be considered upon application from those students in the upper 20 per cent of their class. While application may be made until the student enters his sixth semester, early entrance into the program is recommended. Students admitted to the program enjoy certain academic privileges.

On the basis of the student's performance during his participation in the Honors Program, the department may recommend the candidate for the appropriate degree with (departmental) Honors, or for the appropriate degree with (departmental) High Honors. Successful completion of the Honors program will be recognized by a citation in the Commencement Program and by an appropriate entry on the student's record and diploma.

FACULTY ADVISEMENT

Each student in the College of Agriculture is assigned to a faculty adviser. Advisors normally work with a limited number of students and are able to give individual guidance. The faculty will assist students in obtaining employment providing practical or technical experience for those in need of such experience.

FRESHMAN YEAR

The program of the freshman year is similar for all curricula of the College of Agriculture. During the first year the student obtains a broad foundation in subjects basic to agriculture and the related sciences. Transfer from one curriculum to another, or from the College of Agriculture to another college of the University may be made by the end of the freshman year usually with little or no loss of credit.

Students entering the freshman year with a definite choice of curriculum are assigned to departmental advisors for counsel and planning of an academic program. Students entering the freshman year, who have not selected a definite curriculum, are assigned to a general advisor who assists with the choice of freshman electives and, during the course of the year, acquaints students with opportunities in the curricula in the College of Agriculture and in other divisions of the University. If by the close of the freshman year a student makes no definite choice of a specialized curriculum, he continues under the guidance of his advisor in the General Agriculture curriculum.

SCHOLARSHIPS

A number of scholarships are available for agricultural students. These include awards granted by the Dr. Ernest N. Cory Trust Fund, the Danforth Foundation, Joseph M. Vial Memorial Scholarship Program in Agriculture, Maryland Cooperative Milk Producers, Inc., Maryland and Virginia Milk Producers, Inc., the Ralston Purina Company, Southern States Cooperative, Inc., Bayshore Foods, Inc., Dairy Technology Society of Maryland and District of Columbia, Peninsula Horticultural Society, and The Staley and Eugene Hahn Memorial Scholarship Fund.

These scholarships are awarded by the Faculty Committee in accordance with the terms of the respective grants. For more detailed information about these awards see section on financial aid.

STUDENT ORGANIZATIONS

Students find opportunity for varied expression and growth in the several voluntary organizations sponsored by the College of Agriculture. These organizations are: Agricultural Economics Club, Block and Bridle, Dairy Science Club, Collegiate 4-H Club, Future Farmers of America, Agronomy Club, and the Veterinary Science Club.

Alpha Zeta is a national agricultural honor fraternity. Members are chosen from students in the College of Agriculture who have attained the scholastic requirements and displayed leadership in agriculture.

The Agricultural Student Council is made up of representatives from the various student organizations in the College of Agriculture. Its purpose is to coordinate activities of these organizations and to promote work which is beneficial to the College.

REQUIRED COURSES

All students in the College of Agriculture are required to complete a series of courses to satisfy the University General Education requirements, College requirements and departmental requirements. The courses needed to complete a program of study are selected by the student with the approval of his advisor.

	Semester Credit Hours
University Requirements	
ENGL 001 or 021—Composition of Honors Composition	3
ENGL 003,004—World Literature	6
Social Science	6
History	6
Mathematics	3
Fine Arts or Philosophy	3
HLTH 005—Science and Theory of Health	2
Physical Education	2
Air Science (Optional)	2

COLLEGE OF AGRICULTURE REQUIREMENTS

Courses selected from the basic life sciences, physical sciences and mathematics	16
SPCH 007—Public Speaking	2
AGRI 001—Introduction to Agriculture	1
Department Requirements	74

	Semester	
	I	II
Freshmen	1	1
ENGL 001 or 021—Composition or Honors Composition	3	3
Social Science	3	3
AGRI 001—Introduction to Agriculture	1	1
BOTN 001—General Botany	4	4
ZOOL 001—General Zoology	3	4
ANSC 001—Principles of Animal Science	3	2
ARGO 001—Crop Production	3	3
Mathematics	3	3
Health	2	2
Arts or Philosophy	1	3
Physical Education	1	1
Air Science (Optional)	1	1

The College of Agriculture science requirement will be satisfied by completing the following courses:

BOTN 001—General Botany	4
CHEM 008,009—College Chemistry I, II	4.4
ZOOL 001—General Zoology	4

AGRICULTURE—GENERAL

The general agricultural curriculum provides for the development of a broad understanding in agriculture.

The flexibility of this curriculum permits selection of electives that will meet individual vocational plans in agriculture and agriculturally related business and industry.

	Semester Credit Hours
General Agricultural Requirements	
AGEC 051—Elements of Agricultural Economics	3
AGEC 051—Marketing of Agricultural Products	3
AGEN 056—Introduction to Farm Mechanics	2
AGEN 001—Introduction to Agricultural Engineering	4
AGRO 010—General Soils	4
AGRO 107—Cereal Crop Production	3
AGRO 108—Forage Crop Production	3
AGRO 151—Cropping System	2
ANSC 001—Principles of Animal Science	3
ANSC 010—Feeds and Feeding	3
ANSC 040—Dairy Production	3
ANSC 062—Commercial Poultry Management	3
BOTN 020—Diseases of Plants	4
ENTM 020—Insect Pests of Agricultural Crops	4
HORT 005 or 058—General Horticulture	3
RLED 114—Rural Life in a Modern Society	3

Elect either of the following pairs of courses:

BOTN 117—General Plant Genetics and	
MICB 001—General Microbiology	2.4
or	
BSAD 020,021—Principles of Accounting	3.3
Electives	18

AGRICULTURAL CHEMISTRY

This curriculum insures adequate instruction in the fundamentals of both the physical and biological sciences. It may be adjusted through the selection of electives to fit the student for work in agricultural experiment stations, soil bureaus, geological surveys, food laboratories, fertilizer industries and those handling food products.

The College of Agriculture science requirement will be satisfied by completing 16 credit hours from the following courses:

	Semester Credit Hours
BOTN 001—General Botany	4
MICB 001—General Microbiology	4
ZOOL 001—General Zoology	4
and	
CHEM 008,009—College Chemistry I, II	4.4

Required of all students:

CHEM 014—College Chemistry IV	3
CHEM 016—College Chemistry IV Laboratory	2
CHEM 010—College Chemistry III	3
CHEM 012—College Chemistry III Laboratory	2
CHEM 123—Advanced Quantitative Analysis or	3
CHEM 121—Intermediate Quantitative Analysis	4
AGRO 010—General Soils	4
GEOL 001—Geology	3
MATH 020—Analysis I	4
MATH 021—Analysis III	4
Modern Languages	12
PHYS 030—General Physics	3
PHYS 031—General Physics	4
PHYS 032—General Physics	4
Electives in Biology	6
Electives in Agricultural Chemistry	6

AGRICULTURAL ECONOMICS

The curriculum combines training in the business, economics, and international aspects of agricultural production and marketing with the biological and physical sciences basic to agriculture. Programs are available for students in agricultural economics, agricultural business, international agriculture, and in agribusiness teaching. Students desiring to enter agricultural marketing or businesses affiliated with agriculture may elect the agricultural business option; and those interested in foreign service may elect the international agriculture option. Students primarily interested in the broad aspects of production and management as it is related to the operation of a farm business may elect the agricultural economics option. Those interested in training in agri-

business and also in becoming certified teachers should elect the agribusiness teaching option. In these programs, students are trained for employment in agricultural business firms for positions in sales or management, for local, state, or federal agencies, extension workers, high school and college teachers, researchers, farm operators or farm managers.

Courses for the freshman and sophomore years are essentially the same for all students. In the junior year the student selects the agricultural economics, agricultural business, international agriculture, or agribusiness teaching option according to his particular interest. Courses in this Department are designed to provide training in the application of economic principles to the production, processing, distribution, and merchandising of agricultural products as well as the inter-relationship of business and industry associated with agricultural products. The curriculum includes courses in general agricultural economics, marketing, farm management, prices, resource economics, agricultural policy, and international agricultural economics.

The College of Agriculture science requirement will be satisfied by completing 16 credit hours from the following courses:

	Semester Credit Hours
BOTN 001—General Botany	4
CHEM 008,009—College Chemistry I, II	4,4
MATK 014,015—Elementary Calculus	3,3
MICB 001—General Microbiology	4
PHYS 001—Elements of Physics	3
ZODL 001—General Zoology	4
AGCE 050—Elements of Agricultural Economics	3
AGCE 051—Marketing of Agricultural Products	3
AGCE 106—Prices of Agricultural Products	3
AGCE 108—Farm Management	3
AGCE 112—Agricultural Policy and Programs	3
AGCE 114—World Agricultural Production and Trade	3
AGCE 199—(A or B) Seminar	1
AGEN 001—Introduction to Agricultural Engineering	3
AGRO 011—Crop Production	2
or	
AGRO 010—General Soils	4
ANSC 001—Principles of Animal Science	3
or	
ANSC 010—Feeds and Feeding	3
BSAD 130—Business Statistics I	3
or	
AGRI 080—Introductory Agricultural Biometrics	3
ECON 032—Principles of Economics II	3
MATH 011—Introduction to Mathematics	3

Select a minimum of 6 hours from the following:

ECON 102—National Income Analysis	3
ECON 130—Mathematical Economics	3
ECON 131—Comparative Economic Systems	3
ECON 132—Intermediate Price Theory	3
ECON 140—Money and Banking	3

Agricultural Business Option

Students must complete each of the following:

	Semester Credit Hours
AGCE 103—Introduction to Agricultural Business Management	3
AGCE 118—Marketing Management of Agribusiness Enterprises	3
BSAD 020—Principles of Accounting	3

After consulting with the advisor, students may select additional courses from:

AGCE 117—Agricultural Commodity Markets: An Economic Analysis	3
BSAD 021—Principles of Accounting II	3
BSAD 149—Marketing Principles and Organization	3
BSAD 156—Marketing Research Methods	3
BSAD 163—Labor Relations	3
BSAD 166—Business Communications	3
BSAD 180—Business Law	3

Agricultural Economics Option

After consulting with your advisor, select at least 9 credit hours from the following:

	Semester Credit Hours
AGCE 103—Introduction to Agricultural Business Management	3
AGCE 111—Economics of Resource Development	3
AGCE 107—Financial Analysis of the Farm Business	3
BSAD 020—Principles of Accounting I	3
BSAD 021—Principles of Accounting II	3
MATH 014—Elementary Calculus	3
MATH 015—Elementary Calculus II	3

Agribusiness Teaching Option

Students must complete each of the following:

EDUC 110—Human Development and Learning	6
EDUC 111—Foundations of Education	3
RLED 101—Teaching Materials and Demonstrations	5
RLED 103—Student Teaching	5
RLED 104—Student Teaching	1,4
RLED 107—Introduction to Agricultural Education	3
RLED 109—Teaching Secondary Vocational Agriculture	3
RLED 111—Teaching Young and Adult Former Groups	3
RLED 114—Rural Life in Modern Society	3

Students may elect remaining courses from Agricultural Sciences or Social Sciences

International Agriculture Option

After consulting with advisor, students should select at least 10 credit hours from the following:

AGCE 103—Introduction to Agricultural Business Management	3
AGCE 111—Economics of Resource Development	3
AGCE 119—Foreign Agricultural Economics	3
BOTN 020—Diseases of Plants	3
BOTN 117—General Plant Genetics	3
ENTM 015—Introductory Entomology	3
GEOG 010—General Geography	3
GEOG 041—Climatology	3
GEOI 001—Geology	3
Foreign Language	6

AGRICULTURAL AND EXTENSION EDUCATION

This Department offers instruction in education and other applied behavioral sciences needed by persons preparing to teach agriculture, to enter Extension work and other activity of an educational nature.

Two undergraduate curriculum options are available. The agricultural education curriculum is designed primarily for persons who wish to prepare for teaching agriculture in the secondary schools. The agricultural extension education curriculum is designed for those preparing to enter the Cooperative Extension Service. Either option may lead to a variety of other educational career opportunities in agricultural business and industry, public service, communications, and to research and college teaching.

Students preparing to become teachers of agriculture — including horticulture, agribusiness, or other agricultural related subjects — should have had appropriate experience with the kind of agriculture they plan to teach or should arrange to secure that experience during summers while in college.

In order to be admitted to student teaching or to extension field experience, each of which normally is taken in the senior year, a student must have a 2.3 grade point average or higher.

Students in the agricultural education curriculum are expected to participate in the Collegiate Chapter of the Future Farmers of America in order to gain needed training to serve as advisors of high school chapters of the FFA upon graduation.

The College of Agriculture science requirement will be satisfied by completing 16 credit hours from the following courses:

	Semester Credit Hours
BOTN 001—General Botany	4
CHEM 008,009—College Chemistry I, II	4,4
MATH 003—Fundamentals of Math	4
ZODL 001—General Zoology	4

Departmental Requirements, Both Options	
ANSC 001—Principles of Animal Science	3
ANSC 010—Feeds and Feeding	3
AGRO 001—Crop Production, or	
AGRO 108—Forage Crop Production	2
AGRO 010—General Soils	4
AGEN 001—Introduction to Agricultural Engineering	4
AGEC 107—Financial Analysis of the Farm Business, or	
AGEC 108—Farm Management	3
RLED 114—Rural Life in Modern Society	3
RLED 101—Teaching Materials and Demonstrations	2
ENTM 020—Insect Pests of Agricultural Crops	4
BOTN 020—Diseases of Plants	4
HORT 011—Greenhouse Management, or	
HORT 058—Vegetable Production, or	
HORT 062—Plant Propagation	3
ENGL 014—Expository Writing	3

Agricultural Education Option

RLED 103—Student Teaching	5
RLED 104—Student Teaching	1-4
RLED 107—Introduction to Agricultural Education	2
RLED 109—Teaching Secondary Vocational Agriculture	3
RLED 111—Teaching Young and Adult Farmer Groups	1
EDUC 110—Human Development & Learning	6
EDUC 111—Foundations of Education	3
AGEN 056—Introduction to Farm Mechanics	2
AGEN 104—Farm Mechanics	2
Approved Electives	12

Agricultural Extension Option

RLED 150—Extension Education	2
RLED 160—Extension Communications	2
RLED 161—4-H Organization and Procedure	2
RLED 121—Directed Experience in Extension Education	1-5
PSYC 001—Introduction of Psychology	3
PSYC 021—Social Psychology	3
PSYC 110—Educational Psychology	3
AGEC 111—Economics of Resource Development	3
Approved Electives	18

AGRICULTURAL ENGINEERING

Agricultural engineering utilizes energy and materials to enhance agricultural and aquacultural production. Virtually all efforts are oriented towards increased food production or preservation. An understanding of soil, plant, and animal science is the basis for applications of engineering in all phases of production, harvesting, processing and utilization of plant, avian or animal products.

Interrelated applications of engineering disciplines are found in agriculture or even on a single, diversified farm necessitating a broad base of mathematical, physical, and engineering sciences complemented by basic biological and soil science. Students may specialize in one of four major areas and, upon graduation, receive the degree of Bachelor of Science in Agricultural Engineering.

Power and machinery specialization is oriented towards energy conversion and related machines for tillage, harvesting, transporting and processing of biological products. Farmstead engineering is concerned with functional aspects of structures with particular attention to environmental requirements of birds, plants, or animals and also with material handling systems to optimize labor efficiency. Electric power and processing is concerned with automation of the farmstead, and with the physical properties of biological materials as this knowledge is basic to design criteria for heating, cooling, or change of state. The area of soil and water conservation engineering is oriented towards applications of hydraulics and soil physics in irrigation, drainage, erosion control, water resources management, and abatement of pollution from agricultural operations. The above areas are well defined in agricultural engineering — a developing program is the relationship of these land-based activities to the aquatic environment or aquacultural engineering.

Employment opportunities include farm operation or management, machinery design and development, structural design and construction, process and systems development, land development, and natural resource planning. These opportunities may be in education, research, development, or operations with private industry, and with local, state, or federal agencies throughout the world.

The Department also offers courses in agricultural engineering technology in five general areas primarily for students in the College of Agriculture. These areas are power and machinery, structures, soil and water conservation engineering, electrification, materials handling and processing, and farm mechanics. The technological aspects of these courses complement other curricula of the College of Agriculture.

The agricultural engineering curriculum provides considerable flexibility and places responsibility on the student and the advisor. Twenty semester hours of elective subjects are permitted. Fourteen semester hours must be related to the student's major field of concentration and be taken from a departmentally approved list. A minimum of eight semester hours must be at the 100 level. The total number of semester hours, including health and physical education, required for graduation is 134.

The College of Agriculture science requirement will be satisfied by completing the following:

	Semester Credit Hours
CHEM 008,009—College Chemistry I, II	4,4
PHYS 030,031,032—General Physics	3,4,4

Departmental Requirements

AGEN 121—Engineering Dynamics of Biological Materials	3
AGEN 142—Functional and Environmental Design of Agricultural Structures	3
AGEN 143—Functional Design of Machinery and Equipment	3
AGEN 144—Power Systems	3
AGEN 145—Soil and Water Engineering	3
ENCE 102,103—Structural Analysis	3,3
ENES 001—Intro Engineering Science	3
ENES 010—Mechanics	3
ENES 020—Mechanics of Materials	3
ENES 021—Dynamics	3
ENES 030 or ENES 050—Materials Science	3
ENME 060—Thermodynamics	3
ENME 102 or ENCE 105—Fluid Mechanics	3
ENEE 060—Prin. of Electrical Engineering	3
MATH 019,020—Analysis I, II	4,4
MATH 021,066—Analysis III & Differential Equations	4,3
ZOOL 001—General Biology	3
or	
BOTN 001—General Botany	4
Electives	20

AGRONOMY—CROPS AND SOILS

The Department of Agronomy offers instruction in production and breeding of forage crops, cereal crops, and tobacco; weed control; turf management; soil chemistry; soil fertility; soil physics; soil mineralogy; soil classification; and soil conservation. A technical or a general curriculum may be elected by a student in either crops or soils. A turf option is available in the general crops curriculum and a soil conservation option is available in the general soils curriculum. The technical curricula provide training in basic courses which will increase the student's understanding of the applied crops and soils courses. Training in these basic courses is required for advanced work in agronomy and is

desired by many employers of students graduating in agronomy.

General curricula in crops and soils permit the student to confine his training to applied courses but students following these curricula are encouraged to elect some of the basic courses included in the technical curricula.

Depending on the electives chosen, students graduating in agronomy are well prepared for advanced study, trained for general farming, farm management, specialized seed production, extension work, soil conservation, or employment with commercial seed, fertilizer, chemical, or farm equipment companies. Turf specialists are in demand by park and road commissions, golf courses, and turf and landscape companies.

Additional information on opportunities in agronomy may be obtained by writing to the Department of Agronomy.

CROPS

The College of Agriculture science requirement will be satisfied by completing CHEM 008 and 009, College Chemistry I, II and selecting 8 semester credit hours from the following courses:

	Semester Credit Hours
BOTN 001—General Botany	4
MICB 001—General Microbiology	4
ZOOL 001—General Zoology	4
or	
other courses selected from CHEM, MATH or PHYS	

Departmental Requirements (Crops)

AGRO 002—Crop Production Laboratory	2
AGRO 010—General Soils	4
AGRO 107—Cereal Crop Production	2
AGRO 108—Forage Crop Production	2
AGRO—Advanced Soils Courses	6
AGRO 199—Senior Seminar	1
BOTN 011—Plant Taxonomy	3
BOTN 020—Diseases of Plants	4
BOTN 117—General Plant Genetics or	
ZOOL 006—Genetics	2 or 4
BOTN 101—Plant Physiology	4
Technical Courses for Agronomy Students or	28
General Courses for Agronomy Students	12
(see explanation and lists below)	12
Electives (Technical Crops curriculum) or	15
Electives (General Crops and Turf Management curricula)	31

SOILS

Students will select 28 hours from the technical group. If the student desires to take more than 28 semester hours of technical courses they can be used as part of his 15 hours of electives or they can be substituted for other Department of Agronomy requirements with permission of the crops advisor.

GENERAL CROPS AND TURF MANAGEMENT CURRICULA

Students will select 12 hours from the General Courses listed below. Students in the turf management option must elect AGRO 109—Turf Management, HORT 020—Introduction to the Art of Landscaping, and HORT 107—Woody Plant Materials.

The College of Agriculture science requirement will be satisfied by completing CHEM 008 and 009, College Chemistry I, II and selecting 8 semester credit hours from the following courses:

	Semester Credit Hours
BOTN 001—General Botany	4
MICB 001—General Microbiology	4
ZOOL 001—General Zoology	4
or	
other courses selected from CHEM, MATH or PHYS	

Departmental Requirements (Soils)

AGRO 002—Crop Production Laboratory	2
AGRO 010—General Soils	4

AGRO 107—General Crop Production	2
AGRO 108—Forage Crop Production	2
AGRO 114—Soil Classification and Geography	4
AGRO 116—Soil Chemistry	3
AGRO 117—Soil Physics	3
AGRO—Additional Agronomy or Geology courses	6
AGRO 199—Senior Seminar	1
GEOL 001—Geology	3
GEOL 004—Physical Geology Laboratory	1
Technical courses for Agronomy students or	28
General courses for Agronomy students	12
(see explanation and lists below)	
Electives (Technical Curriculum) or	15
Electives (General Soils and Soil Conservation Curricula)	31

GENERAL SOILS AND SOIL CONSERVATION CURRICULA

Students will select 12 hours from the general course listed below. Students in soil conservation must elect AGRO 113—Soil Conservation, and BOTN 010—Principles of Conservation.

Technical Courses which may be selected by crops and soils students:

	Semester Credit Hours
CHEM Additional Chemistry	8
MATH Additional Mathematics	12
PHYS General Physics	8

If the student elects more than 28 hours of technical courses they should be advanced courses in the above areas.

General Courses which may be selected by crops and soils students:

	Semester Credit Hours
AGEN Agricultural Engineering	3
AGEC Agricultural Economics	3
ANSC Animal Science	3
HORT Horticulture	3

These courses may be replaced by courses from the technical group with permission of the advisor.

ANIMAL SCIENCE

The curriculum in animal science offers a broad background in general education, basic sciences, agricultural sciences and the opportunity for a student to emphasize that phase of animal agriculture in which he is specifically interested. Each student will be assigned to an advisor according to the program he plans to pursue.

OBJECTIVES

In addition to fulfilling the requirements of the University and the College of Agriculture, the following specific objectives have been established for the program in animal science:

1. To acquaint students with the role of animal agriculture in our cultural heritage.
2. To prepare students for careers in the field of animal agriculture. These include positions of management and technology associated with animal, dairy, or poultry production enterprises, positions with marketing and processing organizations, as well as in other allied fields such as feed, agricultural chemicals and equipment.
3. To prepare students for entrance to veterinary schools.
4. To prepare students for graduate study and subsequent careers in teaching, research and extension, both public and private.
5. To provide essential courses for the support of other academic programs of the University.

The College of Agriculture science requirement will be satisfied by completing CHEM 008 and 009, College Chemistry I, II and selecting 8 semester credit hours from the following courses:

Departmental Requirements

	Semester Credit Hours
BOTN 001—General Botany	4
MICB 001—General Microbiology	4
ZOOL 001—General Zoology	4
ANSC 001—Principles of Animal Science	3
ANSC 109—Fundamentals of Nutrition	3
ANSC 116—Anatomy of Domestic Animals	3
ANSC 117—Introduction to Diseases of Animals	3
ANSC 141—Applied Animal Physiology	4
Genetics	3
Agronomy	3
Agricultural Engineering	4
Insect Pests of Agriculture	4
Economics	3
Organic Chemistry	3
Physics	3
Math. and/or Biometrics	6
Electives	27

For students interested in a program of study with major emphasis on beef cattle, sheep, and swine, it is suggested that the elective courses include the following:

	Semester Credit Hours
ANSC 020—Fundamentals of Animal Production	3
ANSC 021—Seminar	1
ANSC 022—Livestock Evolution	3
ANSC 110—Applied Animal Nutrition	3
ANSC 120—Advanced Livestock Judging	2
ANSC 121—Meat	3
ANSC 122,123—Livestock Management	6
ANSC 130—Principles of Breeding	3

For students interested in a program of study with major emphasis on dairying, it is suggested that the elective courses include the following:

ANSC 040—Dairy Production	3
ANSC 041—Dairy Cattle Type Appraisal	1
ANSC 140—Physiology of Mammalian Reproduction	3
ANSC 142—Dairy Cattle Breeding	3

For students interested in a program of study with a major emphasis on poultry, it is suggested that the elective courses include the following:

ANSC 061—Advanced Poultry Judging	1
ANSC 062—Commercial Poultry Mgt.	3
ANSC 165—Physiology of Hatchability	1
ANSC 170—Poultry Hygiene	3
ANSC 171—Avian Anatomy	3
AGEC 117—Agricultural Commodity Markets	2

Students desiring a combination of training in one of the animal sciences and emphasis on business, may choose elective courses from the following:

BSAD 010—Business Enterprise	3
BSAD 020—Principles of Acct.	3
BSAD 130—Business Statistics	3
BSAD 180—Business Law	3
BSAD 166—Business Communication	3
MATH 010—Introduction to Math	3
ECON 037—Fundamentals of Econ.	3
ECON 140—Money and Banking	3
BSAD 149—Marketing Principles and Organization	3
AGR 101—Agricultural Biometrics	3

BOTANY

The Department offers work in the major fields of Physiology, Pathology, Ecology, Taxonomy, Anatomy-Morphology, and Genetics.

The required courses for the freshman and sophomore years are the same for all students. In the junior and senior years, the student elects botany courses to suit his particular interest. Courses are required in other subjects to contribute toward a broad cultural education, and to support the courses selected in the chosen field of botany.

The curriculum provides a complete survey of the field of botany for prospective high school

teachers, and lays a good foundation for graduate work in botany in preparation for college teaching and for research in state or federal experiment stations, or in private research laboratories.

Students who wish to meet the requirements for certificates in secondary education may elect basic courses in education. An additional semester will usually be necessary to take certain courses in education, including the required practice teaching. As long as the demand continues, a series of advanced courses will be offered in rotation in the summer session especially for teachers working toward the degree Master of Education in science teaching.

The Department of Botany has instituted an Honors Program which a student may enter if he desires and if he meets the requirements of the program.

The College of Agriculture science requirement will be satisfied by completing the following courses

BOTN 001—General Botany	4
CHEM 008,009—College Chemistry I, II	4,4
ZOOL 001—General Zoology	4

Department of Botany Requirements

	Semester Credit Hours
BOTN 002—General Botany	4
BOTN 011—Plant Taxonomy	3
BOTN 020—Diseases of Plants	4
BOTN 101—Plant Physiology	4
BOTN 102—Plant Ecology	2
BOTN 103—Plant Ecology Laboratory	1
BOTN 111—Plant Anatomy	3
BOTN 117—General Plant Genetics	2
BOTN 199—Seminar	2
Modern Language, preferably German	12
MATH 010,011—Introduction to Mathematics	6
MICB 001—General Microbiology	4
PHYS 010,011—Fundamentals of Physics	8
Botany electives or related courses	10
Electives	12

CONSERVATION AND RESOURCE DEVELOPMENT

The development and use of natural resources (including water, soil, minerals, fresh water and marine organisms, wildlife, air and human resources), are essential to the full growth of an economy.

The curriculum in Conservation and Resource Development is designed to instill concepts of the efficient development and judicious management of natural resources. The study of the problems associated with the use of natural resources will acquaint students with their role in economic development while maintaining concern for the quality of the environment.

Students will prepare for professional and administrative positions in land and water conservation projects, for careers in operational, administrative, educational, and research work in land use, natural resource management, recreational area development, and management, or for graduate study in any of the several areas within the biological sciences.

Students will pursue a broad education program and then elect subjects concentrated in a specific area of interest. A student will be assigned an advisor according to his area of interest.

Students will be encouraged to obtain summer positions which will give them technical laboratory or field experience in their chosen interest area.

The College of Agriculture science requirement will be satisfied by completing the following courses:

CHEM 008,009 — College Chemistry I, II	4,4
BOTN 001 — General Botany	4
ZOOL 001 — General Zoology	4

Conservation and Resource Development Requirements:

AGRI 080 — Introductory Agricultural Biometrics	
or	
AGRI 101 — Agricultural Biometrics	3,3
AGEN 001 — Introduction to Agricultural Engineering	4
AGRO 010 — General Soils	4
BOTN 002 — General Botany	4
BOTN 010 — Principles of Conservation	3
BOTN 011 — Plant Taxonomy	
or	
BOTN 153 — Field Botany & Taxonomy	3,2
BOTN 102 — Plant Ecology	2
BOTN 103 — Plant Ecology Laboratory	1
ENTM 015 — Introductory Entomology	3
GEOG 010 — General Geography	3
GEOL 001 — Geology	3
MATH 010,011 — Introduction to Mathematics	
(or MATH 18,19)	
MICB 001 — General Microbiology	3,3
ZOOL 002 — Animal Phylo	4
ZOOL 121 — Animal Ecology	4
Electives	27

Additional Requirement: One of the following options must be fulfilled:

Plant Conservation:	
BOTN 011 — Plant Taxonomy	3
BOTN 102 — Plant Ecology	2
BOTN 103 — Plant Ecology Laboratory	1
Botany or Conservation Electives	6

Wildlife Conservation:	
ANSC 118 — Wildlife Management	3
BOTN 102 — Plant Ecology	2
ZOOL 121 — Animal Ecology	3
Zoology Elective	4

Resource Development:	
AGEC 111 — Economics of Resource Development	3
GEOG 015 — Introductory Economic Geography	3
Ecology — Plant or Animal Ecology	3
Agricultural Economics or Economics Elective	3
Electives	24

ENTOMOLOGY

This curriculum prepares students for work in various types of entomological positions. Professional entomologists are engaged in fundamental and applied research, regulatory and control services with state and federal agencies, commercial pest control, sales and developmental programs with chemical companies, and other commercial organizations, consulting work, extension work, and teaching.

Most of the first two years of this curriculum is devoted to obtaining the essential background. In the junior and senior year there is opportunity for some specializing. Students contemplating graduate work are strongly advised to elect courses in physics, modern language, and biometrics.

The College of Agriculture science requirement will be satisfied by completing the following courses:

CHEM 008,009 — College Chemistry I, II	4,4
ZOOL 001 — General Zoology	4
BOTN 001 — General Botany	4

Department of Entomology Requirements	
ENTM 015 — Introductory Entomology	3
ENTM 105 — Medical and Veterinary Entomology	3
ENTM 120 — Insect Taxonomy and Biology	4
ENTM 122 — Insect Morphology	4
ENTM 124 — Economic Entomology	4
ENTM 123 — Insect Physiology	4
ENTM 198 — Special Problems	2
ENTM 199 — Seminar	2
BOTN 011 — Plant Taxonomy	3
BOTN 020 — Diseases of Plants	3
CHEM 010,012 — College Chemistry III and College Chemistry Laboratory III	3,2
MATH 010,011 — Introduction to Mathematics	6
MICB 001 — General Microbiology	4
ZOOL 002 — The Animal Phylo or ZOOL 118 — Invertebrate Zoology	4

FOOD SCIENCE

Food Science applies the fundamentals of the physical and biological sciences to the problems of procurement, preservation, processing, packaging, and marketing foods in a manner that would satisfy man's needs both nutritionally and aesthetically.

Opportunities for careers in food science exist in areas of meats, milk and milk products, fruits and vegetables, poultry and eggs, sea food, baby foods, confections, pet foods, cereals, flavors and colors, etc. Specific positions in Industry, Universities, and Government, include product development, production, engineering, research, quality control, technical service, technical sales, and teaching.

The College of Agriculture science requirement will be satisfied by completing the following courses:

The College of Agriculture science requirement will be satisfied by completing the following courses:

	Semester
	Credit Hours
CHEM 008,009 — College Chemistry I, II	4,4
MICB 001 — General Microbiology	4
BOTN 001 — General Botany or ZOOL 001 — General Zoology	4

Curriculum Requirements

AGEN 113 — Mechanics of Food Processing	4
ANSC 109 — Fundamentals of Nutrition	3
CHEM 010,012 — College Chemistry III & College Chemistry Laboratory III	3,2
FOOD 153 — Experimental Food Science	3
FDSC 001 — Introduction to Food Science	3
FDSC 102,103 — Principles of Food Processing — I, II	3,3
FDSC 111 — Food Chemistry	3
FDSC 112 — Analytical Quality Control	3
FDSC 113 — Statistical Quality Control	3
FDSC 131 — Food Product Research and Development	3
FDSC 199 — Seminar	1
MICB 81 — Applied Microbiology	4
PHYS 10 — Fundamentals of Physics	4
Production course	3
Electives	25

GEOLOGY

The Geology curriculum provides an excellent opportunity to prepare for advanced work in this field. Basic courses in mathematics, chemistry, and physics are necessary for competent geologists and are required for all students preparing for advanced degrees. By the proper selection of courses listed under the technical and general electives, the student can obtain outstanding undergraduate training for advanced work in geology or general training for employment with a Bachelor of Science degree.

The College of Agriculture science requirement will be satisfied by completing CHEM 008 and 009, College Chemistry I, II and selecting 8 semester credit hours from the following courses:

	Semester
	Credit Hours
Departmental Requirements (Geology)	
GEOL 001 — Introductory Physical Geology	3
GEOL 002 — Historical and Stratigraphic Geology	3
GEOL 004 — Physical Geology Laboratory	1
GEOL 005 — Historical Geology Laboratory	1
GEOL 194 — Research Problems in Geology	1
GEOL — Summer Field Camp	5

ANSC 001, AGRO 001, HORT 005, HORT 058 or AGEN 001	2
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AGRO 010 – General Soils	4
Foreign language (French, German, or Russian)	0 12
Proficiency equivalent to that of a student completing two years of college work	
Technical or General Courses for Geology Students (see lists below)	23
Electives	21

Technical Courses which may be Selected by Geology Students

Semester	Credit Hours
CHEM 015 – Qualitative Analysis	4
MATH 019,020 – Analysis I, II	8
PHYS 030,031,032 – General Physics	11
If the student elects more than 23 hours of technical courses they should be additional courses in the above areas	

General Courses which may be Selected by the Geology Students

Semester	Credit Hours
GEOL 121 – Mineralogy	3
GEOL 130 – Paleontology	3
GEOL 140 – Structural Geology	3
GEOL – Additional geology courses or GEOG 118, and GEOG 146	14
These courses may be replaced by courses in physics, chemistry, and mathematics with permission of the geology advisor.	

HORTICULTURE

The Department of Horticulture offers instruction in pomology (fruits), olericulture (vegetables), floriculture (flowers), ornamental horticulture, and processing of horticultural crops. These courses prepare students to enter commercial production and the horticultural industries such as fruit and vegetable processing, seed production, and retail florists and nurseries. Students are likewise prepared to enter the allied industries as horticultural workers with fertilizer companies, equipment manufacturers, and others. Students who wish to enter specialized fields of research and teaching may take advanced work in the Department.

The Horticultural Education curriculum is designed for persons who wish to prepare for teaching horticulture in the secondary schools. It provides basic training in horticulture and includes the necessary courses for teacher certification.

The Department of Horticulture is a cooperating department in the Food Science curriculum.

POMOLOGY AND OLERICULTURE CURRICULUM

The College of Agriculture science requirement will be satisfied by completing the following courses:

Semester	Credit Hours
CHEM 008,009 – College Chemistry I, II	4.4
BOTN 001 – General Botany	4

and 4 semester credits selected from the following:

MICB 001 – General Microbiology	4
ZOOL 001 – General Zool	4
GEOL 001 and 004 – Geology & Physical Geology Laboratory	3.1
CHEM 010,012 – College Chemistry III and College Chemistry Laboratory III	3.2

Department of Horticulture Requirements

AGRO 010 – General Soils	4
BOTN 020 – Diseases of Plants	3
BOTN 101 – Plant Physiology	4
BOTN 117 – General Plant Genetics	2
ENTM 020 – Insect Pests of Agricultural Crops	4
HORT 005,006 – Tree Fruit Production	3.2
HORT 058 – Vegetable Production	3
HORT 059 – Berry Production	3
HORT 062 – Plant Propagation	3
HORT 101 – Technology of Fruits	3
HORT 103 – Technology of Vegetables	3
HORT 161 – Physiology of Maturation and Storage of Horticultural Crops	2
HORT 199 – Seminar	1
A minimum of 3 additional Horticultural credits	3
Electives	30

FLORICULTURE AND ORNAMENTAL HORTICULTURE CURRICULUM

The College of Agriculture science requirement will be satisfied by completing the following courses:

Semester	Credit Hours
CHEM 008,009 – College Chemistry I, II	4.4
BOTN 001 – General Botany	4

and 4 semester credits selected from the following:

MICB 001 – General Microbiology	4
ZOOL 001 – General Zool	4
GEOL 001 and 004 – Geology & Physical Geology Laboratory	3.1
CHEM 010,012 – College Chemistry III and College Chemistry Laboratory III	3.2

Department of Horticulture Requirements

AGRO 010 – General Soils	4
BOTN 011 – Plant Taxonomy	3
BOTN 020 – Diseases of Plants	3
BOTN 101 – Plant Physiology	4
BOTN 117 – General Plant Genetics	2
HORT 011 – Greenhouse Management	3
HORT 016 – Garden Management	3
HORT 020 – Introduction to the Art of Landscaping	3
HORT 056 – Basic Landscape Composition	2
HORT 062 – Plant Propagation	3
HORT 100 – Principles of Landscape Design	3
HORT 105 – Technology of Ornamentals	3
HORT 107,108 – Woody Plant Materials	3.3
HORT 162 – Fundamentals of Greenhouse Crop Production or	
HORT 163 – Production and Maintenance of Woody Plants	3
HORT 199 – Seminar	1
Select 2 credits from the following	2
HORT 012,013 – Greenhouse Crop Production Laboratory	1.1
HORT 017 – Garden Management Laboratory	1
Electives	26

HORTICULTURE EDUCATION CURRICULUM

Department of Horticulture Requirements

The College of Agriculture science requirement will be satisfied by completing the following courses:

Semester	Credit Hours
CHEM 008,009 – College Chemistry I, II	4.4
BOTN 001 – General Botany	4

and 4 semester credits selected from the following:

MICB 001 – General Microbiology	4
ZOOL 001 – General Zool	4
GEOL 001 and 004 – Geology & Physical Geology Laboratory	3.1
CHEM 010,012 – College Chemistry III and College Chemistry Laboratory III	3.2

AGRO 010 – General Soils	4
BOTN 011 – Plant Taxonomy	3
BOTN 020 – Diseases of Plants	4
BOTN 101 – Plant Physiology	4
EDUC 111 – Foundations of Education	3
HORT 011 – Greenhouse Management	3
HORT 012 – Greenhouse Management Laboratory	1
HORT 016 – Garden Management	3
HORT 017 – Flower Production Laboratory	1
HORT 020 – Introduction to the Art of Landscaping	3
HORT 056 – Basic Landscape Composition	2
HORT 062 – Plant Propagation	3
HORT 100 – Principles of Landscape Design	3
HORT 105 – Technology of Ornamentals	3
HORT 199 – Seminar	1
REED 109 – Teaching Secondary Agriculture	3
REED 101 – Teaching Materials and Demonstrations	2
REED 103 – Student Teaching	5
REED 104 – Student Teaching	1-4
REED 107 – Introduction to Agricultural Education	2
REED 111 – Teaching Young and Adult Farmer Groups	1
Elect one of the following courses:	3-6
PSYC 110 – Educational Psychology (3)	
EDUC 110 – Human Development and Learning (6)	
A minimum of 12 additional Agricultural credits	12
Approved Electives	3-9
Total	124

SPECIAL CURRICULA

PRE-FORESTRY STUDENTS

The College of Agriculture is glad to cooperate with any student who wishes to attend the University to pursue courses which may be transferred to a standard forestry curriculum in another institution. The program which a student follows depends to some extent upon the forestry college he plans to enter. All pre-forestry students in the College of Agriculture are sent to the Department of Botany of the University for counsel and advice in these matters.

For residents of Maryland who have completed two years of pre-forestry and have satisfied requirements comparable to those at the University of Maryland and have been accepted in the School of Forestry at North Carolina State University, the University of Maryland will pay the non-resident fee for a period of two years.

All requirements must be completed by June prior to the September in which the student desires to matriculate in veterinary college. The pre-veterinary curriculum can be completed in two years but is usually extended, thus making it possible for the applicant to select desirable electives.

After the names of the candidates have been received, a Georgia Board of Admissions will assemble at the University of Maryland and will interview each candidate and receive the transcript and all pertinent documents relating to him. The selection will be made by the Office of Admissions, University of Georgia.

The pre-veterinary curriculum should contain:

The Pre-Forestry Curriculum Includes:

	Semester Credit Hours
ENGL 001,003,004	9
BOTN 001	4
ZOOL 001	4
MATH 010,011,014,015	12
CHEM 008,009	8
PHYS 010,011	8
SPCH 007	2
BOTN 011	3
HORT 030	3
AGRI 001	1
Social Science	6
Economics	3
HLTH 5	2

	Semester Credit Hours
Biological Sciences	12
Botany (4)	4
Zoology (8)	8
English and Speech	12
Physical Sciences	32
Inorganic Chemistry (9)	9
Organic Chemistry (9)	9
Mathematics (6)	6
Physics (8)	8
Animal Science	9
Genetics	3
Nutrition	3
Social Science ¹	3
History	6
Physical Education	2
Health	2
Air Science Optional	2

Students planning for 3 years in the Pre-Forestry curriculum should include BOTN 020, ENTM 015, AGRO 001, AGEN 001, AGRO 010, and BOTN 010.

PRE-THEOLOGICAL STUDENTS

The College of Agriculture cooperates with the officers of any theological seminary who desire to urge prospective students to pursue courses in agriculture as a preparation for the rural ministry. Such pre-theological students may enroll for a semester or more or for the usual four year training of the College. In either case they should enroll as members of the general curriculum in the College of Agriculture. Students desiring to pursue a pre-theological program in the College of Agriculture of the University of Maryland, should consult with the president or admissions officer of the theological seminary which they expect to attend.

TWO-YEAR PROGRAM—INSTITUTE OF APPLIED AGRICULTURE

The programs of study offered by the Institute will assist men and women interested in preparing for specific jobs in the broad fields of applied science and business in agriculture. Courses taken in these programs are not transferable for degree credits at the University of Maryland. However, students satisfactorily completing two years of study will be awarded an appropriate certificate. For additional information write: Director, Institute of Applied Agriculture, University of Maryland, College Park, Maryland 20742.

PRE-VETERINARY STUDENTS

This program is designed for students desiring to prepare for the professional course in veterinary medicine.

A combined degree is available to students in the pre-veterinary curriculum. A student who has completed 90 academic semester credits at the University of Maryland who has completed 30 additional academic semester credits at the University of Georgia or at any accredited veterinary school is eligible to make application for the Bachelor of Science degree from the University of Maryland.

Students wishing to apply for the combined degree must have completed all University and College requirements as set forth on page ... and must also have completed additional credits in Animal Science.

The State of Maryland has entered into a regional agreement with the State of Georgia which makes ten spaces a year available to Maryland residents in the School of Veterinary Medicine, University of Georgia. The spaces are to be filled on a competitive basis from among qualified applicants.

Candidates, to be considered qualified, must have:

- a. Completed the curriculum shown below with grades not less than "C" in any subject.
- b. Taken the veterinary medical aptitude test; and
- c. Must be a bona fide resident of Maryland.

¹This credit may be satisfied by examination at the University of Georgia

COURSE OFFERINGS

AGRICULTURE

AGRI 001. INTRODUCTION TO AGRICULTURE. (1)

First semester. Required of all beginning freshmen and sophomores in agriculture. Other students must get the consent of the instructor. A series of lectures introducing the student to the broad field of agriculture. (Poffenberger)

AGRI 080. INTRODUCTORY AGRICULTURAL BIOMETRICS. (3)

First semester. Three lectures per week. Graphical presentation of data, descriptive statistics, sampling, individual and group comparisons, simple regression and correlations, and an introduction to analysis of variance with emphasis on interpretation of statistical analyses rather than methodology. (Staff)

AGRI 101. AGRICULTURAL BIOMETRICS. (3)

First semester. Two lectures and one laboratory period per week. Prerequisite, MATH 018 or equivalent. Probability, measures of central tendency and dispersion, frequency distributions, tests of statistical hypotheses, regression analyses, multiway analysis of variance, and principles of experimental design with emphasis on the use of statistical methods in agricultural research. (Staff)

AGRI 197. SPECIAL TOPICS IN AGRICULTURE. (1-3)

First or second semester. Credit according to time scheduled and organization of the course. A lecture series organized to study in depth a selected phase of agriculture not normally associated with one of the existing programs. (Staff)

For Graduates

See the Graduate School catalog for descriptions.

AGRI 201. ADVANCED AGRICULTURAL BIOMETRICS. (3)

(Staff)

AGRI 205. DESIGN OF EXPERIMENTS. (3)

(Staff)

AGRI 206. STATISTICAL METHODS IN BIOLOGICAL ASSAY. (3)

(Staff)

AGRI 207. APPLICATION OF LEAST SQUARES METHOD. (3)

(Staff)

AGRI 210. EXPERIMENTAL PROCEDURES IN THE AGRICULTURAL SCIENCES. (3)

(Staff)

AGRICULTURAL ECONOMICS

PROFESSORS: Beal, Curtis, Foster, Ishee, Moore, Stevens, Tuthill and Wysong.

ASSOCIATE PROFESSORS: Bender, Cain, Hardie, Lessley, and Via.

ASSISTANT PROFESSORS: Holmes and Marasco.

VISITING PROFESSOR: Evans.

VISITING ASSISTANT PROFESSORS: Nash and Sokoloski.

AGEC 050. ELEMENTS OF AGRICULTURAL ECONOMICS. (3)

First semester. An introduction to economic principles of production, marketing, agricultural prices and incomes, farm labor, credit, agricultural policies, and government programs. (Ishee)

AGEC 051. MARKETING OF AGRICULTURAL PRODUCTS. (3)

Second semester. The development of marketing, its scope, channels, and agencies of distribution, functions, costs, methods used and services rendered. (Hardie)

For Advanced Undergraduates and Graduates

AGEC 100 and AGECE 101. AGRICULTURAL ESTIMATING METHODOLOGY. (3) (3) (Not for Grad. Credit)

First and second semesters, respectively. The history, organization and administration of, and services provided by the Statistical Reporting Service of the U. S. Department of Agriculture and the survey sampling methods used by that agency for computing the Department's official statistics on crops, livestock and livestock products, production, agricultural prices and farm employment. Emphasis is on statistical procedures used for preparing approximately 350 reports issued annually by the Crop Reporting Board of the U. S. Statistical Reporting Service. (Designed especially for foreign students in FAO and AID-Program of Technical Cooperation but very beneficial to any student interested in the area.) (Bookhout)

AGEC 103. INTRODUCTION TO AGRICULTURAL BUSINESS MANAGEMENT. (3)

First Semester, (alternate years, 1969). Prerequisite AGECE 051 and BSAD 020 or permission of instructor. The different forms of businesses are investigated. Management functions, business indicators, measures of performance, and operational analysis are examined. Case studies are used to show applications of management techniques. (Lessley)

AGEC 106. PRICES OF AGRICULTURAL PRODUCTS. (3)

Second semester. An introduction to agricultural price behavior. Emphasis is placed on the use of price information in the decision-making process, the relation of supply and demand in determining agricultural prices, and the relation of prices to grade, time, location, and stages of processing in the marketing system. The course includes elementary methods of price analysis, the concept of parity, and the role of price support programs in agricultural decisions. (Marasco)

AGEC 107. FINANCIAL ANALYSIS OF THE FARM BUSINESS. (3)

First semester. Application of economic principles to develop criteria for a sound farm business, including credit source and use, preparing and filing income tax returns, methods of appraising farm properties, the summary and analysis of farm records, leading to effective control and profitable operation of the farm business. (Wysong)

AGEC 108. FARM MANAGEMENT. (3)

Second semester. The organization and operation of the farm business to obtain an income consistent with family resources and objectives. Principles of production economics and other related fields are applied to the individual farm business. Laboratory period will be largely devoted to field trips and other practical exercises. (Lessley)

AGEC 109. INTRODUCTION TO ECONOMETRICS IN AGRICULTURE. (3)

First semester. An introduction to the application of econometric techniques to agricultural problems with emphasis on the assumptions and computational techniques necessary to derive statistical estimates, test hypotheses, and make predictions with the use of single equation models. Includes linear and non-linear regression models, internal least squares, discriminant analysis and factor analysis. (Ishee)

AGEC 111. ECONOMICS OF RESOURCE DEVELOPMENT. (3)

First semester. Economic, political, and institutional factors which influence the use of land resources. Application of elementary economic principles in understanding social conduct concerning the development and use of natural and man-made resources. (Tuthill)

AGEC 112. AGRICULTURAL POLICY AND PROGRAMS. (3)

First semester. A study of public policies and programs related to the problems of agriculture. Description analysis and appraisal of current policies and programs will be emphasized. (Beal)

AGEC 114. WORLD AGRICULTURAL PRODUCTION AND TRADE. (3)

First semester. World production, consumption, and trade patterns for agricultural products. International trade theory applied to agricultural products. National influences on international agricultural trade. (Foster)

AGEC 117. AGRICULTURAL COMMODITY MARKETS: AN ECONOMIC ANALYSIS. (3)

First semester, (alternate years). Problems, institutions and functions within marketing systems for poultry and eggs, dairy, grain, horticultural, livestock, tobacco and forestry products. Practical applications of elementary economic theory in a framework for analysis of market problems. (Via)

AGEC 118. MARKETING MANAGEMENT OF AGRIBUSINESS ENTERPRISES. (3)

Second semester, (alternate years). Prerequisite, AGECE 103 or permission of instructor. Principles, functions, institutions and channels of marketing viewed from the perspective of a manager of an agricultural business enterprise. The managerial framework for analyzing the entire marketing program of a firm is developed and utilized. (Cain)

AGEC 119. FOREIGN AGRICULTURAL ECONOMIES. (3)

Second semester. Analysis of the agricultural economy of selected areas of the world. The interrelationships among institutions and values, such as government and

religion, and the economics of agricultural organization and production. (Holmes)

AGEC 185. APPLICATIONS OF MATHEMATICAL PROGRAMMING IN AGRICULTURE, BUSINESS AND ECONOMIC ANALYSIS. (3)

This course is designed to train students in the application of mathematical programming (especially linear programming) to solve a wide variety of problems in agriculture, business and economics. The primary emphasis is on setting up problems and interpreting results. The computational facilities of the Computer Science Center are used extensively. (Bender)

AGEC 195. HONORS READING COURSE IN AGRICULTURAL ECONOMICS I. (3)

First semester. Selected readings in political and economic theory from 1700 to 1850. This course develops a basic understanding of the development of economic and political thought as a foundation for understanding our present society and its cultural heritage. Prerequisite: Acceptance in the Honors Program of the Department of Agricultural Economics. (Bender)

AGEC 196. HONORS READING COURSE IN AGRICULTURAL ECONOMICS II. (3)

Second semester. Selected readings in political and economic theory from 1850 to the present. This course continues the development of a basic understanding of economic and political thought begun in AGECE 195. This understanding on the part of the student is further developed and broadened in this semester by the examination of modern problems in agricultural economics in the light of the material read and discussed in AGECE 195 and AGECE 196. Prerequisite: Successful completion of AGECE 195 and registration in the Honors Program of the Department of Agricultural Economics. (Via)

AGEC 198. SPECIAL PROBLEMS. (1-2) (2 cr. max.) (not for grad. cr.)

First and second semesters and summer. Concentrated reading and study in some phase or problem in agricultural economics. (Staff)

AGEC 199. SEMINAR. (1, 1)

First and second semesters. Students will obtain experience in the selection, preparation and presentation of economic topics and problems which will be subjected to critical analysis. (Ishee)

For Graduates

See the Graduate School catalog for descriptions.

AGEC 200. APPLICATION OF ECONOMETRICS IN AGRICULTURE. (3) (Staff)

AGEC 201. ADVANCED THEORY AND PRACTICE OF INTERNATIONAL AGRICULTURAL TRADE. (3) (Staff)

AGEC 202. MARKET STRUCTURE IN AGRICULTURE. (3) (Staff)

AGEC 204. ADVANCED AGRIBUSINESS MANAGEMENT. (3) (Staff)

AGEC 208. AGRICULTURAL PRICE AND INCOME POLICY. (3) (Staff)

AGEC 210. ADVANCED AGRICULTURAL PRICE AND DEMAND ANALYSIS. (3) (Staff)

AGEC 212. AGRICULTURE IN WORLD ECONOMIC DEVELOPMENT. (3)

AGEC 214. ADVANCED AGRICULTURAL MARKETING. (3) (Staff)

AGEC 216. ECONOMICS OF AGRICULTURAL PRODUCTION. (3) (Staff)

AGEC 218. AGRICULTURAL ECONOMICS RESEARCH TECHNIQUES. (3) (Staff)

AGEC 219. ADVANCED RESOURCE ECONOMICS. (3) (Staff)

AGEC 220. INTERNATIONAL IMPACTS OF SELECTED AGRICULTURAL FORCES. (3) (Staff)

AGEC 300. SPECIAL TOPICS IN AGRICULTURAL ECONOMICS. (3) (Staff)

AGEC 301. SPECIAL PROBLEMS IN AGRICULTURAL ECONOMICS. (1-2) (4 cr. max.) (Staff)

AGEC 302. SEMINAR. (1, 1)

AGEC 399. RESEARCH. (6 hrs. M. S.) (Staff)

AGEC 499. RESEARCH (12 hours. Ph.D.) (Staff)

AGRICULTURAL AND EXTENSION EDUCATION

PROFESSOR: Ryden.

ASSOCIATE PROFESSORS: Longest and Nelson.

For Advanced Undergraduates

RLED 101. TEACHING MATERIALS AND DEMONSTRATIONS. (2)

First semester. Principles and practices of the demonstration method; construction and use of visual aids in teaching agriculture. (Nelson)

RLED 103. STUDENT TEACHING. (5)

First semester. Prerequisite, satisfactory academic average and permission of instructor. Fulltime student teaching in an off-campus student teaching center under an approved supervising teacher of agriculture. Participating experience in all aspect of the work of a teacher of agriculture. (Nelson)

RLED 104. STUDENT TEACHING. (1-4)

First semester. Prerequisite, satisfactory academic average and permission of instructor. Fulltime observation and participation in work of teacher of agriculture in off-campus student teaching center. Provides students opportunity to gain experience in the summer program of work, to participate in opening of school activities, and to gain other experience needed by teachers. (Nelson)

RLED 107. INTRODUCTION TO AGRICULTURAL EDUCATION. (2)

An overview of the job of the teacher of agriculture; examination of agricultural education programs for youth and adults. (Staff)

RLED 109. TEACHING SECONDARY VOCATIONAL AGRICULTURE. (3)

First semester. A comprehensive course in the work of high school departments of vocational agriculture. It emphasizes particularly placement, supervised farming programs, the organization and administration of Future Farmer activities, and objectives and methods in all-day instruction. (Nelson)

RLED 111. TEACHING YOUNG AND ADULT FARMER GROUPS. (1)

First semester. Characteristics of young and adult farmer instruction in agriculture. Determining needs for and organizing a course; selecting materials for instruction; and class management. Emphasis is on the conference method of teaching. (Staff)

RLED 121. DIRECTED EXPERIENCE IN EXTENSION EDUCATION. (1-5)

Prerequisite, satisfactory academic average and permission of instructor. Full-time observation and participation in selected aspects of extension education in an approved training county. (Ryden)

RLED 161. 4-H ORGANIZATION AND PROCEDURE. (2)

A study of the youth phase of cooperative extension work. Emphasis is placed on the philosophy, objectives, organization, leadership development and methods used in conducting 4-H Club work at the local and county level. (Ryden)

RLED 199. SEMINAR IN AGRICULTURAL EDUCATION. (1)

Examination of current literature, reports and discussions of problems, trends, and issues in agricultural education. (Staff)

For Advanced Undergraduates and Graduates

RLED 114. RURAL LIFE IN MODERN SOCIETY. (3)

Examination of the many aspects of rural life that affect and are affected by, changes in technical, natural and human resources. Emphasis is placed on the role which diverse organizations, agencies, and institutions play in the education and adjustment of rural people to the demands of modern society. (Longest)

RLED 150. EXTENSION EDUCATION. (2)

Second semester. The Agricultural Extension Service as an educational agency. The history, philosophy, objec-

tives, policy, organization, legislation and methods used in extension work. (Ryden)

RLED 160. EXTENSION COMMUNICATIONS. (2)

First semester. An introduction to communications in teaching and within an organization, including barriers to communication, the diffusion process and the application of communication principles person to person, with groups and through mass media. (Ryden)

RLED 170, 171. CONSERVATION OF NATURAL RESOURCES. (3, 3)

Laboratory fee, \$35.00. Designed primarily for teachers. Study of state's natural resources—soil, water, fisheries, wildlife, forests, and minerals—natural resources problems and practices. Extensive field study. First course concentrates on subject matter; second includes methods of teaching conservation. Courses taken concurrently in summer season. (Staff)

RLED 180, 181. CRITIQUE IN RURAL EDUCATION. (1, 1)

Current problems and trends in rural education. (Staff)

RLED 185. DEVELOPMENT AND MANAGEMENT OF EXTENSION YOUTH PROGRAMS. (3)

Designed for present and prospective state leaders of extension youth programs. Program development, principles of program management, leadership development and counseling; science, career selection and citizenship in youth programs, field experience in working with low income families' youth, urban work. (Ryden)

RLED 198. SPECIAL PROBLEMS. (1-3)

Prerequisite, approval staff. (Staff)

For Graduates

See the Graduate School catalog for descriptions.

RLED 200. RESEARCH METHODS IN RURAL EDUCATION. (2-3)

(Staff)

RLED 201. RURAL COMMUNITY ANALYSIS. (3)

(Staff)

RLED 204. DEVELOPING RURAL LEADERSHIP. (2-3)

(Staff)

RLED 207, 208. SPECIAL TOPICS IN RURAL EDUCATION. (2, 2)

(Staff)

RLED 209. RURAL ADULT EDUCATION. (2)

(Staff)

RLED 215. SUPERVISION OF STUDENT TEACHING. (1)

(Staff)

RLED 217. PROGRAM PLANNING AND EVALUATION IN AGRICULTURAL EDUCATION. (2-3)

(Staff)

RLED 225. PROGRAM DEVELOPMENT IN EXTENSION EDUCATION. (2)

(Staff)

RLED 240. AGRICULTURAL COLLEGE INSTRUCTION. (1)

(Staff)

RLED 301. SPECIAL PROBLEMS. (1-3)

(Staff)

RLED 302. SEMINAR IN RURAL EDUCATION. (1, 1)

(Staff)

RLED 399. MASTER'S THESIS

(Staff)

RLED 499. PH.D. DISSERTATION

(Staff)

AGRICULTURAL ENGINEERING

PROFESSORS: Green, Harris and Winn.

ASSOCIATE PROFESSORS: Felton and Merrick.

ASSISTANT PROFESSORS: Hummel and Merkel.

INSTRUCTORS: Brodie, Rice and Stewart.

RESEARCH ASSOCIATE: Wheaton.

VISITING RESEARCH ASSOCIATE: Willson.

AGEN 001. INTRODUCTION TO AGRICULTURAL ENGINEERING. (4)

First and second semesters. Three lectures and one laboratory per week. Applications of mathematics, physics, and engineering techniques in the solution of agricultural engineering problems. Studies will include farm power and machinery, farm structures and electrification and soil and water conservation. (Merkel)

AGEN 056. INTRODUCTION TO FARM MECHANICS. (2)

First and second semesters. One lecture and one laboratory period a week. A study of the hand tools and power equipment and their safe use as it applies to mechanized farms. Principles and practice in arc and gas welding, cold metal and sheet metal work are provided. Also, tool fitting, woodworking, plumbing, blue print reading and use of concrete. (Gienger)

AGEN 086. AGRICULTURAL ENGINEERING SHOP TECHNIQUES. (1)

Second semester. One laboratory per week. Agricultural Engineering majors only. Shop techniques and procedures used in construction of experimental agricultural machinery and equipment. Operation principles of power and hand tools. A term problem to develop plans and techniques for construction, to select materials and to construct an assigned unit will be required. (Staff)

For Advanced Undergraduates and Graduates

AGEN 104. FARM MECHANICS. (2)

First semester. Two laboratory periods a week. Available only to seniors in agricultural education. This course consists of laboratory exercises in practical farm shop and farm equipment maintenance, repair, and construction projects, and a study of the principles of shop organization and administration. (Gienger)

AGEN 113. MECHANICS OF FOOD PROCESSING. (4)

First semester. Three lectures and one laboratory. Prerequisite, PHYS 001 or 010. Applications in the processing and preservation of foods of power transmission, hydraulics, electricity, thermodynamics, refrigeration, instruments and controls, materials handling and time and motion analysis. (Merkel)

AGEN 121. ENGINEERING DYNAMICS OF BIOLOGICAL MATERIALS (3)

Second semester. Three lectures per week. Prerequisite ENME 102. Investigate the physical parameters (impact, temperature, humidity, light, etc.) governing the response of biological materials. Analyses of unit operations and their effect on the physical and quality characteristics of agricultural products. (Staff)

AGEN 123. AGRICULTURAL PRODUCTION EQUIPMENT. (3)

First semester. Two lectures and one laboratory per week. Prerequisite, AGEN 001. Principles of operation and functions of power and machinery units as related to tillage; metering devices; cutting, conveying and separating units; and control mechanisms. Principles of internal combustion engines and power unit components. (Hummel)

AGEN 124. AGRICULTURAL MATERIALS HANDLING AND ENVIRONMENTAL CONTROL. (3)

Second semester. Two lectures and one laboratory per week. Prerequisite, AGEN 001. Characteristics of construction materials and details of agricultural structures. Fundamentals of electricity, electrical circuits, and electrical controls. Materials handling and environmental requirements of farm products and animals. (Staff)

AGEN 142. FUNCTIONAL AND ENVIRONMENTAL DESIGN OF AGRICULTURAL STRUCTURES (3)

Second semester. Two lectures and one two hour laboratory per week. Prerequisites ENME 102. An analytical approach to the design and planning of functional and environmental requirements of plants and animals in semi- or completely enclosed structures. (Staff)

AGEN 143. FUNCTIONAL DESIGN OF MACHINERY AND EQUIPMENT (3)

First semester. Two lectures and one two hour laboratory per week. Prerequisite ENES 021. Theory and methods of agricultural machine design. Application of machine design principles and physical properties of soils and agricultural products in design of machines to perform specific tasks. (Staff)

AGEN 144. POWER SYSTEMS. (3)

First semester. Two lectures and one two hour laboratory per week. Prerequisites ENME 60, ENEE 60 and ENME 102. Analysis of energy conversion devices including internal combustion engines, electrical and hydraulic motors. Fundamentals of power transmission and coordination of power sources with methods of power transmission. (Staff)

AGEN 145. SOIL AND WATER ENGINEERING. (3)

Second semester. Two lectures per week. Prerequisites, ENCE 090 and ENME 102. Applications of engineering and soil sciences in erosion control, drainage, irrigation and watershed management. Principles of agricultural

hydrology and design of water control and conveyance systems. (Schwiesow)

AGEN 165. GENERAL HYDROLOGY. (3)

Second semester. Three lectures per week. Qualitative aspects of basic hydrologic principles pertaining to the properties, distribution and circulation of water as related to public interest in water resources. (Schwiesow)

AGEN 175. ENGINEERING HYDROLOGY. (3)

First semester. Three lectures per week. Prerequisites: MATH 066, ENCE 105 or ENME 102. Properties, distribution and circulation of water from the sea and in the atmosphere emphasizing movement overland, in channels and through the soil profile. Qualitative and quantitative factors are considered. (Schwiesow)

AGEN 185. AQUACULTURAL ENGINEERING (3)

Spring semester. Prerequisite, consent of department. A study of the engineering aspects of development, utilization and conservation of aquatic systems. Emphasis will be on harvesting and processing aquatic animals or plants as related to other facets of water resources management. (Harris)

AGEN 189. SPECIAL PROBLEMS IN AGRICULTURAL ENGINEERING (1-3)

Prerequisite, approval of Department. Student will select an engineering problem and prepare a technical report. The problem may include design, experimentation, and/or data analysis. (Staff)

AGEN 198. SPECIAL PROBLEMS IN FARM MECHANICS. (1-3)

First and second semesters. Prerequisite, approval of Department. Not acceptable for majors in agricultural engineering. Problems assigned in proportion to credit. (Gienger)

For Graduates

See the Graduate School catalog for descriptions.

AGEN 201. INSTRUMENTATION SYSTEMS. (3)

(Staff)

AGEN 202. BIOLOGICAL PROCESS ENGINEERING (3)

(Staff)

AGEN 203. MECHANICAL PROPERTIES OF BIOLOGICAL MATERIALS. (3)

(Staff)

AGEN 204. LAND AND WATER RESOURCE DEVELOPMENT ENGINEERING. (3)

(Staff)

AGEN 302. SEMINAR. (1, 1)

(Staff)

AGEN 399. RESEARCH. (1-6)

(Staff)

AGEN 499. RESEARCH (1-6)

(Staff)

AGRONOMY—CROPS, SOILS, AND GEOLOGY

PROFESSORS: J. Miller, Axley, Decker, Hoyert, Rothgeb, and Strickling.

ASSOCIATE PROFESSORS: Clark, Fanning, Foss, F. Miller, Schillinger.

ASSISTANT PROFESSORS: Ayecok, Bezdicek, Burt, Newcomer, Powell.

CROPS

AGRO 001. CROP PRODUCTION. (2)

Second semester. Prerequisite, AGRO 002 or concurrent enrollment therein. Culture, use, improvement, adaptation, distribution, and history of field crops. (Clark)

AGRO 002. CROP PRODUCTION LABORATORY. (2)

First and second semesters. Two laboratory periods a week. Demonstration and application of practices in the identification, distribution and management of field crops. (Clark)

For Advanced Undergraduates and Graduates

AGRO 103. CROP BREEDING. (3)

First semester, alternate years. (Offered 1970-71.) Prerequisite, BOTN 117 or ZOOL 006. Principles and methods of breeding annual self and cross-pollinated plant and perennial forage species. (Schillinger)

AGRO 104. TOBACCO PRODUCTION. (3)

Second semester. Prerequisite, BOTN 001. A study of the history, adaptation, distribution, culture, and improvement of various types of tobacco, with special emphasis

on problems in Maryland tobacco production. Physical and chemical factors associated with yield and quality of tobacco will be stressed. (Hoyert)

AGRO 107. CEREAL CROP PRODUCTION. (2)

First semester, alternate years. (Offered 1970-71.) Prerequisite, BOTN 001, AGRO 002 or concurrent enrollment therein. Study of the principles and practices of corn, wheat, oats, barley, rye, and soybean production. (Rothgeb)

AGRO 108. FORAGE CROP PRODUCTION. (2)

Second semester. Prerequisite, BOTN 001, AGRO 002 or concurrent enrollment therein. Study of the production and management of grasses and legumes for quality hay, silage, and pasture. (Decker)

AGRO 109. TURF MANAGEMENT. (3)

First semester, alternate years. (Offered 1971-72.) Two lectures and one laboratory period per week. Prerequisite, BOTN 001. A study of principles and practices of managing turf for lawns, golf courses, athletic fields, playgrounds, airfields and highways for commercial sod production. (Powell)

AGRO 119. SOIL-WATER POLLUTION. (3)

Second semester. Prerequisite: Background in biology and one semester of organic chemistry. Reaction and fate of pesticides, agricultural fertilizers, industrial and animal wastes in soil and water will be discussed. Their relation to the environment will be emphasized. (Staff)

AGRO 151. CROPPING SYSTEMS. (2)

First semester. Prerequisite, AGRO 001 or equivalent. The coordination of information from various courses in the development of balanced cropping systems, appropriate to different objectives in various areas of the state and nation. (Clark)

AGRO 152. SEED PRODUCTION AND DISTRIBUTION (2)

Second semester, alternate years. (Offered 1970-71). One lecture and one laboratory period a week. Prerequisite, AGRO 001 or equivalent. A study of seed production, processing, and distribution; federal and state seed control programs; seed laboratory analysis; release of new varieties; and maintenance of foundation seed stocks. (Newcomer)

AGRO 154. WEED CONTROL. (3)

First semester, alternate years. (Offered 1971-72.) Two lectures and one laboratory period a week. Prerequisite, AGRO 001 or equivalent. A study of the use of cultural practices and chemical herbicides in the control of weeds. (Burt)

For Graduates

See the Graduate School catalog for descriptions.

AGRO 201, 202. ADVANCED CROP BREEDING. (2, 2)

(Staff)

AGRO 203. BREEDING FOR RESISTANCE TO PLANT PESTS. (3)

(Staff)

AGRO 204. TECHNIC IN FIELD CROP RESEARCH (2)

(Staff)

AGRO 205. ADVANCED TOBACCO PRODUCTION. (2)

(Staff)

AGRO 207. ADVANCED FORAGE CROPS. (2)

(Staff)

AGRO 208. RESEARCH METHODS. (2)

(Staff)

Additional courses under CROPS AND SOILS.

SOILS

AGRO 010. GENERAL SOILS. (4)

Second semester. Three lectures and one laboratory period a week. Prerequisite, CHEM 008 or permission of instructor. A study of the fundamentals of soils including their origin, development, relation to natural sciences, effect on civilization, physical properties, and chemical properties. (Foss)

For Advanced Undergraduates and Graduates

AGRO 111. SOIL FERTILITY PRINCIPLES. (3)

First semester, alternate years. (Offered 1970-71.) Prerequisite, AGRO 010. A study of the chemical, physical, and biological characteristics of soils that are important in growing crops. Soil deficiencies of physical, chemical, or biological nature and their correction by the use of lime, fertilizers, and rotations are discussed and illustrated. (Strickling)

AGRO 112. COMMERCIAL FERTILIZERS. (3)
Second semester. Prerequisites, AGRO 010 or permission of instructor. A study of the manufacturing of commercial fertilizers and their use in soils for efficient crop production. (Axley)

AGRO 113. SOIL AND WATER CONSERVATION. (3)
First semester, alternate years. (Offered 1970-71.) Two lectures and one laboratory period a week. Prerequisite, AGRO 010 or permission of instructor. A study of the importance and causes of soil erosion, methods of soil erosion control, and the effect of conservation practices on soil-moisture supply. Special emphasis is placed on farm planning for soil and water conservation. The laboratory period will be largely devoted to field trips. (Foss)

AGRO 114. SOIL CLASSIFICATION AND GEOGRAPHY. (3)
Second semester. Three lectures and one laboratory period a week. Prerequisite, AGRO 010, or permission of instructor. A study of the genesis, morphology, classification and geographic distribution of soils. The broad principles governing soil formation are explained. Attention is given to the influence of geographic factors on the development and use of the soils in the United States and other parts of the world. The laboratory periods will be largely devoted to the field trips and to a study of soil maps of various countries. (Fanning)

AGRO 115. SOIL SURVEY AND LAND USE. (3)
First semester alternate years. (Offered 1971-72.) Two lectures and one laboratory a week. Prerequisite, AGRO 114 or consent of the instructor. An introduction to soil survey interpretation as a tool in land use both in agricultural and urban situations. The implications of soil problems as delineated by soil surveys on land use will be considered. (F. Miller)

AGRO 116. SOIL CHEMISTRY. (3)
First semester, alternate years. (Offered 1970-71.) One lecture and two laboratory periods a week. Prerequisite, AGRO 010, or permission of instructor. A study of the chemical composition of soils; cation and anion exchange; acid, alkaline and saline soil conditions; and soil fixation of plant nutrients. Chemical methods of soil analysis will be studied with emphasis on their relation to fertilizer requirements. (Axley)

AGRO 117. SOIL PHYSICS. (3)
First semester, alternate years. (Offered 1971-72.) Two lectures and one laboratory period a week. Prerequisite AGRO 010 and a course in physics, or permission of instructor. A study of physical properties of soils with special emphasis on relationship to soil productivity. (Strickling)

AGRO 118. SOIL BIOCHEMISTRY. (3)
Second semester. Alternate years. (Offered 1970-71.) Two lectures and one laboratory period a week. Prerequisite, AGRO 10, CHEM 33 or 37 and 38 or consent of instructor. A study of biochemical processes involved in the formation and decomposition of organic soil constituents. Significance of soil-biochemical processes involved in plant nutrition will be considered. (Bezdicsek)

For Graduates

See the Graduate School catalog for descriptions.

AGRO 250. ADVANCED SOIL MINERALOGY. (3) (Staff)
ARGO 251. ADVANCED METHODS OF SOIL INVESTIGATION. (3) (Staff)
AGRO 252. ADVANCED SOIL PHYSICS. (3) (Staff)
AGRO 253. ADVANCED SOIL CHEMISTRY. (3) (Staff)

CROPS AND SOILS

For Advanced Undergraduates and Graduates

AGRO 198. SPECIAL PROBLEMS IN AGRONOMY. (1-3 var. cr.)
First and second semesters. Prerequisites, AGRO 010, 107, 108 or permission of instructor. A detailed study, including a written report of an important problem in agronomy. (Staff)

AGRO 199. SENIOR SEMINAR. (1) (No Grd. Cr.)
First semester. Reports by seniors on current scientific and practical publications pertaining to agronomy. (J. Miller)

For Graduates

See the Graduate School catalog for descriptions.

AGRO 260. RECENT ADVANCES IN AGRONOMY. (2-4) (Staff)
AGRO 302. AGRONOMY SEMINAR. (1, 1) (Staff)
AGRO 399. THESIS RESEARCH. (Master's Level) (1-4) (Staff)
AGRO 499. DISSERTATION RESEARCH. (Doctoral Level) (1-4) (Staff)

ANIMAL SCIENCE

ANIMAL:

PROFESSORS: Green and Young.
ASSOCIATE PROFESSORS: Buric, Leffel.
ASSISTANT PROFESSOR: DeBarth.

DAIRY:

PROFESSOR: Davis.
ASSOCIATE PROFESSORS: Williams and Vandersall.
ASSISTANT PROFESSOR: Douglass.

POULTRY:

PROFESSOR: Shaffner.
ASSOCIATE PROFESSOR: Creek.
ASSISTANT PROFESSORS: Bigbee and Pollard.

VETERINARY SCIENCE:

ASSOCIATE PROFESSORS: Marquardt, Mohanty and Newman.
ASSISTANT PROFESSOR: Albert.
INSTRUCTOR: Ingling.

ANSC 001. PRINCIPLES OF ANIMAL SCIENCE. (3)

First semester. Two lectures and one, two-hour laboratory period per week. A comprehensive course, including the development of animal science, its contributions to the economy, characteristics of animal products, factors of efficient and economical production and distribution. (Young)

ANSC 010. FEEDS AND FEEDING. (3)

First semester. Credit not allowed for ANSC major. Two lectures and one laboratory period per week. Prerequisites, Chem 008 and 009. Elements of nutrition, source, characteristics and adaptability of the various feedstuffs to the several classes of livestock. A study of the composition of feeds, the nutrient requirements of farm animals and the formulation of economic diets and rations for livestock. (Leffel)

ANSC 020. FUNDAMENTALS OF ANIMAL PRODUCTION. (3)

First semester. Two lectures and one laboratory period per week. This course deals with the adaptation of beef cattle, sheep, swine and horses to significant and specific uses. Breeding, feeding, management practices and criteria for evaluating usefulness are emphasized. (DeBarth)

ANSC 021. SEMINAR. (1)

First semester. One lecture per week. Reviews, reports and discussions of pertinent subjects in Animal Science. (Staff)

ANSC 022. LIVESTOCK EVALUATION. (3)

Second semester. Two lectures and one laboratory period per week. Prerequisite, ANSC 020 or permission of instructor. A study of type and breed characteristics of beef cattle, sheep and swine and the market classes of livestock which best meet present day demands. One field trip of about two days duration is made during which students participate in the Annual Eastern Intercollegiate Livestock Clinic. (Buric)

ANSC 040. DAIRY PRODUCTION. (3)

Second semester. Two lectures and one laboratory period per week. Prerequisite, ANSC 001. A comprehensive course in dairy breeds, selection of dairy cattle, dairy cattle nutrients, feeding and management. (Staff)

ANSC 041. DAIRY CATTLE TYPE APPRAISAL. (1)

Second semester. Freshmen, by permission of instructor. Two laboratory periods. Analysis of dairy cattle type with emphasis on the comparative judging of dairy cattle. (Cairns)

ANSC 061. ADVANCED POULTRY JUDGING. (1)

First semester. Prerequisite, ANSC 001. One lecture or laboratory period per week. The theory and practice of judging and culling by physical means is emphasized, including correlation studies of characteristics associated with productivity. Contestants for regional collegiate judging competitions will be selected from this class. (Bigbee)

ANSC 062. COMMERCIAL POULTRY MANAGEMENT. (3)

Second semester. Prerequisite, ANSC 001. A symposium of finance, investment, plant layout, specialization, purchase of supplies and management problems in baby chick, egg, broiler and turkey production; foremanship, advertising, selling, by-products, production and financial records. Field trips required. (Bigbee)

For Advanced Undergraduates and Graduates**ANSC 109. FUNDAMENTALS OF NUTRITION. (3)**

Second semester. Three lectures per week. Prerequisite, CHEM 31. A study of the fundamental role of all nutrients in the body, including their digestion, absorption and metabolism. Dietary requirements and nutritional deficiency syndromes of laboratory and farm animals and man will be considered. This course will be for both graduate and undergraduate credit, with additional assignments given to the graduate students. (Staff)

ANSC 110. APPLIED ANIMAL NUTRITION. (3)

First semester. Two lectures and one laboratory period per week. Prerequisite, MATH 010, ANSC 109 or permission of instructor. A critical study of those factors which influence the nutritional requirements of ruminants, swine and poultry. Practical feeding methods and procedures used in formulation of economically efficient rations will be presented. (Vandersall)

ANSC 116. ANATOMY OF DOMESTIC ANIMALS. (3)

First semester. One lecture and two laboratory periods per week. A systematic comparative study of the pig, ruminants and fowl, with special emphasis of those systems important in animal production. Prerequisite, ZOO 001. (Staff)

ANSC 117. INTRODUCTION TO DISEASES OF ANIMALS. (3)

Second semester. Two lectures and one laboratory period per week. This course gives basic instruction in the nature of disease: including causation, immunity, methods of diagnosis, economic importance, public health aspects and prevention and control of the common diseases of sheep, cattle, swine, horses and poultry. Prerequisite, MICB 001 and ZOO 001. (Staff)

ANSC 118. WILDLIFE MANAGEMENT. (3)

Second semester. Two lectures and one laboratory. An introduction to the interrelationships of game birds and mammals with their environment, population dynamics and the principles of wildlife management. (Flyger)

ANSC 119. LABORATORY ANIMAL MANAGEMENT. (3)

Both semesters. A comprehensive course in care and management of laboratory animals. Emphasis will be placed on physiology, anatomy and special uses for the different species. Disease prevention and regulations for maintaining animals colonies will be covered. Field trips will be required. (Marquardt)

ANSC 120. ADVANCED LIVESTOCK JUDGING. (2)

First semester. Two laboratory periods per week. Prerequisites, ANSC 022 and permission of instructor. An advanced course in the selection and judging of pure-bred and commercial meat animals. The most adept students enrolled in this course are chosen to represent the University of Maryland in Intercollegiate Livestock judging contests. (Boric)

ANSC 121. MEATS. (3)

Second semester. Two lectures and one laboratory period per week. Prerequisite, ANSC 020. Registration limited to 14 students. A course designed to give the basic facts about meat as a food and the factors influencing acceptability, marketing, and quality of fresh meats. It includes comparisons of characteristics of live animals with their carcasses, grading and evaluating carcasses as well as wholesale cuts, and the distribution and merchandising of the nation's meat supply. Laboratory periods are conducted in packing houses, meat distribution centers, and retail outlets. (Boric)

ANSC 122. LIVESTOCK MANAGEMENT. (3)

First semester. One lecture and two laboratory periods per week. Prerequisite, ANSC 109. Application of various phases of animal science to the management and production of beef cattle, sheep and swine. (Staff)

ANSC 123. LIVESTOCK MANAGEMENT. (3)

Second semester. One lecture and two laboratory periods per week. Prerequisite, ANSC 122. Applications of various phases of animal science to the management and production of beef cattle, sheep and swine. (Leffel)

ANSC 130. PRINCIPLES OF BREEDING. (3)

Second semester. Three lectures per week. Prerequisites, ZOO 006 or BOTN 117. Graduate credit (1-3 hours) allowed with permission of instructor. The practical aspects of animal breeding, heredity, variation, selection, development, systems of breeding and pedigree study are considered. (Green)

ANSC 131. SPECIAL TOPICS IN ANIMAL SCIENCE. (1)

Prerequisite, permission of instructor. Summer session only. This course is designed primarily for teachers of vocational agriculture and Extension Service personnel. One primary topic, to be selected mutually by the instructor and students, will be presented each session. (Staff)

ANSC 140. PHYSIOLOGY OF MAMMALIAN REPRODUCTION. (3)

First semester. Two lectures and one three-hour laboratory period per week. Prerequisite, ZOO 102 or 104. Anatomy and physiology of the reproductive process and artificial insemination of cattle. (Williams)

ANSC 141. APPLIED ANIMAL PHYSIOLOGY. (4) (P-F)

Second semester. Three lectures and one three-hour laboratory period per week. Prerequisites, CHEM 31 and ANSC 116 or equivalent. The physiology of domesticated animals with emphasis on functions related to production, and the physiological adaption to environmental influences. (Staff)

ANSC 142. DAIRY CATTLE BREEDING. (3)

Second semester. Two lectures and one laboratory period per week. Prerequisites, ANSC 040, ZOO 006 or BOTN 117. A specialized course in breeding dairy cattle. Emphasis is placed on methods of evaluation and selection, systems of breeding and breeding programs. (Douglass)

ANSC 143S. ADVANCED DAIRY PRODUCTION. (1)

Summer session only. An advanced course primarily designed for teachers of vocational agriculture and county agents. It includes a study of the newer discoveries in dairy cattle nutrition, breeding and management. (Staff)

ANSC 146. ANALYSIS OF DAIRY PRODUCTION SYSTEMS. (3)

Prerequisites, AGEC 108 and ANSC 010 or 110, or permission of instructor. The business aspects of dairy farming including an evaluation of the costs and returns associated with each segment. The economic impact of pertinent management decisions is studied. Recent developments in animal nutrition, physiology and genetics, agricultural economics, agricultural engineering, and agronomic practices are discussed as they apply to management of a dairy herd. (Staff)

ANSC 162. AVIAN PHYSIOLOGY. (2)

First semester. One three-hour laboratory period per week. Prerequisites, ZOO 102 or 104 and ANSC 116. The basic physiology of the bird is discussed, excluding the reproductive system. Special emphasis is given to physiological differences between birds and other vertebrates. (Pollard)

ANSC 163S. POULTRY BREEDING AND FEEDING. (1)

Summer session only. This course is designed primarily for teachers of vocational agriculture and extension service workers. The first half will be devoted to problems concerning breeding and the development of breeding stock. The second half will be devoted to nutrition. (Staff)

ANSC 164S. POULTRY PRODUCTS AND MARKETING. (1)

Summer session only. This course is designed primarily for teachers of vocational agriculture and county agents. It deals with the factors affecting the quality of poultry products and with hatchery management problems, egg and poultry grading, preservation problems and market outlets for Maryland poultry. (Helbacka)

ANSC 165. PHYSIOLOGY OF HATCHABILITY. (1)

Second semester. One, three-hour laboratory period per week. Prerequisite, ZOO 102 or 104. The physiology of embryonic development as related to principles of hatchability and problems of incubation encountered in the hatchery industry are discussed. (Shaffner)

ANSC 170. POULTRY HYGIENE. (3)

Second semester. Two lectures and one laboratory period per week. Prerequisites, MICB 001 and ANSC 001. Virus, bacterial and protozoan diseases; parasitic diseases, prevention, control and eradication. (Newman)

ANSC 171. AVIAN ANATOMY. (3)

First semester. Two lectures and one laboratory period per week. Prerequisite, ZOO 001. Gross and microscopic

s-structure, dissection and demonstration. (Newman)
ANSC 189. SPECIAL TOPICS IN FISH AND WILDLIFE
MANAGEMENT (3)
First semester. Three lectures. Analysis of various state
and federal programs related to fish and wildlife manage-
ment. This would include: fish stocking programs, Mary-
land deer management program, warm water fish manage-
ment, acid drainage problems, water quality, water-
fowl management, wild turkey management and regula-
tions relative to the administration of these programs. (Staff)

ANSC 198. SPECIAL PROBLEMS IN ANIMAL SCIENCE
(1-2) (4 cr. max.)
First and second semester. Prerequisite, approval of
staff. Work assigned in proportion to amount of credit.
A course designed for advanced undergraduates in which
specific problems relating to animal science will be
assigned. (Staff)
ANSC 199. SEMINAR. (1, 1)
First and second semesters. Prerequisite, permission of
staff. Presentation and discussion of current literature
and research work in animal science. (Staff)

For Graduates
See the Graduate School catalog for descriptions
ANSC 200. ELECTRON MICROSCOPY. (4) (Staff)

ANSC 220. ADVANCED BREEDING. (2) (Staff)

ANSC 221. ENERGY AND PROTEIN NUTRITION. (3) (Staff)

ANSC 240. ADVANCED RUMINANT NUTRITION. (2) (Staff)

ANSC 241. RESEARCH METHODS. (3) (Staff)

ANSC 242. EXPERIMENTAL MAMMALIAN SURGERY, I. (2) (Staff)

ANSC 243. EXPERIMENTAL MAMMALIAN SURGERY, II. (3) (Staff)

ANSC 261. PHYSIOLOGY OF REPRODUCTION. (3) (Staff)

ANSC 262. POULTRY LITERATURE. (1-4) (Staff)

ANSC 263. POULTRY NUTRITION LABORATORY. (2) (Staff)

ANSC 264. VITAMINS. (2) (Staff)

ANSC 265. MINERAL METABOLISM. (2) (Staff)

ANSC 266. PHYSIOLOGICAL GENETICS OF DOMESTIC
ANIMALS. (2) (Staff)

ANSC 280. SEMINAR IN POPULATION GENETICS OF
DOMESTIC ANIMALS. (3) (Staff)

ANSC 301. SPECIAL PROBLEMS IN ANIMAL SCIENCE (1-2)
(4 cr. max.) (Staff)

ANSC 302. SEMINAR. (1) (Staff)

ANSC 399. RESEARCH-MASTER'S THESIS. (1-6) (Staff)

ANSC 499. RESEARCH-PH.D. DISSERTATION. (1-6) (Staff)

BOTANY
HEAD AND PROFESSOR: Krauss.

PROFESSORS: Corbett, Galloway, Gauch, Kantzes, D. T.
Morgan, Sisler, Stern, and Weaver.

RESEARCH PROFESSOR: Sorokin.

ASSOCIATE PROFESSORS: Brown, Karlander, Klarman, Krus-
berg, Lockard, O. D. Morgan, Patterson, and Rappleye.

ASSISTANT PROFESSORS: Barnett, Bean, Curtis, Harrison,
Motta, Reveal, Smith, and Terborgh.

RESEARCH ASSOCIATE: Norton.

INSTRUCTORS: Grigg and Owens.

GENERAL BOTANY

BOTN 001. GENERAL BOTANY. (4)
First and second semesters. Summer session. Two lec-
tures and two laboratory periods a week. General introduc-
tion to botany, touching briefly on all phases of the
subject. Emphasis is on the fundamental biological prin-
ciples of the higher plants. (Stern and Department Faculty.)

BOTN 001H. GENERAL BOTANY. (4)
First and second semesters. Two lectures and two labora-
tory periods a week. A broad study of plant science with
emphasis on current conceptions of major fields of
interest. Designed for general honors students, as well
as for freshman students with superior training in
biology or chemistry, for upper class science majors,
and for those students seeking an advanced treatment
of BOTN 001. (Galloway and Departmental Faculty.)

BOTN 002. GENERAL BOTANY. (4)
Second semester. Two lectures and two laboratory periods
a week. Prerequisite, BOTN 001 or equivalent. A brief
evolutionary study of algae, fungi, liverworts, mosses,
ferns and their relatives, and the seed plants, emphasizing
their structure, reproduction, habitats, and economic
importance. (Staff)

BOTN 010. PRINCIPLES OF CONSERVATION. (3)
First semester. Three lectures per week. A study of the
principles of economical use of our natural resources in-
cluding water, soil, plants, minerals, wildlife and man.
(Harrison)

BOTN 116. HISTORY AND PHILOSOPHY OF BOTANY (1)
First semester. Prerequisites 20 semester credit hours
in biological sciences including BOTN 001 or equivalent.
Discussion of the development and ideas and knowledge
about plants, leading to a survey of contemporary work
in botanical science. (Staff)

BOTN 136. PLANTS AND MANKIND. (2)
First semester. Prerequisite, BOTN 001 or equivalent.
A survey of the plants which are utilized by man, the
diversity of such utilization, and their historic and
economic significance. (Rappleye)

BOTN 151S. TEACHING METHODS IN BOTANY. (2)
Summer session. Four two-hour laboratory demonstra-
tion periods per week, for eight weeks. Prerequisite, BOTN
001, or equivalent. A study of the biological principles of
common plants, and demonstrations, projects, and visual
aids suitable for teaching in primary and secondary
schools. (Lockard)

BOTN 171. MARINE PLANT BIOLOGY. (4)
Summer session. Prerequisite, BOTN 001 or General
Biology plus Organic Chemistry or the consent of the
instructor. Five, one-hour lectures and three, 3-hour
laboratories each week for six weeks. An introduction to
the taxonomic, physiological and biochemical charac-
teristics of marine plants which are basic to their role
in the ecology of the oceans and estuaries. Laboratory
fee \$12.00. (Krauss and Staff)

BOTN 195. TUTORIAL READING IN BOTANY. (HONORS
COURSE) (2 or 3)
Prerequisite, admission to the Department of Botany
Honors Program. A review of the literature dealing with
a specific research problem in preparation for original
research to be accomplished in Botany 196. Papers will
be assigned and discussed in frequent sessions with
the instructor. (Galloway and Departmental Faculty.)

BOTN 196. RESEARCH PROBLEMS IN BOTANY. (HONORS
COURSE) (2 or 3)
Prerequisite, BOTN 195. The candidate for Honors will
pursue a research problem under the direction and
close supervision of a member of the faculty. (Staff)

BOTN 199. SEMINAR. (1)
First and second semesters. Two semester hours maximum
credit. Prerequisite, permission of instructor. Discussion
and readings on special topics, current literature, or
problems and progress in all phases of botany. Minor
experimental work may be pursued if facilities and the
qualifications of the students permit. For seniors only,
majors and minors in botany or biological science.
(Terborgh)

BOTN 199-S. NSF SEMINAR. (2)
Seminar in the Sciences for NSF participants only. In-
cludes guest speakers, a field trip to area science labora-
tories, and individual problem work. (Lockard)

For Graduates
See the Graduate School catalog for descriptions.

BOTN 301. SPECIAL PROBLEMS IN BOTANY. (1 to 3)

(Staff)

BOTN 302. SEMINAR IN BOTANY. (1)

(Staff)

PLANT PHYSIOLOGY

For Advanced Undergraduates and Graduates

BOTN 101. PLANT PHYSIOLOGY. (4)

First semester. Two lectures and one 4-hour laboratory period a week. Prerequisites, BOTN 001 and General Chemistry. Organic Chemistry strongly recommended. A survey of the general physiological activities of plants.

(Patterson, Lockard)

BOTN 172. SPECIAL PROBLEMS IN MARINE RESEARCH.

Summer session. Prerequisites BOTN 001 or general biology plus Organic Chemistry or consent of instructor. Recommended concurrent or previous enrollment in BOTN 171, Marine Plant Biology. An experimental approach to problems in marine research dealing primarily with the phytoplankton, the larger algae, and marine spermatoytes. Emphasis will be placed on their physiological and biochemical activities.

(Staff)

For Graduates

See the Graduate School catalog for descriptions.

BOTN 204. GROWTH AND DEVELOPMENT. (2)

(Staff)

BOTN 209. PHYSIOLOGY OF ALGAE. (2)

(Staff)

BOTN 210. PHYSIOLOGY OF ALGAE—LABORATORY. (1)

(Staff)

BOTN 230. ADVANCED PLANT PHYSIOLOGY. (2)

(Staff)

BOTN 231. PLANT BIOCHEMISTRY. (2)

(Staff)

BOTN 232. PLANT BIOPHYSICS. (2)

(Staff)

BOTN 233. PLANT BIOCHEMISTRY-BIOPHYSICS LABORATORY. (4)

(Staff)

PLANT PATHOLOGY

BOTN 020. DISEASES OF PLANTS. (4)

First semester. Two lectures and two laboratory periods a week. Prerequisite, BOTN 001, or equivalent. An introductory study of the symptoms and casual agents of plant diseases and measure for their control.

(Klarman)

BOTN 122. RESEARCH METHODS IN PLANT PATHOLOGY. (2)

Second semester. Two laboratory periods a week. Prerequisite, BOTN 020, or equivalent. Advanced training in the basic research techniques and methods of plant pathology.

(Curtis)

BOTN 127. DIAGNOSIS AND CONTROL OF PLANT DISEASES. (3)

Second semester. Three lectures per week. A study of various plant diseases grouped according to the manner in which the host plants are affected. Emphasis will be placed on recognition of symptoms of the various types of diseases and on methods of transmission and control of the pathogens involved.

(Bean)

BOTN 152S. FIELD PLANT PATHOLOGY. (1)

Summer session. Daily lecture for three weeks. Prerequisite, BOTN 020, or equivalent. Given in accordance with demand. A course for county agents and teachers of vocational agriculture. Discussion and denomination of the important diseases in Maryland crops.

(Kantzes)

For Graduates

See the Graduate School catalog for descriptions.

BOTN 221. PLANT VIROLOGY. (2)

(Staff)

BOTN 222. PLANT VIROLOGY LABORATORY. (2)

(Staff)

BOTN 223. PHYSIOLOGY OF FUNGI. (2)

(Staff)

BOTN 224. PHYSIOLOGY OF FUNGI LABORATORY. (1)

(Staff)

BOTN 227. PHYSIOLOGY OF PATHOGENS AND HOST-PATHOGEN RELATIONSHIPS. (3)

(Staff)

BOTN 241. PLANT NEMATOLOGY. (4)

(Staff)

Taxonomy

BOTN 011. PLANT TAXONOMY. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisite, BOTN 001, or equivalent. An introductory study of plant classification, based on the collection and identification of local plants.

(Brown)

BOTN 128. MYCOLOGY. (4)

Second semester. (Not offered 1971-72.) An introductory study of the morphology, classification, life histories, and economics of the fungi.

(Motta)

BOTN 153S. FIELD BOTANY AND TAXONOMY. (2)

Summer session. Prerequisite, BOTN 001 or General Biology. Four two-hour laboratory periods a week for eight weeks. The identification of trees, shrubs, and herbs, emphasizing the native plants of Maryland. Manuals, keys, and other techniques will be used. Numerous short field trips will be taken. Each student will make an individual collection.

(Brown)

BOTN 161. SYSTEMATIC BOTANY. (2)

Fall semester. (Not offered 1970-71). Two two-hour laboratory periods a week. Prerequisite, BOTN 011 or equivalent. An advanced study of the principles of systematic botany. Laboratory practice with difficult plant families including grasses, sedges, legumes, and composites. Field trips arranged.

(Reveal)

ECOLOGY

BOTN 102. PLANT ECOLOGY. (2)

Second semester. Prerequisite, BOTN 001. Two lectures per week. The dynamics of populations as affected by environmental factors, with special emphasis on the structure and composition of natural plant communities, both terrestrial and aquatic.

(Terborgh)

BOTN 103. PLANT ECOLOGY LABORATORY. (1)

Prerequisite, BOTN 102 or its equivalent or concurrent enrollment therein. One three-hour laboratory period a week. The application of field and experimental methods to the qualitative and quantitative study of vegetation and environmental factors.

(Terborgh)

BOTN 113. PLANT GEOGRAPHY. (2)

First semester. Prerequisite, BOTN 001, or equivalent. A study of plant distribution throughout the world and the factors generally associated with such distribution.

(Brown)

For Graduates

See the Graduate School catalog for descriptions.

BOTN 219. ADVANCED PLANT ECOLOGY. (3)

(Staff)

ANATOMY—MORPHOLOGY

BOTN 110. PLANT MICROTECHNIQUE. (3)

Second semester. One lecture a week. Laboratory periods by arrangement. Prerequisite, BOTN 001 or equivalent and permission of instructor. Preparation of temporary and permanent mounts, including selection of material, killing and fixing, embedding, sectioning, and staining methods; photomicrography, film and paper processing and preparation of photographic illustrations for research publication.

(Stern)

BOTN 111. PLANT ANATOMY. (3)

First semester. One lecture and two laboratory periods a week. Prerequisite, BOTN 110, or equivalent. The origin and development of the organs and tissue systems in the vascular plants.

(Rapplee)

BOTN 115. STRUCTURE OF ECONOMIC PLANTS. (3)

Second semester. (Not offered 1971-72.) One lecture and two laboratory periods a week. Prerequisite, BOTN 111. A detailed microscopic study of the anatomy of the chief fruit and vegetable crops.

(Rapplee)

For Graduates

See the Graduate School catalog for description.

GENETICS

BOTN 117. GENERAL PLANT GENETICS. (2)

Second semester. Prerequisite, BOTN 001 or equivalent. The basic principles of plant genetics are presented; the mechanics of transmission of the hereditary factors in relation to the life cycle of seed plants, the genetics of specialized organs and tissues, spontaneous and induced mutations of basic and economic significance, gene action, genetic maps, the fundamentals of polyploidy, and genetics in relation to methods of plant breeding are the topics considered.

(Smith)

See the Graduate School catalog for descriptions.

- BOTN 215. PLANT CYTOGENETICS. (3)
(Staff)
- BOTN 216. NUCLEIC ACIDS AND MOLECULAR GENETICS (2)
(Staff)
- BOTN 399. M. S. RESEARCH
(Staff)
- BOTN 499. PH.D. RESEARCH
(Staff)

- ENTM 123. INSECT PHYSIOLOGY. (4)
Second semester. Two lectures and two three-hour laboratory periods a week. Prerequisites, ENTM 015, CHEM 031 or equivalent. Lectures and laboratory exercises on the cuticle, growth, endocrines, muscles, circulation, nerves, digestion, excretion and reproduction in insects.
(Jones)
- ENTM 124. ECONOMIC ENTOMOLOGY. (4)
First semester. 2 lectures and two 2-hour laboratory periods a week. Prerequisite, ENTM 015. The recognition, biology and control of insects injurious to fruit and vegetable crops, field crops and stored products.
(Harrison)

- ENTM 125. INSECT PATHOLOGY. (3)
Second semester. 2 lectures and one 3-hour laboratory period per week. Prerequisite, MICB 001; prerequisite or concurrent ENTM 123, or consent of the instructor. An introduction to the principal insect pathogens with special reference to symptomology, epizootiology, and microbial control of insect pests.
(Reichelderfer)
- ENTM 198. SPECIAL PROBLEMS. (1-3)
First and second semesters. Credit and prerequisites, to be determined by the Department. Investigations of assigned entomological problems.
(Staff)
- ENTM 199. SEMINAR. (1, 1)
First and second semesters. Prerequisite, senior standing. Presentation of original work, reviews and abstracts of literature.
(Staff)

- For Graduates**
See the Graduate School catalog for descriptions.
- ENTM 205. INSECT ECOLOGY. (2)
(Staff)
- ENTM 206. CULICIDIOLOGY. (2)
(Staff)
- ENTM 208. TOXICOLOGY OF INSECTICIDES. (4)
(Staff)
- ENTM 209. ADVANCES IN INSECT PHYSIOLOGY. (2)
(Staff)
- ENTM 210. ENTOMOLOGICAL TOPICS. (Credit arranged)
(Staff)
- ENTM 211. ASPECTS OF INSECT BIOCHEMISTRY. (2)
(Staff)
- ENTM 301. ADVANCED ENTOMOLOGY. (1-6)
(Staff)
- ENTM 399. THESIS RESEARCH. (Master's Level)
(Staff)
- ENTM 499. DISSERTATION RESEARCH. (Doctoral Level)
(Staff)

FOOD SCIENCE

- PROFESSORS:** Young (Animal Science); Davis Arbuckle, King and Mattick (Dairy Science); Stark¹, Kramer, Scott and Wiley (Horticulture); Shaffner (Poultry Science).
- ASSOCIATE PROFESSORS:** Buric (Animal Science).
- ASSISTANT PROFESSORS:** Bigbee, and Heath (Poultry Science).
- FDSO 001. INTRODUCTION TO FOOD SCIENCE. (3)
Second semester. Two lectures and one laboratory per week. An introductory course to orient the student in the broad field of food science. Includes a historical and economic survey of the major food industries, composition and nutritive value, quality aspects, spoilage, preservation, sanitation, standards and regulation of foods.
(Mattick)

For Advanced Undergraduates and Graduates

- FDSO 102. PRINCIPLES OF FOOD PROCESSING—I. (3)
Second semester. Two lectures and one laboratory per week. A study of the basic methods by which foods are preserved (unit operations). Effect of raw product quality and the various types of processes on yield and quality of the preserved products.
(Wiley)
- FDSO 103. PRINCIPLES OF FOOD PROCESSING—II. (3)
First semester. Three lectures per week. A detailed study of food processing with emphasis on line and staff operations, including physical facilities, utilities, pre- and post-processing operations, processing line development and sanitation.
(Mattick)

ENTOMOLOGY

PROFESSORS: Bickley and Jones
ASSOCIATE PROFESSORS: Harrison, Menzer, Messersmith and Steinhauer

ASSISTANT PROFESSORS: Davidson and Reichelderfer

LECTURERS: Heimpel and Spangler

- ENTM 004. BEEKEEPING. (2)
First semester. A study of the life history, behavior and seasonal activities of the honeybee, its place in pollination of flowers with emphasis on plants of economic importance and bee lore in literature.
(Staff)
- ENTM 005. INSECTS. (3)
First and second semesters. A survey of the major groups of insects, their natural history, and their relationships with man and his environment.
(Messersmith and Staff)

- ENTM 015. INTRODUCTORY ENTOMOLOGY. (3)
First semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, one semester of college zoology. The position of insects in the animal kingdom, their gross structure, classification into orders and principal families and the general economic status of insects. A collection of common insects is required.
(Messersmith)

- ENTM 020. AGRICULTURAL INSECT PESTS. (3)
Second semester. 2 lectures and one 2-hour laboratory period a week. Prerequisite BOTN 001 or ZOOL 001. An introduction to the principal insect pests of fruit, vegetable, forage, and ornamental crops, with special reference to Maryland agriculture. Not open to entomology majors.
(Harrison)

- ENTM 100. ADVANCED APICULTURE. (3)
Second semester. One lecture and two three-hour laboratory periods a week. Prerequisite, ENTM 004. The theory and practice of apary management. Designed for the student who wishes to keep bees or requires a practical knowledge of bee management.
(Staff)

- ENTM 105. MEDICAL AND VETERINARY ENTOMOLOGY. (4)
Second semester. Two lectures and one two-hour laboratory period a week. Prerequisite, ENTM 001 or consent of the Department. A study of the morphology, taxonomy, biology and control of the arthropod parasites and disease vectors of man and animals. The ecology and behavior of vectors in relation to disease transmission will be emphasized.
(Messersmith)

- ENTM 107. INSECTICIDES. (2)
Second semester. Prerequisite, consent of the Department. The development and use of contact and stomach poisons, fumigants and other important chemicals, with reference to their chemistry, toxic action, compatibility, and host injury. Recent research emphasized. (Menzer)

- ENTM 120. INSECT TAXONOMY AND BIOLOGY. (4)
First semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, ENTM 015. Introduction to the principles of systematic entomology and the study of all orders and the important families of insects; immature forms considered.
(Davidson)

- ENTM 121S. ENTOMOLOGY FOR SCIENCE TEACHERS. (4)
Summer. Four lectures and four three-hour laboratory periods a week. This course will include the elements of morphology, taxonomy and biology of insects using examples commonly available to high school teachers. It will include practice in collecting, preserving, rearing and experimenting with insects insofar as time will permit.
(Davidson and Messersmith)

- ENTM 122. INSECT MORPHOLOGY. (4)
Second semester. Two lectures and two three-hour laboratory periods a week. Prerequisite, ENTM 015. A basic study of insect form, structure and organization in relation to function.
(Davidson)

- FDSC 111. FOOD CHEMISTRY. (3)**
 First semester. Two lectures and one laboratory per week. Prerequisite, CHEM 010, 012. The application of basic chemical and physical concepts to the composition and properties of foods. Emphasis will be on the relationship of processing technology on the keeping quality, nutritional value and acceptability of foods. (King)
- FDSC 112. ANALYTICAL QUALITY CONTROL. (3)**
 Second semester. Two lectures and one laboratory per week. Prerequisite CHEM 010, 012. Instrumental and sensory measurement of food quality attributes including appearance, rheological, flavor, and microbiological evaluations, and their integration into grades and standards of quality. (Kramer)
- FDSC 113. STATISTICAL QUALITY CONTROL. (3)**
 First semester. Two lectures and one laboratory per week. Prerequisite AGRI 100. Statistical methods for acceptance sampling of supplies and raw materials, in-plant and finished product inspection, water, fuel, and waste control, production, transportation, inventory and budget controls. (Kramer)
- FDSC 125. MEAT AND MEAT PROCESSING. (3)**
 First semester, alternate years. Two lectures and one laboratory per week. Prerequisite CHEM 161 or permission of instructor. Physical and chemical characteristics of meat and meat products, meat processing, methods of testing and product development.
- FDSC 131. FOOD PRODUCT RESEARCH AND DEVELOPMENT (3)**
 Second semester. Two lectures, one laboratory per week. Prerequisite FDSC 103, CHEM 161, or permission of instructor. A study of the research and development function for improvement of existing products and development of new, economically feasible and marketable food products. Application of chemical-physical characteristics of ingredients to produce optimum quality products, cost reduction, consumer evaluation, equipment and package development. (Mattick)
- FDSC 156. HORTICULTURAL PRODUCTS PROCESSING. (3)**
 Second semester, alternate years. Two lectures and one laboratory per week. Commercial methods of canning, freezing, dehydrating, fermenting, and chemical preservation of fruit and vegetable crops. (Wiley)
- FDSC 160. TECHNOLOGY OF MARKET EGGS AND POULTRY. (3)**
 First semester, alternate years. Two lectures and one laboratory per week. A study of the technological factors concerned with the processing, storage, and marketing of eggs and poultry and the factors affecting their quality. (Helbacka)
- FDSC 175. SEAFOOD PRODUCTS PROCESSING. (3)**
 Second semester, alternate years. Two lectures and one laboratory a week. Prerequisite, CHEM 161 or permission of instructor. The principal preservation methods for commercial seafood products with particular reference to the invertebrates. Chemical and microbiological aspects of processing are emphasized. (Staff)
- FDSC 182. DAIRY PRODUCTS PROCESSING. (3)**
 First semester, alternate years. Two lectures and one laboratory per week. Method of production of fluid milk, butter, cheese, condensed and evaporated milk and milk products and ice cream. (Mattick)
- FDSC 198. SPECIAL PROBLEMS IN FOOD SCIENCE. (1-3) (4 cr. max.)**
 First and second semesters. Prerequisite, approval of staff. Designed for advanced undergraduates in which specific problems in food science will be assigned. (Staff)
- FDSC 199. SEMINAR. (1)**
 Second semesters. Presentation and discussion of current literature and research in food science. (Staff)
- MECHANICS OF FOOD PROCESSING.**
 See Agricultural Engineering, AGEN 113.
- EXPERIMENTAL FOOD SCIENCE.**
 See Food and Nutrition, FOOD 153.
- For Graduates**
 See the Graduate School catalog for descriptions.
- FDSC 201. ADVANCES IN FOOD TECHNOLOGY. (3)** (Staff)
- FDSC 301. SPECIAL PROBLEMS IN FOOD SCIENCE. (1 to 4)** (Staff)
- FDSC 302. SEMINAR IN FOOD SCIENCE. (1-3)** (Staff)
- FDSC 310. COLLOQUIUM IN FOOD SCIENCE. (1)** (Staff)
- FDSC 399. THESIS RESEARCH. (1-12)** (Staff)
- FDSC 499. DISSERTATION RESEARCH. (1-12)** (Staff)
- Methods of Horticultural Research**, see Horticulture, HORT 207.
- Research Methods**, see Animal Science, ANSC 241.
- Recent Advances in Nutrition**, see Home Economics, NUTR 204.
- GEOLOGY**
ASSOCIATE PROFESSORS: Fernow, Segovia, Siegrist and Stifel
ASSISTANT PROFESSORS: Maccini and Weidner
- GEOL 001. INTRODUCTORY PHYSICAL GEOLOGY. (3)**
 First and second semester. A study dealing primarily with the principles of dynamical and structural geology. Designed to give a general survey of the rocks and minerals composing the earth; the movement within it; and its surface features and the agents that form them. (Staff)
- GEOL 002. HISTORICAL AND STRATIGRAPHIC GEOLOGY. (3)**
 Second semester. Prerequisite, GEOL 001. A study of the earth's history as revealed through the principles of stratigraphy and the processes of physical geology, with emphasis on the formations and the geologic development of the North American continent. (Fernow)
- GEOL 004. PHYSICAL GEOLOGY LABORATORY. (1)**
 First and second semester. One laboratory a week. May be taken concurrently with a specially designated section of GEOL 1 or after successful completion of GEOL 001. The basic materials and tools of physical geology stressing familiarization with rocks and minerals and the use of maps in geologic interpretations. (Staff)
- GEOL 005. HISTORICAL GEOLOGY LABORATORY. (1)**
 Second semester. One laboratory a week. Concurrent registration in GEOL 002 or consent of instructor is required. The use of geologic maps and fossils in the study of the physical and biological evolution of the earth. (Fernow)
- For Advanced Undergraduates and Graduates**
GEOL 120. CRYSTALLOGRAPHY. (3)
 First semester. Two lectures and one laboratory a week. Prerequisite, CHEM 009 or consent of instructor. An introduction to the study of crystals. Stresses the theoretical and practical relationships between the internal and external properties of crystalline solids. Encompasses morphological, optical and chemical crystallography. (Siegrist)
- GEOL 121. MINERALOGY. (3)**
 Second semester. One lecture and two laboratories a week. Prerequisite, GEOL 004 and 120 or consent of instructor. Basic elementary mineralogy with emphasis on description, identification, formation, occurrence and economic significance of approximately 150 minerals. (Siegrist)
- GEOL 122. OPTICAL MINERALOGY. (3)**
 First semester, alternate years. (Offered 1970-71) One lecture and two laboratories a week. Prerequisite, GEOL 121 or consent of instructor. The optical behavior of crystals with emphasis on the theory and application of the petrographic microscope. (Staff)
- GEOL 130. INVERTEBRATE PALEONTOLOGY. (3)**
 First semester, alternate years. (Offered 1971-72). Two lectures and one laboratory a week. Prerequisite, GEOL 002 or consent of instructor. ZOOLO02 or equivalent recommended. A systematic review of the morphology, classification, ecology, and geologic ranges of selected invertebrate groups represented in the fossil record. (Fernow)
- GEOL 131. STRATIGRAPHIC PALEONTOLOGY. (3)**
 Second semester, alternate years. (Offered 1971-72). Two lectures and one laboratory a week. Prerequisite, GEOL 130. Principles of biostratigraphy, paleoecology and paleogeography. Laboratory study emphasizes significant index fossils. (Fernow)

GEOL 140. STRUCTURAL GEOLOGY. (3)

First semester, alternate years. (Offered 1971-72.) Two lectures and one laboratory a week. Prerequisite, GEOL 004 or consent of instructor. A study of the cause and nature of the physical stresses and resulting deformational responses in the earth. Laboratory exercises include crustal model studies and stereographic analysis of deformational structures. (Segovia)

GEOL 141. SEDIMENTATION. (3)

Second semester, alternate years. (Offered 1970-71.) Two lectures and one laboratory a week. Prerequisite, GEOL 004 or consent of instructor. A study of the critical variables in sedimentation systems; origin, dispersion, accumulation, and properties of sediments and sedimentary rocks. Laboratories will include the measurement and statistical analysis of sediment properties and study of sedimentation rates. (Stifel)

GEOL 142. IGNEOUS AND METAMORPHIC PETROLOGY. (2)

First semester, alternate years. (Offered 1970-71.) Two laboratories a week. Prerequisites, GEOL 121 or consent of instructor. A detailed study of igneous and metamorphic rocks: petrogenesis; distributions; chemical and mineralogical relations; macroscopic descriptions and geologic significance. (Staff)

GEOL 143. PETROGRAPHY. (2)

Second semester, alternate years. (Offered 1970-71.) Two laboratories a week. Prerequisites, GEOL 122, 141, 142 or consent of instructor. Microscopic thin-section studies of rocks stressing the description and classification of igneous, metamorphic and sedimentary rocks. (Staff)

GEOL 145. GEOCHEMISTRY. (3)

First semester, alternate years. (Offered 1970-71.) Two lectures and one laboratory a week. Prerequisite, GEOL 121 or consent of instructor. An introduction to the chemistry of the earth including high and low temperature equilibria relations between and within important mineral groups and an analysis of the distribution and significance of elements and their isotopes in the earth. (Staff)

GEOL 147. GEOPHYSICS. (3)

Second semester, alternate years. (Offered 1971-72.) Two lectures and one laboratory a week. Prerequisite, PHYS 011 or consent of instructor. An introduction to the basic theories and principles of geophysics stressing such important applications as rock magnetism, gravity anomalies, crustal strain and earthquakes, and surveying. (Staff)

GEOL 150. GROUNDWATER GEOLOGY. (3)

First semester, alternate years. (Offered 1970-71.) Prerequisite, GEOL 001 or consent of instructor. An introduction to the basic geologic parameters associated with the hydrologic cycle. Problems in the accumulation, distribution and movement of groundwater will be analyzed. (Staff)

GEOL 151. MARINE GEOLOGY. (3)

Second semester, alternate years. (Offered 1970-71.) Prerequisite, GEOL 001 or consent of instructor. An introduction to the essential elements of marine and estuarine geology including studies of currents, tides, waves, coastline development, shore erosion and marine and bay sedimentation. (Staff)

GEOL 152. ECONOMIC GEOLOGY 1 — METALLIC ORE DEPOSITS. (2)

First semester, alternate years. (Offered 1970-71.) Two laboratories a week. Prerequisite, GEOL 121 or consent of instructor. A study of the geology of metallic ore deposits stressing ore-forming processes, configuration of important ore bodies, and familiarization with characteristic ore mineral suites. (Staff)

GEOL 153. ECONOMIC GEOLOGY 11 — NON-METALLIC ORE DEPOSITS. (2)

Second semester, alternate years. (Offered 1970-71.) Two laboratories a week. Prerequisite, GEOL 121 or consent of instructor. A study of the geology of non-metallic ore deposits: nitrates, phosphates, limestone, etc., and fossil fuels; coal oil, and natural gas. (Staff)

GEOL 154. ENGINEERING GEOLOGY. (3)

Second semester, alternate years. (Offered 1971-72.) Two lectures and one laboratory a week. Prerequisite, GEOL 004 or consent of instructor. A study of the geological problems associated with the location of tunnels, bridges, dams and nuclear reactors; slope control, and natural hazards. (Segovia)

GEOL 160. EARTH SCIENCE. (3)

First semester. Two lectures and one laboratory a week. Prerequisite, permission of instructor. An interdisciplinary course designed to show how geology, meteorology, physical geography, soil science, astronomy and oceanography are interrelated in the study of the earth and its environment in space. Recommended for science education undergraduate and graduate students. May not be used for credit towards geology majors. (Maccini)

GEOL 194. RESEARCH PROBLEMS IN GEOLOGY. (1)

First and second semester. Open only to geology majors in their final year. The student will select and investigate with departmental assistance a specific library, laboratory or field study. A written and oral presentation of the study will determine satisfactory completion of the course. (Staff)

GEOL 197. SPECIAL TOPICS IN EARTH SCIENCE. (1-3)

Second semester. Prerequisite, GEOL 160 or equivalent. (Maccini)

GEOL 198. SPECIAL PROBLEMS IN GEOLOGY. (1-3)

First and second semesters. Prerequisites, GEOL 002 and GEOL 004 or equivalent, and consent of instructor. Intensive study of a special geologic subject or technique selected after consultation with instructor. Intended to provide training or instruction not available in other courses which will aid the student's development in his field of major interest. (Staff)

HORTICULTURE

PROFESSORS: Stark, Haut, Kramer, Link, Reynolds, Scott, Shanks, Thompson and Wiley.

ASSOCIATE PROFESSOR: Soergel.

ASSISTANT PROFESSORS: Angell, Baker and Bouwkamp.

LECTURERS: Borthwick, Hendee and Hornstein.

HORT 005. TREE FRUIT PRODUCTION. (3)

First semester. Prerequisite BOTN 001. Two lectures and one laboratory per week. A detailed study of the principles and practices in fruit production, harvesting and storage, with emphasis on the apple. One field trip required. (Thompson)

HORT 006. TREE FRUIT PRODUCTION. (2)

Second semester. Two lectures per week. Prerequisite HORT 005. A study of the principles and practices in fruit production, harvesting, and handling of deciduous tree fruit crops other than the apple. (Thompson)

HORT 011. GREENHOUSE MANAGEMENT. (3)

First semester. Three lectures per week. Prerequisite BOTN 001. A study of the construction and operation of structures for forcing horticultural crops and the principles underlying the regulation of plant growth under greenhouse conditions. (Shanks)

HORT 012, 013. GREENHOUSE CROP PRODUCTION LABORATORY. (1, 1)

First and Second Semesters. One laboratory per week. Prerequisite or concurrent HORT 011. Demonstration and application of practices in the commercial production of greenhouse crops. (Shanks)

HORT 016. GARDEN MANAGEMENT. (2)

Second semester. Two lectures per week. Prerequisite BOTN 001. The planting and care of ornamental plants on the home grounds and a study of commonly used species of annuals and herbaceous perennials. (Baker)

HORT 017. GARDEN MANAGEMENT LABORATORY. (1)

Second semester. One two-hour laboratory per week. Prerequisite or concurrent HORT 016. Demonstration and application of practices in the production and maintenance of garden plants. (Baker)

HORT 020. INTRODUCTION TO THE ART OF LANDSCAPING. (3)

First and second semesters. Three lectures per week. The theory and general principles of landscape design with their application to public and private areas. (Soergel)

HORT 030. ELEMENTS OF FORESTRY. (3)

First semester. Two lectures per week. Prerequisite BOTN 001. Not open to freshmen. A general survey of the field of forestry, including timber values, conservation, protection silviculture, utilization, mensuration, engineering, recreation and lumbering. Principles and practices of woodland management. Four all-day Saturday field trips are required. (Hendee)

HORT 056. BASIC LANDSCAPE COMPOSITION. (2)

First and second semesters. Two laboratory periods per week. The introduction of landscaping presentation technique, supplemented by problems in basic composition. (Soergel)

HORT 058. VEGETABLE PRODUCTION. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, BOTN 001. A study of principles and practices of commercial vegetable production. (Reynolds)

HORT 059. BERRY PRODUCTION. (3)

Second semester. Two lectures and one laboratory period a week. Prerequisite, BOTN 001. A study of the principles and practices involved in the production of small fruits including grapes, strawberries, raspberries, blackberries, and cranberries. (Angell)

HORT 062. PLANT PROPAGATION. (3)

First semester. Three lectures per week. Prerequisite BOTN 001. A study of the principles and practices of the propagation of plants. (Baker)

HORT 063. FLOWER STORE MANAGEMENT. (3)

Second semester, alternate years. Two lectures and laboratory periods a week. Prerequisite, HORT 011. A study of the operation and management of a flower store. Laboratory period devoted to principles and practice of floral arrangements and decoration. (Link)

For Advanced Undergraduates

HORT 100. PRINCIPLES OF LANDSCAPE DESIGN. (3)

First semester. One lecture and two laboratory periods per week. Prerequisite HORT 020 and HORT 056. A consideration of design criteria and procedure as applied to residential properties. (Soergel)

HORT 152. ADVANCED LANDSCAPE DESIGN. (3)

Second semester, alternate years. One lecture and two laboratory periods per week. Prerequisite HORT 100, prerequisite or concurrent HORT 108. The design of public and private areas with the major emphasis on plant materials. (Soergel)

HORT 153. LANDSCAPE CONSTRUCTION. (3)

Second semester, alternate years. One lecture and two laboratory periods per week. Prerequisite HORT 100. An introductory study and application of location methods, construction details, and construction techniques of the various landscape objects such as walks, walls, benches, roads. (Soergel)

HORT 198. SPECIAL PROBLEMS. (2, 2) (4 cr. max.)

First and second semesters. Credit arranged according to work done. For major students in horticulture or botany. Four credits maximum per student. (Staff)

HORT 199. SEMINAR. (1)

Second semester. Oral presentation of the results of investigational work by reviewing recent scientific literature in the various phases of horticulture. (Stark)

For Advanced Undergraduates and Graduates

HORT 101. TECHNOLOGY OF FRUITS. (3)

First semester. Three lectures per week. Prerequisite HORT 006; prerequisite or concurrent BOTN 101. A critical analysis of research work and application of the principles of plant physiology, chemistry, and botany to practical problems in commercial production. (Thompson)

HORT 103. TECHNOLOGY OF VEGETABLES. (3)

Second semester. Three lectures per week. Prerequisite HORT 058; prerequisite or concurrent BOTN 101. A critical analysis of research work and application of the principles of plant physiology, chemistry, and botany to practical problems of commercial vegetable production. (Reynolds)

HORT 105. TECHNOLOGY OF ORNAMENTALS. (3)

First semester. Three lectures per week. Prerequisite or concurrent BOTN 101. A study of the physiological processes of the plant as related to the growth, flowering and storage of ornamental plants. (Link)

HORT 107, 108. WOODY PLANT MATERIALS. (3, 3)

First and second semesters. Prerequisite, BOTN 011. A field and laboratory study of trees, shrubs, and vines used in ornamental plantings. (Baker)

HORT 109. PRINCIPLES OF BREEDING HORTICULTURAL PLANTS. (3)

Second semester. Alternate years. Three lectures per week. Prerequisite, BOTN 117 or permission of instructor. The genetic and cytogenetic basis of plant breeding.

Systems of pollination control, theories of selection, heterosis and quantitative inheritance; mutation breeding; interspecific hybridization, induced polyploidy and haploidy. (Bouwkamp)

HORT 114. SYSTEMATIC HORTICULTURE. (3)

First semester. Two lectures and one laboratory period a week. A study of the origin, taxonomic relationship and horticultural classification of fruits and vegetables. (Angell)

HORT 115S. TRUCK CROP MANAGEMENT. (1)

Summer session only. Primarily designed for teachers of vocational agriculture and extension agents. Special emphasis will be placed upon new and improved methods of production of the leading truck crops. Current problems and their solution will receive special attention. (Staff)

HORT 124S. TREE AND SMALL FRUIT MANAGEMENT. (1)

Summer session only. Primarily designed for vocational agriculture teachers and county agents. Special emphasis will be placed upon new and improved commercial methods of production of the leading tree and small fruit crops. Current problems and their solution will receive special attention. (Staff)

HORT 125S. ORNAMENTAL HORTICULTURE. (1)

Summer session only. A course designed for teachers of agriculture and extension agents to place special emphasis on problems of the culture and use of ornamental plants. (Staff)

HORT 161. PHYSIOLOGY OF MATURATION AND STORAGE OF HORTICULTURAL CROPS. (2)

Second semester, alternate years. Two lectures a week. Prerequisite, BOTN 101. Factors related to maturation and application of scientific principles to handling and storage of horticultural crops. (Scott)

HORT 162. FUNDAMENTALS OF GREENHOUSE CROP PRODUCTION. (3)

Second semester, alternate years. Three lectures per week. Prerequisite HORT 011. This course deals with a study of the commercial production and marketing of ornamental plant crops under greenhouse, plastic houses and out-of-door conditions. (Shanks)

HORT 163. PRODUCTION AND MAINTENANCE OF WOODY PLANTS. (3)

Second semester, alternate years. Two lectures and one laboratory period a week. Prerequisite or concurrent HORT 062; 108. A study of the production methods and operation of a commercial nursery and the planting and care of woody plants in the landscape. (Link)

For Graduates

See the Graduate School catalog for descriptions.

HORT 207. METHODS OF HORTICULTURAL RESEARCH. (3)

(Staff)

HORT 211. EDAPHIC FACTORS AND HORTICULTURAL PLANTS. (3)

(Staff)

HORT 212. CHEMICAL REGULATION OF GROWTH OF HORTICULTURAL PLANTS. (3)

(Staff)

HORT 213. ENVIRONMENTAL FACTORS AND HORTICULTURAL PLANTS. (3)

(Staff)

HORT 214. BREEDING OF HORTICULTURAL PLANTS. (3)

(Staff)

HORT 301. SPECIAL PROBLEMS IN HORTICULTURE. (1-3)

(Staff)

HORT 302. ADVANCED SEMINAR. (1, 1)

(Staff)

HORT 399. THESIS RESEARCH (1-12)

(Staff)

HORT 499. DISSERTATION RESEARCH. (1-12)

(Staff)

Seed Inspection, Seed Certification, and Weed Control

The Seed Inspection Service administers the state seed law; inspects seeds sold throughout the state; collects seed samples for laboratory examination; reports the results of the examinations to the parties concerned; publishes summaries of these reports which show the relative reliability of the label information supplied by wholesale seedsmen;

cleans and treats tobacco seed intended for planting in the state; makes analysis, tests, and examinations of seed samples submitted to the laboratory; and advises seed users regarding the economic and intelligent use of seeds. In 1969, new laws pertaining to the control of noxious weeds and correct labeling of turf products were enacted.

The work of the Seed Inspection Service is not restricted to the enforcement of the seed law, however, for state citizens may submit seed samples to the laboratory for analysis, test, or examination. Specific information regarding suitability for planting purposes of seeds is thus made available to individuals without charge.

State Horticultural Department

Work in this field is designed to control insects and plant diseases and to protect the public in the purchase of products of nurserymen and florists. A considerable part of staff time is occupied by inspection of orchards, crops, nurseries, greenhouses, and floral establishments. Cooperation with the federal government in the inspection and certification of materials that come under quarantine regulations is another major function of the Department. The Department enforces the provisions of the Apiary Law, including inspection of apiaries. It also regulates the use of pesticides under provisions of a new law enacted in 1969.

State Department of Drainage

The State Department of Drainage was established in 1937. Its duties are to encourage and assist with the drainage of agricultural lands in the state, to correlate the activities of the local drainage organizations in the state, and to cooperate with state and federal agencies in the interest of a permanent program of improved drainage.

State Inspection Service

The protection of consumers and manufacturers of agricultural products against fraudulent practices makes certain specialized laws necessary. These are classified as correct labeling laws, and are enforced by the State Inspection Service. Included in this legislation are the Feed, Fertilizer, Agricultural Liming Materials, and Pesticide Laws.

Soil Conservation

In 1937 the Maryland Legislature created the State Soil Conservation Committee in Maryland. The twenty-four districts organized under the law include all the land in the state.

The State Committee is charged with the responsibility of coordinating the efforts of the districts and encouraging the application of soil and water conservation practices.

THE AGRICULTURAL EXPERIMENT STATION

Irvin C. Haut, Director

The Agricultural Experiment Station serves Maryland agriculture in much the same manner as research laboratories serve large corporations. The problems which face a biological and business undertaking such as agriculture are as numerous and perplexing as the problems of any business.

The station is a joint federal and state undertaking. Passage of the Hatch Act of 1887, which made available a grant-in-aid to each state for the purpose of establishing an agricultural experiment station, gave a great impetus to the development of research work in agriculture. This work was further encouraged by the passage of the Adams Act in 1906, the Purnell Act in 1925, the Bankhead-Jones Act in 1935, and the Flannagan-Hope Act of 1946.

The work of the Maryland Agricultural Experiment Station, which is supported by these Acts and by State appropriations, centers at College Park. On the University campus are laboratories for studying insects and diseases, soil fertility, botanical problems, and the economics of our agricultural industry and its interrelationship with our total economy. This is also the location of the livestock and dairy barns with their experimental herds.

About eight miles from the campus at College Park, near Beltsville, the Plant Research Farm of about 500 acres is devoted to work connected with soil fertility, plant breeding and general crop production problems. An experimental farm near Upper Marlboro is devoted to the problems of tobacco growing and curing. A farm near Salisbury is devoted to solution of the problems of producers of broilers and of vegetable crops in the southern Eastern Shore area. Two experimental farms are operated near Ellicott City; one is devoted to livestock problems and the other to dairy cattle nutrition and forage research. Also tests of various crop and soil responses are distributed throughout the state. These different locations provide the opportunity to conduct experiments under conditions existing where the results will be put into practice.

AGRICULTURAL EXTENSION SERVICE

Robert E. Wagner, Director

Cooperative Extension work in agriculture and home economics, established by state and federal laws in 1914, extends practical agricultural and home information beyond the classrooms of the University of Maryland to young people, farmers, homemakers, and people in businesses relating to agriculture and home economics.

The educational endeavors of the Cooperative Extension Service are financed cooperatively by the federal, state, and county governments. In each county there is a competent staff of Extension agents assigned to conduct educational work in rather specific program areas consistent with the needs of the people in the county and as funds permit. The county staff is supported by a staff of specialists located at the University, and through their mutual efforts they assist local people in seeking solutions to problems.

The Cooperative Extension Service works in close harmony and association with all groups and organizations. In addition to the work on the farms and in the farm homes, the Extension program is aimed at the many rural, non-farm, and urban clientele who service the agricultural industries of the state, including consumers. Thousands of boys and girls gain leadership knowledge and experience and are provided practical educational instruction in 4-H clubs and other youth groups.

The Cooperative Extension Service in cooperation with the College of Agriculture and the Experiment Station arranges and conducts short courses, workshops, and conferences in various lines, many of which are held at the University.

STATE BOARD OF AGRICULTURE PROGRAMS

Charles P. Ellington, Director

The state law provides that the Board of Regents of the University of Maryland shall constitute the Maryland State Board of Agriculture. While the Service and Control programs are part of the University, they are designed primarily to carry out the functions of the State Board of Agriculture. Numerous services are performed which result

in the improvement and maintenance of high standards in production, processing and distribution of farm products. In addition, many control or regulatory activities are authorized by state law and are carried out by the following departments of the State Board of Agriculture:

Dairy Inspection

Duties of the dairy inspection force deal with the calibration of glassware used in testing milk and cream; examination of all weighers, samplers, and testers and the issuance of licenses to those satisfactorily passing the examination; and inspection of the pertinent activities of weighers, samplers, testers, and dairy plants.

Department of Markets

Activities of the Department of Markets serve to insure a fair and equitable treatment of the farmer in all dealings which he may have concerning the marketing of his products. In the performance of these responsibilities, the Department conducts market surveys, compiles and disseminates marketing information and market data, operates a market news service, provides an agricultural inspection and grading service, maintains a consumer informa-

tion service, and enforces the agricultural marketing laws of the state. The control work of the department is carried out under the authority of various state laws relating to the marketing of farm products.

Field offices are located in Baltimore, Salisbury, Hancock, and Pocomoke.

MARYLAND LIVESTOCK SANITARY SERVICE

The Livestock Sanitary Service is charged with the responsibility of preventing the introduction of diseases of animals and poultry from outside of the state and with control and eradication of such diseases within the state.

Facilities for the diagnosis of a wide variety of diseases are furnished in the main laboratory at College Park and in the branch laboratories at Salisbury, Preston, Centreville, Bel Air, Frederick, and Oakland.

Meat inspection is carried out under the Maryland Wholesome Meat Act of 1968. The act requires ante and post mortem inspection of all animals and their carcasses if used for human food, as well as processing and sanitation inspection.

The School of Architecture offers a five-year undergraduate professional program leading to the degree, Bachelor of Architecture. Future plans include development of other environmental design programs at the graduate and undergraduate level.

The School is following established procedures of the National Architectural Accreditation Board, and it is anticipated that it will be accredited in accordance with policies of the NAAB, insuring that present and future students will be eligible for registration in all fifty states upon meeting experience requirements and passing the standard examination. The School is an associate member of the Association of Collegiate Schools of Architecture, and is assigned to that organization's Northeastern Region.

The curriculum presents the basic knowledge and the opportunity to develop the requisite skills to beginning professional work. The School's goal is to prepare students for professional service in helping ameliorate the nation's environmental problems.

OPPORTUNITIES IN ARCHITECTURE

A rapidly expanding population, together with rapidly developing industrial civilization, has taxed the resources of cities throughout the world. Large segments of these urban populations are overcrowded, underserved, and deprived of many of the amenities which city life historically symbolizes. Many cities find themselves on the edge of economic, political, and social disaster. Whole ethnic, racial, and economic groups live in a continuing situation of environmental frustration. This urban crisis, which has come to fruition over the last generation, promises to dominate our domestic life in the United States for at least the generation to come.

The very complexity of these problems, precluding easy attribution of causes and obviating simple solutions, has generated great changes in the environmental design professions and in the other social disciplines. Where they once stood part, they are now committed to a common purpose. Each of them has had to broaden its vision of service and concern, and has come to recognize the worth and value of the techniques and insights of the others.

In architecture, these exchanges have influenced the procedures, scope of services, and goals of the profession. Recent years have seen the introduction of the ideas of urban sociology and the behavioral sciences into the area of professional concern, of the inclusion into professional procedures of linear programming, computer technology, operations research, mathematical and gaming simulation, and the use of analogue models. The scope of architectural services, once confined to the design of and supervision of construction of buildings, has been broadened to include programming, developmental planning, operations research, project feasibility studies and other new professional activities. Finally, the role of the architect is expanding from a narrow concern with building design to a broad concern for developmental change, and his goal has developed from a preoccupation with beauty to a commitment to contributing to the enhancement of the quality of life.

These observations indicate both the great need for educated and trained professionals, and the relevancy and excitement which characterize the profession today. Perhaps at no time in history has architecture posed as great a challenge, nor offered so great a promise of personal fulfillment to its successful practitioners. There are many opportunities for employment and careers in architectural practice.

Additional education and experience also qualify a graduate for a career in city or regional planning.

Moreover, the general nature of an architectural education is such that some graduates elect and achieve successful careers in civil service, commerce or industry in related fields.

THE CURRICULUM

The program permits students to enter the School either directly from high school or after one year of general college work without extending the time required for completion of degree requirements.

Students in the first year may take an introductory course in the history of architecture as well as general courses. In the second year, the student begins his professional education in the basic environmental design studio course as well as continuing his general education. The basic environmental design studio explores the parameters which define architectural problems as well as the problems inherent in making objects and making spaces. In the third year, coordinated courses in design and building systems introduce the student to the Ecological, physiographic, physiological and physical generators of architectural design, and the student is given an introduction into building technology. In the fourth year, this process is continued, but the emphasis is on urban, design factors: the environmental context, the historical and situation context, urban metabolic factors, and theoretical, aesthetic and sociological considerations. In the fifth year of design, the student is offered an opportunity to choose a comprehensive topical problem from several offered each year including special studies in technical areas as well as building design and planning case studies.

All of the design studio courses emphasize environmental design problem solving experiences to advance the student's skill in the field, as well as lectures, reading assignments, field trips, etc. In addition to the design and technical courses, the student is required to take four semesters of architectural history, of which two are optional, several liberal and physical sciences, and a number of electives and professional electives. The latter may be chosen from among those offered by the School's faculty as well as from among selected courses offered by other departments. A list of professional electives is presented elsewhere in this section.

The general education requirements of the University apply generally to the architecture program, but architectural students are specifically required to complete math through Math 014 and 015. Most students find it necessary to begin college math with Math 018, followed by Math 014 and 015. In addition, architecture students are required to complete Physics 010, Biology 1 and Computer Science 012.

LOCATION

A permanent, contemporary, air-conditioned building for the School is anticipated in the academic year 1971-72. Planning for this facility is completed, and construction has begun.

Meanwhile, temporary facilities in a World War II wooden, one-story barracks complex on the campus provide adequate studio space, a library, exhibit space, classroom and lecture hall facilities, and office space.

LIBRARY

The Architectural School Library at present comprises some 6,000 volumes. It is expected that the library will number twelve to fifteen thousand volumes by 1971. This will make it one of the major architectural school libraries in the nation. The library subscribes to about 100 foreign and domestic periodicals providing resources in urban sociology, building technology, and urban planning as well as in architecture.

The visual aids library presently comprises about 20,000 35-mm. color slides in architecture, landscape architecture and urban planning.

ADMISSION

Because there is a fixed limit to the number of candidates who can be admitted each year, it is important that the following instructions be carefully followed:

1. **Students applying from high school:** Write the Director of Admissions, University of Maryland, College Park, Maryland 20742 for application instructions;

2. **Students who have completed work at other universities:** Write the Director of Admissions, University of Maryland, College Park, Maryland 20742 for application instructions;

3. **Students transferring from other colleges of the University of Maryland:** Please pick up an application record form at the School of Architecture, and return it to the Assistant Dean of the School, together with a record of all work taken at the University of Maryland.

Deadlines: All application procedures should be completed and materials in hand at the University by March 1. Applications received after this date, but before the University deadline dates for new students and for transfer students, will be considered only on a space-available basis.

FINANCIAL ASSISTANCE

For promising young men and women who might not otherwise be able to attend the University's School of Architecture, a number of grants and scholarships are available, some earmarked specifically for architectural students. New students must apply before March 15th. Students already enrolled may apply before May 1st. All requests for information concerning these awards should be directed to: Director, Student Aid, University of Maryland, College Park, Maryland 20742.

REQUIREMENTS FOR GRADUATION

Since the School is entering its fourth year of operation all of its proposed courses have not yet been approved by appropriate University authorities. Consequently, the five-year curriculum in Architecture which follows is labelled "tentative". However, it can be anticipated that most, if not all, requirements will be approved.

Students in architecture are required to complete a minimum of 170 credits of work for the Bachelor of Architecture degree. In addition to prescribed courses in the School of Architecture, students are required to complete a number of credits in electives offered elsewhere in the University. The requirements for graduation are tabulated below:

Studio Courses	36 credits
Systems & Technology Courses	16 credits
Architectural History Courses	12 credits
Math.	9 credits

Computer Science	3 credits
Physics	8 credits
Theory of Urban Form	3 credits
Professional Practice	2 credits
Professional Electives	17 to 38 credits
Electives	15 to 36 credits
General Education	24 (see curriculum)
P.E.	2 credits
Health	2 credits
	170 credits (minimum)

176	Urban Trans. & Urb. Dev	3	Econ. 37 and jr. stdg.
180, 181	Business Law	3	Jr. stdg.
195	Real Estate Prin.	3	Econ. 37 & jr. stdg.
196	Urban Land Management	3	Jr. stdg.

COMPUTER SCIENCE

100	Language & Struct. of Computers	3	CMSC 12
140	Struct. of Programming Lang.	3	Jr. stdg., CMSC 100
150	Data & Storage Structures	3	Jr. stdg., CMSC 100
166	Functional Organization of Digital Computer Systems	3	Jr. stdg., CMSC 100

Distribution

Minimum architecture courses	69 credits
General Education, Math, Physics, Health & P.E.	48 credits
Professional Electives and Electives	53 credits
	170 credits

ECONOMICS

37	Fund. of Economics	3	soph. stdg.
120	Intro. to Reg. & Urban Econ.	3	Perm. of Instr.
142	Intro. to Public Finance	3	Econ. 37
144	State & Local Public Finance	3	Econ. 37
171	Economics of American Industry	3	Econ. 37

Tentative Five-Year Curriculum in Architecture

FIRST YEAR

Fall		Spring			
(G.E.) (Social Science Option)	3	(G.E.) (Social Science Option)	3		
(G.E.) Math 18**	3	(G.E.) Math 14	3		
(G.E.) English 1	3	(G.E.) English 3	3		
(G.E.) (History Option)	3	(G.E.) (History Option)	3		
Arch. 014 Hist. Mod. Env. Des.	3	Arch. 015 Hist. Mod. Env. Des.	3		
P.E.	1	P.E.	1		
Health 5	2	P.E.	1		
	18		16		

GENERAL EDUCATION

GNED 60	Intro. to Interdisciplinary Urban Studies	3	
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GEOGRAPHY

10	General Geography	3	none
191	Population Geography	3	Geog. 10, Perm. of Instr.
197	Urban Geography	3	Jr. stdg.

GEOLOGY

001	Geology	3	none
004	Physical Geology Lab.	1	none

INFORMATION SYSTEM MANAGEMENT

101	Electronic Data Processing	3	Jr. std., CMSC 12
102	Electronic Data Processing Applications	3	Jr. stdg., ISM 101

PSYCHOLOGY

001	Intro. to Psych.	3	meets G.E.
021	Social Psychology	3	Psych. 1
136	Applied Exper. Psychology	3	Psych. 1 or Perm. of Instr.

SOCIOLOGY

001	Intro. to Sociology	3	meets G.E.
014	Urban Sociology	3	Soc. 1
051	Social Pathology	3	Soc. 1, soph. stdg.
113	The Rural Community	3	Soc. 1, jr. stdg.
114	The City	3	Soc. 1, jr. stdg.
116	Community Organization	3	Soc. 1, jr. stdg.
123	Ethnic Minorities	3	Soc. 1, jr. stdg.
124	Sociology of Race Relations	3	Soc. 1, jr. stdg.
148	Sociology of the Arts	3	Soc. 1, jr. stdg.

STATISTICS AND PROBABILITY

50	Intro. to Random Variables	4	Math. 15
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ART

16	Life Drawing		
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FACULTY
PROFESSORS: Cochran, Murtagh, Hill,
ASSOCIATE PROFESSORS: Ekstrom, Hutton, Schack, Shaefter, D. Wiebenson, J. Wiebenson.
ASSISTANT PROFESSORS: Bell, Chabrowe, Lewis.
INSTRUCTORS: Alley, Kaskey, Michel.
LECTURERS: Carter, Long (Visiting), Sellers (Visiting), Wilkins.

PROFESSIONAL ELECTIVES

The following courses are presently accepted by the faculty in Architecture as meeting the professional elective requirements.

Course	Course Name	Credits	Prerequisites
ANTHROPOLOGY			
001	Intro. to Anth: Archaeol. and Phy.	3	Meets G.E.
002	Intro. to Anth: Cult. Anth & Ling.	3	none
021	Man and Environment	3	Soph. stdg.
041	Intro. to Archaeology	3	Soph. stdg.
101	Cultural Anthropology	3	Anth. 1 or 2 or 21
141	Archaeology of Old World	3	Anth. 1 or 41
151	Archaeology of New World	3	Anth. 1 or 41

ARCHITECTURE

080	Basic Photography	2	Perm. of Instr.
081	Advanced Photography	2	Arch. 80
180	Theories and Lit. of Architecture	3	Perm. of Instr.
182	Signs, Symbols & Messages in Arch.	3	Perm. of Instr.

BUSINESS ADMINISTRATION

163	Labor Relations	3	Jr. stdg.
170	Prin. of Transportation	3	Econ. 37 and jr. stdg.

COURSE DESCRIPTION

ARCH 014. HISTORY OF MODERN ENVIRONMENTAL DESIGN (3)
 Survey of architectural history. Lecture, 3 hours per week.

ARCH 015. HISTORY OF MODERN ENVIRONMENTAL DESIGN (3)
 Prerequisite Arch. 014—Survey of architectural history. Lecture, 3 hours per week.

ARCH 020. BASIC ENVIRONMENTAL DESIGN (4)
 Introduction to the processes of visual and architectural design, including the study of visual design fundamentals. Field problems involving the student in the study of actual developmental problems. Lecture, studio, 9 hours per week.

ARCH 021. BASIC ENVIRONMENTAL DESIGN (4)
 Prerequisite Architecture 20. Introduction to the processes of visual and architectural design, including the study of visual design fundamentals. Field problems involving the student in the study of actual developmental problems. Lecture, studio, 9 hours per week.

ARCH 030. INTRODUCTION TO THE BUILT ENVIRONMENT (3)
 Introduction of (1) conceptual, perceptual, behavioral and technical aspects of the environment; and, (2) methods of

- analysis, problem solving and implementation. For students not majoring in architecture. Prerequisites: None. Lecture, seminar, 3 hours per week.
- ARCH 080. BASIC PHOTOGRAPHY (2)**
Provides a student with the basic concepts of clarity and organization on a two-dimensional surface and stresses photography as a tool for visual communication. Lecture 1 hour per week — 3 hours lab a week.
- ARCH 081. ADVANCED PHOTOGRAPHY (2)**
Prerequisite: Architecture 080. Allows the student to investigate independently areas of photographic communication not covered in the basic course. Lecture, 1 hour per week; 3 hours lab.
- ARCH 130. ARCHITECTURE STUDIO I (4)**
Prerequisite: Arch. 020 & Arch. 021. Develops a basic understanding of the elements of environmental control, basic structural systems, building processes, materials, and the ability to manipulate them. Lecture, studio, 9 hours per week. Corequisite—Architecture 132.
- ARCH 131. ARCHITECTURE STUDIO II (4)**
Prerequisite: Architecture 130. Develops a basic understanding of the forms generated by different structural systems, environmental controls and methods of construction. Lecture, studio, 9 hours per week. Corequisite —Arch. 133.
- ARCH 132. BUILDING SYSTEMS I (4)**
Prerequisites: Math 15, Physics 11 and Arch 021. Introduction to architectural science and technology treating principles of structures, environmental mechanical controls, and construction. Corequisite: Architecture 130. Lecture, studio, 6 hours per week.
- ARCH 133. BUILDING SYSTEMS II (4)**
Prerequisite: Architecture 130 and 132. Develops working knowledge of the design principles and parameters of three areas of architectural science and technology: structures, environmental - mechanical controls, and construction. Lecture, studio, 6 hours per week. Corequisite: Architecture 131.
- ARCH 135. STUDIES IN MEDIEVAL ARCHITECTURE (3)**
Limited to Architecture students or by permission of the instructor. Architectural innovations from the Carolingian through the Gothic periods. Lecture, 3 hours per week.
- ARCH 136. THEORY OF URBAN FORM (3)**
Urban spatial forms of the past and present; theories of design of complexes of buildings, urban space and communities. Lecture, 3 hours per week.
- ARCH 140. ARCHITECTURE STUDIO III (4)**
Continuation of design studio, with emphasis on comprehensive building design and introduction to urban design factors. Prerequisites: Architecture 131 and Architecture 133. Corequisite: Architecture 142, except by permission of the Dean. Lecture, studio, 9 hours per week.
- ARCH 141. ARCHITECTURE STUDIO IV (4)**
Continuation of design studio, with emphasis on urban design factors. Prerequisites: Architecture 140 and Architecture 142. Corequisite: Architecture 143, except by permission of the Dean. Lecture, studio, 9 hours per week.
- ARCH 142. BUILDING SYSTEMS III (4)**
Applications of principles in architectural structures, environmental controls and construction. Prerequisites: Architecture 131 and Architecture 133. Corequisite: Architecture 140. Lecture, studio, 6 hours per week.
- ARCH 143. BUILDING SYSTEMS IV (4)**
Applications of principles and further analysis of systems and hardware in architectural structures, environmental controls and construction. Prerequisites: Architecture 140 and Architecture 142. Corequisite: Architecture 141. Lecture, studio, 6 hours per week.
- ARCH 144. STUDIES IN RENAISSANCE ARCHITECTURE (3)**
Limited to Architecture students or by permission of the instructor. Study of Renaissance architectural principles and their development in the Baroque period. Lecture, 3 hours per week.
- ARCH 145. STUDIES IN MODERN ARCHITECTURE (3)**
Limited to Architecture students or by permission of the instructor. Study of Architectural problems from 1750 to the present. Lecture, 3 hours per week.
- ARCH 154. HISTORY OF AMERICAN ARCHITECTURE, 17TH CENTURY TO 19TH CENTURY (3)**
History of American Architecture — 17th to 19th Century. Prerequisite—Architecture 014 and 015. Lecture, 3 hours per week.
- ARCH 155. HISTORY OF AMERICAN ARCHITECTURE, 19TH AND 20TH CENTURY (3)**
Prerequisite: Architecture 014, 015 and 154. History of American Architecture 19th and 20th Centuries. Lecture, 3 hours per week.
- ARCH 164. INDEPENDENT STUDIES IN THE HISTORY OF ARCHITECTURE (3)**
Permission of the instructor. Independent research in architectural history. Lecture, 3 hours per week.
- ARCH 165. DIRECTED STUDIES IN ARCHITECTURE (1-4)**
Directed study under individual faculty guidance with enrollment limited to advanced undergraduate students. Project proposals must receive a recommendation from the School Curriculum Committee and approval of the Dean of the School prior to registration. Public oral presentation to the faculty of a final report or project will be required at final submission for credit.
- ARCH 180. THEORIES AND LITERATURE OF ARCHITECTURE (3)**
Limited to Architecture students or by permission of the instructor. Provides an understanding of some historical and present theories of architectural design readings and seminar discussions. Lecture, 3 hours per week.
- ARCH 182. SIGNS, SYMBOL AND MESSAGES IN ARCHITECTURE (3)**
Limited to Architecture students or by permission of the instructor. Class limited to 15-20 students. Signs and symbols in buildings and cities, messages conveyed and purposes for conveying these messages. Readings, photographic reports and minor problem-solving assignments. Lecture, 3 hours per week.
- ARCH 185. ECONOMIC DETERMINANTS OF ARCHITECTURE (3)**
Introduction of economic aspects of present day architecture: governmental policy, land evaluation, and project financing; construction materials and labor costs; cost analysis and control systems. Architecture majors, except by permission of instructor. Lecture, seminar, 3 hours per week.

Arts and Sciences

THE COLLEGE OF ARTS AND SCIENCES offers its students a liberal education. It seeks to develop graduates who can deal intelligently with the problems which confront them and whose general education will be a continuing source not only of material well-being but of genuine personal satisfaction. It also offers each student the opportunity to concentrate in the field of his choice; this element of depth serves both as an integral part of his education and as a foundation for further professional training or pursuits.

This College is an outgrowth of the Division of Language and Literature and the Division of Applied Science and the later School of Liberal Arts of Maryland State College. In 1921 the School of Liberal Arts and the School of Chemistry were combined and other physical and biological sciences were brought into the newly formed College of Arts and Sciences. In later reorganizations some departments have been added and some transferred to the administrative control of other colleges.*

ADMISSION

The requirements for admission to the College of Arts and Sciences are, in general, the same as those for admission to the other colleges and schools of the University. Application must be made to the Director of Admissions, University of Maryland, College Park, Maryland.

The student who intends to pursue a program of study in the College of Arts and Sciences should in-

clude the following subjects in his high school program: English, four units; college preparatory mathematics (algebra, plane geometry), three or four units; foreign language, two or more units; biology, chemistry, or physics, two units; history and social sciences, one or more units.

The student who wishes to major in chemistry, mathematics, physics, botany, microbiology, zoology, or who wishes to follow a pre-medical or pre-dental program, should include four units of college preparatory mathematics (algebra, plane geometry, trigonometry, and more advanced mathematics, if available). He should also include chemistry and physics.

DEGREES

Students of this College who satisfactorily complete curricula with majors in departments of the humanities or social sciences are awarded the degree of Bachelor of Arts.* Those who satisfactorily complete curricula with majors in the Department of Mathematics or the biological and physical sciences are awarded the degree of Bachelor of Science.* Those who complete satisfactorily a special professional program in the Department of Music are awarded the degree of Bachelor of Music.

GENERAL REQUIREMENTS FOR DEGREES

The baccalaureate degree from the College of Arts and Sciences may be conferred upon a student who has satisfied the following requirements:

1. General Education requirements.

*The Departments of Economics, Geography, and Government and Politics, although administratively in the College of Business and Public Administration, offer courses for Arts and Sciences students. Majors may be elected in these departments as in those of the departments administered by the College of Arts and Sciences.

*The Department of Botany, although administered by the College of Agriculture, offers courses for Arts and Sciences students. A major may be elected in this department as in those of the departments administered by the College of Arts and Sciences.

2. College of Arts and Sciences requirements.

COLLEGE REQUIREMENTS

1. **FOREIGN LANGUAGE.** Students in the College of Arts and Sciences must follow one of the following options in foreign language:

- They may take twelve semester hours in a classical language at the level indicated under Classical Languages and Literature
- Students who begin a modern foreign language in the University must successfully complete the study of that language in any authorized sequence, through Course 007 in all languages; however, Course 008 in German may be taken by science majors in lieu of 007.
- Students who continue in the University a language studied for two or more years in secondary school may choose, in French, German, or Spanish, between enrolling in Course 005 or taking a placement examination (students beginning in Courses 005, 006, or 007 must continue in any authorized sequence through Course 007). Students who score higher than the Course 007 level on the placement examination thereby fulfill the College language requirement. In modern languages other than French, German, or Spanish (i.e., languages which do not have a Course 005), all students must take a placement examination.*

The languages which may be offered to meet this requirement are Classical Languages (Greek or Latin) or modern foreign languages. Students who wish to offer a foreign language not included in this list should consult the chairman of the appropriate foreign language department for a recommendation to the Dean.

Foreign students may satisfy this requirement by offering twelve hours of English in addition to the regular English requirement. The special course in English for foreign students (FOLA 001, 002) may be included in the additional hours of English. (This option may not be used by pre-medical students.) A foreign student may not meet the foreign language requirement by taking freshman or sophomore courses in his native language.

Normally a student shall not be permitted to repeat a foreign language course below Course 009 for credit if he has successfully completed a higher numbered course than the one he wishes to repeat. Credit (including elective credit) will be given for a language Course 001 only if credit has been earned in additional courses in the same language.

2. **NATURAL SCIENCE AND MATHEMATICS.** Twelve semester hours are required, except for candidates for the Bachelor of Music degree (who must satisfy the minimum General Education requirement, however). The science courses elected require the approval of the Dean; departments in which courses may be selected are the same as those listed under the General Education requirements.

3. **SPEECH.** Normally, students in the arts area take SPCH 001 (3 hours), while those in the science area take 007 (2 hours). In certain specialized programs, other courses may be required. The foreign student should register for 003—Fundamentals of General

American Speech—rather than the speech course normally required in his curriculum.

4. **MAJOR AND MINOR REQUIREMENTS.** Specific descriptions of the departmental, inter-departmental, or pre-professional majors are found, in alphabetical order, along with the course offerings in the second section of this catalog. The general College regulations controlling majors (and minors) are as follows.**

Each student chooses a field of concentration (major). He may make this choice as early as he wishes; however, once he has earned 56 hours of acceptable credit he must choose a major before his next registration.

In the program leading to the B.A. degree, the student must also have a secondary field of concentration (minor). The courses constituting the major and the minor must conform to the requirements of the department in which the work is done.

The student must have an average of not less than "C" in the introductory courses in the field in which he intends to major.

A major shall consist, in addition to the underclass departmental requirements, of 24-40 hours, of which at least twelve must be in courses numbered 100 or above, and at least twelve of which must be taken in the University of Maryland.

A minor in programs leading to the B.A. degree shall consist of a coherent group of courses totaling 18 semester hours in addition to the requirements listed above. At least six of the 18 hours must be in a single department in courses numbered 100 or above. The courses comprising the minor must be chosen with the approval of the major department. Except in certain specialized curricula approved by the Dean, not more than nine hours of the minor may be taken in courses outside of the College of Arts and Sciences.

No minor is required in programs leading to the B.S. degree, but the student must take supporting courses in science or other fields as specified by his major department.

The average grade of the work taken for the major must be at least "C"; some departments will count toward satisfaction of the major requirement no course completed with a grade of less than "C." The average grade of the work taken in the major and minor combined must be at least "C." A general average of "C" in courses taken at the University of Maryland is required for graduation.

Courses taken to fulfill the requirements in General Education may not be used toward major or minor requirements.

JUNIOR REQUIREMENTS

To attain junior standing, a student must acquire a minimum of 56 academic semester hours and be eligible to re-register in the University. See **Appendix C Academic Regulations** for full statement of rules pertaining to junior standing.

NORMAL LOAD

A minimum of 120 semester hours credit, exclusive of required courses in physical activities and health, is required for graduation. The normal load for students in this college is 15 semester hours credit per semester, exclusive of the required work in physical activities and health.

**Beginning September 1, 1968, the minor requirement for programs leading to the B.A. degree will be eliminated. Major departments may then require that specific supporting courses in other departments be included, along with required courses in the major department, in the area of concentration. Students enrolled in the University prior to September 1968 may elect to satisfy the requirements for programs leading to the B.A. degree either with the old plan or with the new.

*A placement test is given during registration week for students wishing to pursue a modern language they have studied in high school.

A student must have the approval of his advisor and dean to take more than the normal program prescribed in his curriculum.

ADVISORS

Each freshman in this College will be assigned to a faculty advisor who will help the student, during his first year, to select his courses and to determine what his field of major concentration should be.

The student at the sophomore level and above will be advised by a faculty member in his major department. Students following the three-year programs in Dentistry, Law, and Medicine will be advised by special advisors for these programs.

ELECTIVES IN OTHER SCHOOLS AND COLLEGES

A limited number of courses taken in other colleges and schools of the University may be counted for elective or minor credit toward a degree in the College of Arts and Sciences. The number of credits which may be accepted from the various colleges and schools is as follows: College of Education—24; all other colleges or independent departments—20. The combined credits from other colleges and schools shall not exceed 20 (or 24 if courses in education are included). For the combined degree programs in Dentistry, Law, or Medicine the first year of professional work must be completed and the student is permitted to continue immediately as a sophomore in the professional school.

CERTIFICATION OF HIGH SCHOOL TEACHERS

If courses are properly chosen in the field of education, a prospective high school teacher can prepare for high school positions, with a major and minor in one of the departments of this College. A student who wishes to work for a teacher's certificate must consult his advisor before his junior year. Such a student must, at the same time, consult an advisor in the appropriate curriculum in the College of Education.

HONORS

The aim of the College Honors Programs is to recognize and encourage superior scholarship. To this end, Honors work offers the gifted student challenging opportunities to work in small groups with carefully chosen instructors and to move at a speed appropriate to his capacities in an atmosphere conducive both to independent study and to growth in intellectual maturity. The College conducts both General and Departmental Honors Programs spanning the four undergraduate years. For information concerning the General Honors Program, see below, under "Honors."

For information concerning the Departmental Honors Programs, consult the various departmental entries in this catalog. It may, however, be remarked that the Departmental Honors Programs are administered by a Honors Committee within each department. Admission to a Departmental Honors Program ordinarily occurs at the beginning of the first or second semester of the student's junior year. As a rule, only students with a cumulative grade point average of at least 3.0 are admitted. A comprehensive examination over the field of his major program is given to a candidate near the end of his senior year. On the basis of the student's performance on the Honors Comprehensive Examination and in meeting such other requirements as may be set by the Departmental Honors Committee, the faculty may vote to recommend the candidate for the appropriate degree with (departmental) HONORS, or for the appropriate degree with (depart-

mental) HIGH HONORS. Successful candidacy will be symbolized by appropriate announcement in the Commencement Program and by citation on the student's academic record and diploma.

Students in the General and Departmental Honors Programs enjoy some academic privileges similar to those of graduate students.

AFRO-AMERICAN STUDIES PROGRAM

This program is for the student who wants a concentration in Afro-American studies outside of his departmental major. It includes work in literature, history, sociology, and government. The emphasis is on an interdisciplinary study of the Negro in American life and culture.

An undergraduate in good standing in a college of the University who wishes to enroll in the Program should consult with his departmental advisor and an advisor of the Afro-American Studies Program. The student following this program must meet the general requirements for a degree in his college.

To receive a Certificate in Afro-American Studies, the student must complete 18 hours of upper division course work with an Afro-American emphasis outside his major. Required courses are ENGL 167, HIST 117, SOCY 124, and a Seminar on Afro-American Studies. Two additional courses may be selected from ANTH 101, ENGL 166, GOVT 132, GOVT 134, HIST 183, SOCY 123, and a Directed Readings in Afro-American Studies.

A student planning to enter the Program should consult with a Program advisor on prerequisites and introductory courses. Advisors are available in the English and History Departments.

COURSES

AASP 100. DIRECTED READINGS IN AFRO-AMERICAN STUDIES. (3)

(Staff)

AASP 101. SEMINAR IN AFRO-AMERICAN STUDIES. (3)

(Staff)

PROGRAMS AND COURSE OFFERINGS

Freshmen who are interested in this program consult with their lower division advisor. Upperclassmen should consult with Professor Lounsbury.

- AMST 127, 128. CULTURE AND THE ARTS IN AMERICA. (3, 3)
Prerequisite, junior standing. A study of American institutions, the intellectual and esthetic climate from the Colonial period to the present. (Beall)
- AMST 137, 138. READINGS IN AMERICAN STUDIES. (3, 3)
First and second semesters. A historical survey of American values as presented in various key writings. (Staff)

FOR GRADUATES

- AMST 200. INTRODUCTORY SEMINAR IN AMERICAN STUDIES. (3) (Staff)
- AMST 201, 202. SEMINAR IN AMERICAN STUDIES. (3, 3) (Staff)
- AMST 251. ORIENTATION SEMINAR—MATERIAL ASPECTS OF AMERICAN CIVILIZATION. (3) (Staff)
- AMST 255, 256. READING COURSE IN SELECTED ASPECTS OF AMERICAN CIVILIZATION. (3, 3) (Staff)
- AMST 299. THESIS RESEARCH. (1-6) (Staff)
- AMST 399. THESIS RESEARCH. (1-6) (Staff)
- AMST 499. DISSERTATION RESEARCH (ARRANGED) (Staff)

AMERICAN STUDIES

PROFESSOR AND DIRECTOR: Beall.

ASSISTANT PROFESSOR: Lounsbury and Mintz.

ADVISORY COMMITTEE: Beall (Chairman, American Studies), Fry (English), Grimsted (History), Lounsbury (American Studies), Mintz (American Studies), Schwartz (Sociology). Ex Office: Manning (Dean of the College of Arts and Sciences) and Sparks (Associate Dean of the Graduate School)

The University has a comprehensive program in American Studies. It begins with required courses on the freshman and sophomore levels, includes a major for juniors and seniors, and also provides for graduate work on the M.A. and Ph.D. levels. (For information concerning the graduate program, see the Graduate School Catalog.)

The student who majors in American Studies has the advantage of being taught by specialists from various departments. The committee in charge of the program represents the Departments of English, History, Art, and Philosophy.

The program is intended to have generous breadth, but the danger of securing breadth without depth is offset by the requirement of an area of concentration. Strong emphasis upon English and History is required, with a concentration in one of these. The major consists of 42-credits (of which 24 must be on the 100 level) including not only courses in American Studies but additional courses distributed among the four fields of English, History, Art, and Philosophy. Since the major is a special interdisciplinary one, the student's selection of courses must meet the approval of the advisor. Two courses are required for the major: AMST 127, 128 (Culture and the Arts in America), 6 credits, for juniors; and AMST 137, 138 (Readings in American Studies), 6 credits, for seniors. No grade of less than C counts toward the major.

Suggested sample curriculum for American Studies majors: Junior year: AMST 127, AMST 128—Culture and the Arts in America (3, 3); ENGL 150 and ENGL 151—American Literature (3, 3); HIST 109 and HIST 110—Social History of the United States (3, 3); ART 158—History of American Art (3), (or ART 159—History of American Art (3); PHIL 102—Modern Philosophy (3), (or PHIL 101—Ancient Philosophy (3); Electives (6)

Senior year: AMST 137 and 138—Readings in American Studies (3, 3); ENGL 155 and 156—Major American Writers (3, 3); HIST 133 and 134—History of Ideas in America (3, 3); ART 178—20th Century Art (3); PHIL 105—Philosophy in America (3); Electives (6).

ANTHROPOLOGY (Division of Sociology)

ASSOCIATE PROFESSOR AND DIRECTOR OF ANTHROPOLOGY: Williams

ASSOCIATE PROFESSORS: Anderson and Hoffman.

ASSISTANT PROFESSORS: Fidelholtz and Rosen.

LECTURER: McDowell.

The Division of Anthropology offers beginning and advanced course work in the four principal subdivisions of the discipline: physical anthropology, linguistics, archaeology, and ethnology. Courses in these subdivisions may be used to fulfill the minor or "supporting courses" requirement in some programs leading to the B.A. degree. They also may, at the discretion of the Department of Sociology, be counted toward a major in Sociology.

Anthropology Major: The fulfillment of the requirements for a major in anthropology leads to the B.A. degree. All majors are required to take 30 hours in anthropology, 18 of which must be selected from the following courses: ANTH 001, 002, 101, 141 or 151, 161 or 171, and 198. It should be noted, however, that if ANTH 001 is used to satisfy the General Education requirement in Social Science, it may not be counted as a part of the 30 required semester hours for the major. The 18 hours of required courses insures that the major becomes familiar with all areas of anthropology. No one area, therefore, receives special emphasis, for it is believed that such specialization should occur during graduate study, preferably at the Ph.D. level. Thus the student is broadly prepared in the ways man has evolved culturally and physically. A statement of course requirements and recommended sequences of courses is available in the departmental office.

No course with a grade of less than "C" may be used to satisfy major requirements.

ANTH 001 or its equivalent is prerequisite to all other courses in Anthropology.

ANTH 001. INTRODUCTION TO ANTHROPOLOGY: ARCHAEOLOGY AND PHYSICAL ANTHROPOLOGY. (3)

May be taken for credit in the General Education Program. General patterns of the development of human culture; the biological and morphological aspects of man viewed in his cultural setting. (Staff)

ANTH 002. INTRODUCTION TO ANTHROPOLOGY: CULTURAL ANTHROPOLOGY AND LINGUISTICS. (3)

Social and cultural principles as exemplified in ethnographic descriptions. The study of language within the context of Anthropology. (Staff)

ANTH 021. MAN AND ENVIRONMENT. (3)

Prerequisite, sophomore standing. A geographical introduc-

- tion to ethnology, emphasizing the relations between cultural forms and natural environment. (Anderson)
- ANTH 041. INTRODUCTION TO ARCHEOLOGY. (3)**
Prerequisite, sophomore standing. A survey of the basic aims and methods of archeological field work and interpretation, with emphasis on the reconstruction of prehistoric ways of life. (Staff)
- ANTH 061. INTRODUCTION TO PHYSICAL ANTHROPOLOGY. (3)**
Prerequisite, sophomore standing. The biological evolution of man, including the process of race formation, as revealed by the study of the fossil record and observation of modern forms. (Staff)
- ANTH 071. LANGUAGE AND CULTURE. (3)**
Prerequisite, sophomore standing. A non-technical introduction to linguistics, with special consideration of the relations between language and other aspects of culture. (Listed also as LING 071.) (Staff)
- For Advanced Undergraduates and Graduates**
- ANTH 101. CULTURAL ANTHROPOLOGY: PRINCIPLES AND PROCESSES. (3)**
Prerequisite, ANTH 001 or 002 or 021. An examination of the nature of human culture and its processes, both historical and functional. The approach will be topical and theoretical rather than descriptive. (Anderson, Hoffman, Hulse, Williams)
- ANTH 102. CULTURAL ANTHROPOLOGY: WORLD ETHNOGRAPHY. (3)**
Prerequisite, ANTH 001 or 002 or 021. A descriptive survey of the culture areas of the world through an examination of the ways of selected representative societies. (Anderson, Hoffman, Hulse, Williams)
- ANTH 112. PEOPLES AND CULTURES OF OCEANIA. (3)**
A survey of the cultures of Polynesia, Micronesia, Melanesia and Australia. Theoretical and cultural-historical problems will be emphasized. (Anderson, Hulse)
- ANTH 114. ETHNOLOGY OF AFRICA. (3)**
Prerequisites, ANTH 001 and 002. The native peoples and cultures of Africa and their historical relationships, with emphasis on that portion of the continent south of the Sahara. (Staff)
- ANTH 118. PEOPLES AND CULTURES OF THE FAR EAST. (3)**
A survey of the major sociopolitical systems of China, Korea and Japan. Major anthropological questions will be dealt with in presenting this material. (Hulse)
- ANTH 123. ETHNOLOGY OF THE SOUTHWEST. (3)**
Prerequisites, ANTH 001 and 002. Culture history, economic and social institutions, religion, and mythology of the Indians of the southwest United States. (Anderson, Williams)
- ANTH 124. ETHNOLOGY OF NORTH AMERICA. (3)**
Prerequisites, ANTH 001 and 002. The native people and cultures of North America north of Mexico and their historical relationships, including the effects of contact with European-derived populations. (Hoffman)
- ANTH 126. ETHNOLOGY OF MIDDLE AMERICA. (3)**
Prerequisites, ANTH 001 and 002. Cultural background and modern social, economic and religious life of Indian and metiszo groups in Mexico and Central America; processes of acculturation and currents in cultural development. (Williams)
- ANTH 131. SOCIAL ORGANIZATION OF PRIMITIVE PEOPLES. (3)**
Prerequisites, ANTH 001 and 002. A comparative survey of the structures of non-literate and folk societies, covering both general principles and special regional developments. (Staff)
- ANTH 134. RELIGION OF PRIMITIVE PEOPLES. (3)**
Prerequisites, ANTH 001 and 002. A survey of the religious systems of primitive and folk societies, with emphasis on the relation of religion to other aspects of culture. (Anderson)
- ANTH 136. PRIMITIVE TECHNOLOGY AND ECONOMY. (3)**
A survey of technology, food economy and general economic processes in non-industrial societies. (Anderson, Williams)
- ANTH 138. POLITICS AND GOVERNMENT IN PRIMITIVE SOCIETY. (3)**
A combined survey of politics in human societies and of important anthropological theories concerning this aspect of society. (Hulse)
- ANTH 141. ARCHEOLOGY OF THE OLD WORLD. (3)**
Prerequisite, ANTH 001 or 041. A survey of the archaeological materials of Europe, Asia and Africa, with emphasis on chronological and regional inter-relationships. (Staff)

- ANTH 151. ARCHEOLOGY OF THE NEW WORLD. (3)**
Prerequisite, ANTH 001 or 041. A survey of the archaeological materials of North and South America with emphasis on chronological and regional interrelationships. (Staff)
- ANTH 161. ADVANCED PHYSICAL ANTHROPOLOGY. (3)**
Prerequisite ANTH 001 or 061. A technical introduction to the hereditary, morphological, physiological, and behavioral characteristics of man and his primate ancestors and relatives, with emphasis on evolutionary processes. (Staff)
- ANTH 171. INTRODUCTION TO LINGUISTICS. (3)**
Introduction to the basic concepts of modern descriptive linguistics. Phonology, morphology, syntax. Examinations of the methods of comparative linguistics, internal reconstruction, dialect geography. (Listed also as LING 101 and ENGL 105.) (Tuniks)
- ANTH 191. RESEARCH PROBLEMS. (3)**
Prerequisite, permission of instructor. Introductory training in anthropological research methods. The student will prepare a paper embodying the results of an appropriate combination of research techniques applied to a selected problem in any field of anthropology. (Staff)
- ANTH 192. FIELD METHODS IN ETHNOLOGY (1-6)**
Field training in the collection and recording of ethnological data. (Summer only) (Williams)
- ANTH 194. FIELD METHODS IN ARCHAEOLOGY (1-6)**
Field training in the techniques of archaeological survey and excavation. (Summer only). (Schuyler)
- ANTH 198. ANTHROPOLOGICAL THEORY. (3)**
Prerequisite, permission of instructor. A survey of the historical development and current emphasis in the theoretical approaches of all fields of anthropology, providing an integrated frame of reference for the discipline as a whole. (Williams)
- ANTH 205. THEORY OF CULTURAL ANTHROPOLOGY. (3)**
(Staff)
- ANTH 281. PROCESSES OF CULTURE CHANGE. (3)**
(Staff)
- ANTH 285. PEASANT COMMUNITIES IN THE MODERN WORLD. (3)**
(Staff)
- ANTH 287. CURRENT DEVELOPMENTS IN ANTHROPOLOGY. (3)**
(Staff)
- ANTH 291. SPECIAL PROBLEMS IN ANTHROPOLOGY. (1-6)**
(Staff)
- ART**
- PROFESSOR AND CHAIRMAN:** Levitine.
PROFESSORS: A. de Leiris, Lembach, Lynch, Maril.
ASSOCIATE PROFESSORS: Denny, Gross, Jamieson, Rearick, Stites.
ASSISTANT PROFESSORS: Bunts, Freeny, Isen, Longley, Mirolli, Niese, O'Conner, Pemberton.
LECTURERS: Banks, Campbell, Griffin, Landgren.
VISITING LECTURERS: Heban, Hommel.
INSTRUCTORS: M. de Leiris, Dillinger, Forbes, Gelman, Green, Klank, Lewis.

Two majors are offered in Art: Art History and Studio. The student who majors in Art History is committed to the study and scholarly interpretation of existing works of art, from the prehistoric era to our times, while the studio major stresses the student's direct participation in the creation of works of art.

In spite of this difference, both majors are rooted in the concept of art as a humanistic experience, and share an essential common aim: the development of aesthetic sensitivity, understanding, and knowledge. For this reason, students in both majors are required to progress through a "common curriculum," which will ensure a broad grounding in both aspects of art; then each student will move into a "specialized curriculum" with advanced courses in his own major. Maximum allowable credits in either major is 42.

COMMON CURRICULUM:

ART 010, Introduction to Art (3); ART 012, Design

I (3); ART 016, Drawing I (3); and ART 060 and 061, History of Art (3, 3).

117-b. Watercolor and casein. (Grossman)
177-c. Plastic media, such as encaustic and polymer tempera. (Jamieson)

117-d. Mural painting. The use of contemporary synthetic media. (Jamieson)

SPECIALIZED CURRICULUM:

Art History major: ART 080, History of American Art (3); four courses in over 100 level in History of Art (12). In addition, one advanced course in Studio work is required. Total credits for Art History major: 33.

Studio major: ART 017, Painting I (3); ART 026, Drawing II (3); ART 118, Sculpture I (3); ART 119, Printmaking I (3); ART 126, Drawing III (3); plus one course at the 100 level (3). In addition, one advanced course in Art History is required. Total credits for Studio majors: 36.

No course with a grade less than "C" may be used to satisfy major requirements.

ART 010. INTRODUCTION TO ART. (3)

Basic tools of understanding visual art. This course stresses major approaches such as techniques, subject matter, form, and evaluation. Architecture, sculpture, painting, and graphic art will be discussed. Required of all Art majors in the first year. (Staff)

ART 012. DESIGN I. (3)

Six hours per week. Prerequisite or concurrent registration, ART 010. Principles and elements of design including basic composition, line, color theory, perspective, and three-dimensional space. (Staff)

ART 016. DRAWING I. (3)

Six hours per week. Prerequisite or concurrent registration, ART 010. An introductory course with a variety of media and related techniques. Problems based on still life, figure and nature. (Staff)

ART 017. PAINTING I. (3)

Six hours per week. Prerequisites, ART 010, 012, 016. Basic tools and language of painting. Oil and watercolor. (Maril, Staff)

ART 026. DRAWING II. (3)

Six hours per week. Prerequisites, ART 010, 012, 016. Original compositions from the figure and nature, supplemented by problems of personal and expressive drawing. (Staff)

ART 027. ARCHITECTURAL PRESENTATION. (3)

Six hours per week. Prerequisites, ART 010, 012, 016. Technique of wash and watercolor in architectural, interior, and landscape architectural rendering. (Stites)

ART 040. FUNDAMENTALS OF ART EDUCATION. (3)

Two hours of laboratory and two hours of lecture per week. Fundamental principles of the visual arts for teaching on the elementary level. Elements and principles of design and theory of color. Studio practice in different media. (Crull, Lewis, Lembach, Longley)

ART 060, 061. HISTORY OF ART. (3, 3)

A survey of western art as expressed through architecture, sculpture, and painting. First semester, prehistoric times to Renaissance; second semester, from Renaissance to the present. (Staff)

ART 062. AFRICAN ART. (3)

A study of West and Central African Art with emphasis on inter-tribal relationships as demonstrated by their sculptural styles.

ART 065, 066. MASTERPIECES OF PAINTING. (3, 3)

Prerequisite, sophomore standing. A study of the contributions of a few major painters, ranging from Giotto to Picasso. (Levitine, Staff)

ART 067, 068. MASTERPIECES OF SCULPTURE. (3, 3)

Prerequisite, sophomore standing. A study of the contributions of a few major sculptors, ranging from Polykleitos to Moore. (Levitine, Staff)

ART 070, 071. MASTERPIECES OF ARCHITECTURE. (3, 3)

ART 080, 081. HISTORY OF AMERICAN ART. (3, 3)

Architecture, sculpture and painting in the United States from the Colonial period to the present. (Staff)

ART 117. PAINTING II. (3)

Six hours per week. Prerequisites, ART 017, 026. Original compositions based upon nature, figure, and still life, supplemented by expressive painting. Choice of media. Different sections of course may be taken for credit.

117-a. Oil painting and related media. (Maril)

ART 118. SCULPTURE I. (3)

Six hours per week. Prerequisite, ART 026. (For students majoring in Art History, by permission of Department.) Volumes, masses, and planes, based on the use of plastic earths. Simple armature construction and methods of casting. (Freeny)

ART 119. PRINTMAKING I. (3)

Six hours per week. Prerequisite, ART 026. (For students majoring in Art History, by permission of Department.) Basic printmaking technique in relief, intaglio, and planographic media. (Forbes)

ART 126. DRAWING III. (3)

Six hours per week. Prerequisite, ART 026. Emphasis on understanding organic form, as it is related to study from the human figure and to pictorial composition. (Isen, Jamieson)

ART 127. PAINTING III. (3)

Six hours per week. Prerequisite, ART 117. Creative painting for advanced students. Problems require a knowledge of pictorial structure. Development of personal direction. Choice of media. (Gross)

ART 128. SCULPTURE II. (3)

Six hours per week. Prerequisite, ART 118. Different sections of course may be taken in for credit.

128-a. Nature as a point of reference with potentiality of developing ideas into organic and architectural forms. (Freeny)

128-b. May be taken after 128-a. Problems involving plastic earths and other material capable of being modeled or cast. Choice of individual style encouraged. (Freeny)

ART 129. PRINTMAKING II. (3)

Six hours per week. Prerequisite, ART 119. One print media including extensive study of color processes. Individually structured problems. (O'Connell)

ART 136. DRAWING IV. (3)

Six hours per week. Prerequisite, ART 126. Advanced drawing, with emphasis on the human figure, its structure and organic likeness to forms in nature. The course also stresses those compositional problems deriving from this relationship. (Staff)

ART 137. PAINTING IV. (3)

Six hours per week. Prerequisite, ART 127. Creative painting. Emphasis on personal direction and self-criticism. Group seminars. (Gross, Grossman, Jamieson, Maril)

ART 138. SCULPTURE III. (3)

Six hours per week. Prerequisite, ART 128. Problems and techniques of newer concepts, utilizing various materials, such as plastics and metals. Technical aspects of welding stressed. (Freeny)

ART 139. PRINTMAKING III. (3)

Six hours per week. Prerequisite, ART 129. 139-a. Contemporary experimental techniques of one print medium with group discussions. (Staff)

139-b. Continuation of 139-a. May be taken for credit after 139-a. (Staff)

ART 150, 151. SPANISH ART. (3, 3)

Special emphasis will be given to the artists of the 16th and 17th centuries, such as El Greco and Velasquez. (Lynch)

ART 152, 153. LATIN AMERICAN ART. (3, 3)

Art from the pre-Columbian civilization to the modern period. (Lynch)

ART 155. AMERICAN COLONIAL PAINTING. (3)

Development and style of painting in Colonial America: sources, genres, influential studios, Anglo-American School of historical painting. (Staff)

ART 157. AMERICAN ART AND ITS RELATIONSHIP TO EUROPE: 1800-1900. (3)

ART 080 and 081 recommended. The American artist in Europe; American and German Romanticism; Neo-Classicism in America and Europe; Dusseldorf School; Munich School; Pre-Raphaelism; Barbizon School and Impressionism. (Staff)

ART 158, 159. HISTORY OF AMERICAN ART. (3, 3)

Architecture, sculpture, and painting in the United States from the Colonial period to the present. (Staff)

ART 160, 161. CLASSICAL ART. (3, 3)

Architecture, sculpture and painting in the Classical cul-

tures. First semester will stress Greece; second semester, Rome. (Pemberton)	ART 228. DRAWING. (3)	(Staff)
ART 162, 163. ART OF THE EAST. (3, 3) Architecture, sculpture and painting. First semester will stress India; second semester, China and Japan (Staff)	ART 229. DRAWING AND PAINTING. (3)	(Staff)
ART 164. EARLY CHRISTIAN AND BYZANTINE ART. (3) Architecture, sculpture, painting, and mosaic of early Christian Rome, the Near East, and the Byzantine Exmpire. (Staff)	ART 240, 241. ADVANCED PROBLEMS IN ART EDUCATION. (3, 3)	(Staff)
Art 166, 167. MEDIEVAL ART. (3, 3) Architecture, sculpture and painting in the Middle Ages. First semester will stress Romanesque; second semester, the Gothic period. (Denny)	ART 250. AMERICAN COLONIAL ART. (3)	(Staff)
ART 168, 169. RENAISSANCE ART IN ITALY. (3, 3) Architecture, sculpture and painting from 1400 to the High Renaissance in the 16th century. (Staff)	ART 255. SEMINAR IN 19TH CENTURY AMERICAN ART. (3)	(Staff)
ART 170, 171. NORTHERN EUROPEAN PAINTING IN THE 15TH AND 16TH CENTURIES. (3, 3) Painting in the Netherlands, France, and Germany. (Denny)	ART 256. TWENTIETH CENTURY AMERICAN ART. (3)	(Staff)
ART 172, 173. EUROPEAN BAROQUE ART. (3, 3) Architecture, sculpture and painting of the major European centers in the 17th century. (deLeiris)	ART 257. SEMINAR IN AMERICAN ART AND ITS LITERARY SOURCES. (3)	(Staff)
ART 174, 175. FRENCH PAINTING. (3, 3) French painting from the 15th through the 18th century, from Fouquet to David. (Levitine)	Art 258. SEMINAR IN LOCAL AND REGIONAL ART. (3)	(Staff)
ART 176, 177. 19TH CENTURY EUROPEAN ART. (3, 3) Architecture, sculpture and painting in European Art from Neo-Classicism to Impressionism. (deLeiris)	ART 259. THE ART OF MANNERISM. (3)	(Staff)
ART 178, 179. 20TH CENTURY ART. (3, 3) Architecture, sculpture and painting from the late 19th century to our day.	ART 260. FRENCH PAINTING FROM LEBRUN TO GERICAULT, 1715-1815. (3)	(Staff)
ART 180. IMPRESSIONISM AND NEO-IMPRESSIONISM. (3) Prerequisite, ART 060 and 061 or consent of instructor. History of Impressionism and Neo-Impressionism: artists, styles, art theories, criticism, sources, and influence on twentieth century. (deLeiris)	ART 261. SEMINAR IN ROMANTICISM. (3)	(Staff)
ART 182. TWENTIETH CENTURY MASTERS AND MOVEMENTS. (3) Artists and tendencies in twentieth century art. Subject will change and be announced each time course is offered. (Staff)	ART 262. SEMINAR IN 18TH CENTURY EUROPEAN ART. (3)	(Staff)
ART 184. HISTORY OF THE GRAPHIC ARTS. (3) Prerequisite, ART 010, or ART 069 and 061, or consent of instructor. Graphic techniques and styles in Europe from 1400 to 1800; contributions of major artists. (Levitine)	ART 263. SEMINAR IN 19TH CENTURY EUROPEAN ART. (3)	(Staff)
ART 192, 193. DIRECTED STUDIES IN STUDIO ART. (2 or 3, 2 or 3) For advanced students, by permission of Department Chairman. Course may be repeated for credit if content differs. (Staff)	ART 264. NINETEENTH CENTURY REALISM, 1830-1860. (3)	(Staff)
ART 194, 195. DIRECTED STUDIES IN ART HISTORY. (2 or 3, 2 or 3) For advanced students, by permission of Department Chairman. Course may be repeated for credit if content differs. (Staff)	ART 265. SEMINAR IN POST-IMPRESSIONISM AND SYMBOLISM. (3)	(Staff)
	ART 266. SEMINAR IN CONTEMPORARY ART. (3)	(Staff)
	ART 267. TWENTIETH CENTURY EUROPEAN ART. (3)	(Staff)
	ART 268. SEMINAR IN LITERARY SOURCES OF ART HISTORY. (3)	(Staff)
	ART 269. SEMINAR IN CLASSICAL ART. (3)	(Staff)
	ART 270. SEMINAR IN MEDIEVAL ART. (3)	(Staff)
	ART 272. SEMINAR. PROBLEMS IN MEDIEVAL ICONOGRAPHY. (3)	(Staff)
	ART 274. ROMANESQUE ART. (3)	(Staff)
	ART 276. GOTHIC ART. (3)	(Staff)
	ART 280. METHODS OF ART HISTORY. (3)	(Staff)
	ART 282, 283. MUSEUM TRAINING PROGRAM. (3, 3)	(Staff)
	ART 284. SEMINAR. PROBLEMS IN ARCHITECTURAL HISTORY AND CRITICISM. (3)	(Staff)
	ART 286. SEMINAR IN LATIN-AMERICAN ART. (3)	(Staff)
	ART 288. SEMINAR IN MODERN MEXICAN ART. (3)	(Staff)
	ART 292, 293. DIRECTED GRADUATE STUDIES IN STUDIO ART. (3, 3)	(Staff)
	ART 294, 295. DIRECTED GRADUATE STUDIES IN ART HISTORY. (3, 3)	(Staff)
	ART 399. THESIS RESEARCH. (1-6)	(Staff)
	ART 499. DISSERTATION RESEARCH (ARRANGED)	(Staff)

FOR GRADUATES

The requirements of students will determine which courses will be offered.

ART 200, 201. PAINTING. (3, 3)	(Staff)
ART 202, 203. PAINTING. (3, 3)	(Staff)
ART 211. PRINTMAKING. (3)	(Staff)
ART 212. PRINTMAKING. (3)	(Staff)
ART 213. PRINTMAKING. (3)	(Staff)
ART 214. SEMINAR IN PRINTMAKING. (3)	(Staff)
ART 221, 222. EXPERIMENTATION IN SCULPTURE. (3, 3)	(Staff)
ART 223. MATERIALS AND TECHNIQUES IN SCULPTURE. (3)	(Staff)
ART 224. SCULPTURE—CASTING AND FOUNDRY. (3)	(Staff)
ART 226. DRAWING. (3)	(Staff)
ART 227. DRAWING. (3)	(Staff)

ASTRONOMY

PROFESSOR AND CHAIRMAN: Laster.
PROFESSOR AND DIRECTOR OF ASTRONOMY: Westerhout.
PROFESSORS: Erickson, Kerr, Kundu, Musen (P. T.), Opik.
VISITING PROFESSOR: Lindblad.
ASSOCIATE PROFESSORS: Bell, Matthews, Smith, Wentzel.
ASSISTANT PROFESSORS: A'Hearn, Harrington, Simonson, Zuckerman.
LECTURERS: Brandt (P. T.), Clark (P. T.), Maran (P. T.).

The Department of Physics and Astronomy offers a major in Astronomy. The Astronomy Program office is located in the Space Sciences Building. Astronomy students are given a strong undergraduate preparation in astronomy, physics and mathematics, as well as encouragement to take a wide range of other liberal arts courses. The Astronomy Program is designed to be quite flexible, in order to take advantage of students' special talents or interests after the basic requirements for a sound astronomy education have been met. Students preparing for graduate studies will have an opportunity to choose from among many advanced courses available in astronomy, mathematics, and physics. The program is designed to prepare students for graduate work as well as for positions in governmental and industrial laboratories and observatories.

Students intending to major in astronomy who have had a high school course in physics, and who have adequate preparation in mathematics to qualify for admission to MATH 019 will ordinarily take the introductory physics courses PHYS 015, 016, 017 and 018, during their freshman and sophomore years. Those students who do not decide to major in astronomy or physics until after their freshman or sophomore year or enter as transfer students will often have taken other introductory courses in physics (i.e. PHYS 030, 031, 032). Students will find recommended course programs in the pamphlet entitled "Department Requirements for a B.S. degree in Astronomy" which is available from the Astronomy Program Office. This pamphlet outlines many different approaches for an astronomy major.

ASTR 010 (Descriptive and Analytical Astronomy) is the introductory astronomy course required of astronomy majors. It may be taken in the freshman or sophomore year. It is followed by another required course, ASTR 025 (Practical Astronomy). Occasionally a student may not decide to major in astronomy until after he has already taken ASTR 001 and 002 (Introduction to Astronomy and Modern Astronomy). These courses together may be substituted for the ASTR 010 requirement, but only students with a grade of "B" or better in ASTR 001 and 002 will be encouraged to major in astronomy. Such students must also take ASTR 025.

HONORS IN ASTRONOMY

The Honors Program offers to students of exceptional ability and interest in astronomy an educational program with a number of special opportunities for learning. Honors sections are offered in several courses, and there are many opportunities for part-time research participation which may develop into fulltime summer projects. An honors seminar is offered for advanced students; credit may be given for independent work or study; and certain graduate courses are open for credit toward the bachelor's degree.

Students for the Honors Program are accepted by the Department's Honors Committee on the basis of recommendations from their advisors and other faculty members. A final written and oral comprehensive examination in the senior year concludes the

program which may lead to graduation "with Honors (or High Honors) in Astronomy."

ASTR 001. INTRODUCTION TO ASTRONOMY. (3)

Every semester. An elementary course in descriptive astronomy, especially appropriate for non-science students. Sun, moon, planets, stars and nebulae, galaxies, evolution. The course is illustrated with slides and demonstrations of instruments. (Westerhout, Wentzel, A'Hearn)

ASTR 002. INTRODUCTION TO MODERN ASTRONOMY. (3)

Spring semester. Three lectures per week. Prerequisite, ASTR 001. An elementary course in modern astronomy elaborating on some of the topics which could only be mentioned briefly in ASTR 001. Appropriate for non-science students. (Wentzel, Smith)

ASTR 005. ASTRONOMY LABORATORY. (1)

Fall and spring semesters. Two hours of laboratory per week. Prerequisite, previous or concurrent enrollment in ASTR 001 or 010. Exercises in the use of celestial coordinates, measurement of position, determination of time of day and night; study of photographs of stars, nebulae and galaxies, and spectra; photoelectric photometry; demonstration of astronomical instruments, daytime and nighttime observations if weather permits. Appropriate for non-science majors. (Smith, Matthews)

ASTR 010. DESCRIPTIVE AND ANALYTICAL ASTRONOMY. (3)

Fall semester. Three lectures per week. A general survey course intended for science majors. Prerequisite, MATH 018 or equivalent; a knowledge of trigonometry and logarithms will be assumed. This introductory course will deal with the sun and the solar system, stars and astrophysics, stellar systems and cosmology. It should not be taken by students who have already taken ASTR 001 and 002. (Smith)

ASTR 025. PRACTICAL ASTRONOMY (2-3).

Prerequisites: ASTR 010 and MATH 019. ASTR 001 and 002 may be substituted for ASTR 010 if approved by instructor. One lecture and one two-hour laboratory per week. 2-3 credits, according to work done. This course is designed primarily for astronomy majors and will give the student familiarity with techniques used by astronomers and an understanding of how astronomical data are obtained. Students registered for 2 credits will not be required to do all the exercises. Topics will include coordinate systems, optics, photometry, binary stars, distance determinations, Hertzsprung-Russell diagram, solar observations, moon, galactic structure, and galaxies. (Smith)

ASTR 100, 110. OBSERVATIONAL ASTRONOMY. (3, 3)

Prerequisites: working knowledge of calculus, physics through PHYS 018 or 032, and 3 credits of astronomy. An introduction to current methods of obtaining astronomical information including radio, infrared, optical, ultra-violet, and x-ray astronomy. The laboratory work will involve photographic and photoelectric observations with the department's optical telescope and 21-cm line spectroscopy, flux measurements and interferometry with the department's radiotelescopes. (A'Hearn, Clark, Erickson)

ASTR 101. INTRODUCTION TO GALACTIC RESEARCH. (3)

First semester. Three lectures per week. Prerequisite, MATH 021 and at least 12 credits of introductory physics and astronomy courses. Stellar motions, methods of galactic research, study of our own and nearby galaxies, clusters of stars. (Kerr)

ASTR 102. INTRODUCTION TO ASTROPHYSICS. (3)

Second semester. Three lectures per week. Pre- or co-requisite, PHYS 119 or consent of instructor. Spectroscopy, structure of the atmospheres of the sun and other stars. Observational data and curves of growth. Chemical composition. (Bell)

ASTR 124. CELESTIAL MECHANICS. (3)

Three lectures a week. Prerequisite, PHYS 127 or consent of instructor. Celestial mechanics, orbit theory, equations of motion. (Musen)

ASTR 150. SPECIAL PROBLEMS IN ASTRONOMY.

Given each semester. Prerequisite, major in physics or astronomy and/or consent of advisor. Research or special study. Credit according to work done. (Staff)

ASTR 190. HONORS SEMINAR.

Credit according to work done, each semester. Enrollment is limited to students admitted to the Honors Program in Astronomy. (Staff)

FOR GRADUATES

See the Graduate School Catalogue for descriptions.

ASTR 200. DYNAMICS OF STELLAR SYSTEMS. (3)

(Staff)

ASTR 202. STELLAR INTERIORS. (3)

(Staff)

ASTR 203. STELLAR ATMOSPHERES. (3) (Staff)
ASTR 204. PHYSICS OF THE SOLAR SYSTEM. (3) (Staff)

REQUIRED COURSES FOR ASTRONOMY MAJOR

- (a) Introductory Physics Courses. PHYS 015, 016 — Introductory Physics, Mechanics, Fluids, Heat, and Sound (4, 4), followed by PHYS 017—Introductory Physics, Electricity and Magnetism (4) and PHYS 018—Introductory Physics, Optics and Modern Physics (4) (Total 16 credits); or PHYS 030, 032—General Physics (3, 4, 4) and PHYS 104, 105—Electricity and Magnetism (3, 3) and PHYS 106—Mechanics (3).
- (b) Physics Laboratory. At least four credits of laboratory courses; ordinarily PHYS 060, 061, but 100, 109 may be added.
- (c) Modern Physics, PHYS 118, 119 (3, 3) or Mathematical Physics, PHYS 127, 128 (4, 4).
- (d) Supporting Courses. MATH 019, 020, 021 — Analysis (4, 4, 4)
(Astronomy majors are encouraged to enter the accelerated math sections which cover these courses in two terms). These must be followed by at least one additional 3 or 4 credit mathematics course approved by the astronomy advisor. Recommended courses are MATH 022 — Calculus (4), MATH 066 — Differential Equations for Scientists and Engineers (3) MATH 162, 163 — Analysis for Scientists and Engineers (3, 3), MATH 113 — Introduction to Complex Variables (4), MATH 110 — Advanced Calculus (4), or MATH 168 — Numerical Methods (3). (Minimum 15 credits).
- (e) Introductory Astronomy Courses. Normally ASTR 010 and ASTR 025.
ASTR 001 and 002 may be substituted for ASTR 010 (See above)
- (f) Advanced Astronomy Courses. Two Astronomy courses at the 100 level. (Minimum 6 credits).

Students may major in Astronomy only if a grade of "C" is attained in each semester of the introductory Physics and Astronomy courses. Any student who wishes to be recommended for graduate work in astronomy must maintain a "B" average and should also consider including some or all of the following courses in his program in addition to those required of all astronomy majors.

- (a) Astronomy. One or more additional courses at the 100 level.
- (b) Physics. Both PHYS 127-128 (4, 4) — Mathematical Physics and PHYS 118, 119 (3, 3) — Modern Physics; and one or more of those listed below.
- (c) Supporting Courses. One or two additional mathematics or computer science courses, selected in consultation with the advisor.

Further Physics courses that astronomy majors should consider, both those terminating at the B.S. and those planning on graduate studies, are the following:

PHYS 100—Advanced Experiments
PHYS 103—Applied Optics
PHYS 123—Introduction to Atmospheric and Space Physics
PHYS 124—Plasma Physics
PHYS 126—Kinetic Theory of Gases

PHYS 129—Elementary Particles
PHYS 144, 145—Methods of Theoretical Physics
PHYS 152—Thermodynamics and Statistical Mechanics

ASTR 210. GALACTIC RADIO ASTRONOMY. (3) (Staff)
ASTR 212. PHYSICS OF THE SOLAR ENVELOPE. (3) (Staff)
ASTR 214. INTERSTELLAR MATTER. (3) (Staff)
ASTR 230. SEMINAR. (1) (Staff)
ASTR 248, 249. SPECIAL TOPICS IN MODERN ASTRONOMY. (Staff)
ASTR 250. SPECIAL PROBLEMS IN ADVANCED ASTRONOMY. (1-6) (Staff)
ASTR 399. RESEARCH. (Staff)
ASTR 499. DISSERTATION RESEARCH (ARRANGED) (Staff)

BOTANY

HEAD AND PROFESSOR: Krauss.
PROFESSORS: Corbett, Galloway, Gauch, Kantzes, D. T. Morgan, Sisler, Stern, Weaver.
RESEARCH PROFESSOR: Sorokin.
ASSOCIATE PROFESSORS: Brown, Karlander, Klarman, Krusberg, Lockard, O. D. Morgan, Patterson, Rappleye.
ASSISTANT PROFESSORS: Barnett, Bean, Curtis, Harrison, Motta, Reveal, Smith Terborgh.
RESEARCH ASSOCIATE: Norton.
INSTRUCTORS: Grigg and Owens.

GENERAL BOTANY

BOTN 001. GENERAL BOTANY. (4)
First and second semesters. Summer session. Two lectures and two laboratory periods a week. General introduction to botany, touching briefly on all phases on the subject. Emphasis is on the fundamental biological principles of the higher plants. (Stern and Departmental Faculty)

BOTN 001H. GENERAL BOTANY. (4)
First and second semesters. Two lectures and two laboratory periods a week. A broad study of plant science with emphasis on current conceptions of major fields of interest. Designed for general honors students, as well as for freshman students with superior training in biology or chemistry, for upper class science majors, and for those students seeking an advanced treatment of BOTN 001. (Galloway and Departmental Faculty)

BOTN 002. GENERAL BOTANY. (4)
Second semester. Two lectures and two laboratory periods a week. Prerequisite, BOTN 1 or equivalent. A brief evolutionary study of algae, fungi, liverworts, mosses, ferns and their relatives, and the seed plants, emphasizing their structure, reproduction, habitats, and economic importance. (Stern and Departmental Faculty)

BOTN 010. PRINCIPLES OF CONSERVATION. (3)
First semester. Three lectures per week. A study of the principles of economical use of our natural resources, including water, soil, plants, minerals, wildlife and man. (Harrison)

BOTN 116. HISTORY AND PHILOSOPHY OF BOTANY (1)
First semester. Prerequisites 20 semester credit hours in biological sciences including BOTN 001 or equivalent. Discussion of the development and ideas and knowledge about plants, leading to a survey of contemporary work in botanical science. (Staff)

BOTN 136. PLANTS AND MANKIND. (2)
First semester. Prerequisite, BOTN 001 or equivalent. A survey of the plants which are utilized by man, the diversity of such utilization, and their historic and economic significance. (Rappleye)

BOTN 151S. TEACHING METHODS IN BOTANY. (2)
Summer session. Four two-hour laboratory demonstration periods per week, for eight weeks. Prerequisite, BOTN 1, or equivalent. A study of the biological principles of common plants, and demonstrations, projects, and visual aids suitable for teaching in primary and secondary schools. (Lockard)

BOTN 171. MARINE PLANT BIOLOGY. (4)
Summer session. Prerequisite, BOTN 001 or General Biology plus Organic Chemistry or the consent of the instructor. Five, one-hour lectures and three, 3-hour labora-

ories each week for six weeks. An introduction to the taxonomic, physiological and biochemical characteristics of marine plants which are basic to their role in the ecology of the oceans and estuaries. Laboratory fee \$12.00. (Krauss and Staff)

BOTN 195. TUTORIAL READING IN BOTANY. (HONORS COURSE) (2 or 3)

Prerequisite, admission to the Department of Botany Honors Program. A review of the literature dealing with a specific research problem in preparation for original research to be accomplished in BOTN 196. Papers will be assigned and discussed in frequent sessions with the instructor. (Galloway and Departmental Faculty)

BOTN 196. RESEARCH PROBLEMS IN BOTANY. (HONORS COURSE) (2 or 3)

Prerequisite, BOTN 195. The candidate for Honors will pursue a research problem under the direction and close supervision of a member of the faculty. (Staff)

BOTN 199. SEMINAR. (1)

First and second semesters. Two semester hours maximum credit. Prerequisite, permission of instructor. Discussion and readings on special topics, current literature, or problems and progress in all phases of botany. Minor experimental work may be pursued if facilities and the qualifications of the students permit. For seniors only, majors and minors in botany or biological science. (Terborgh)

BOTN 199-S. NSF SEMINAR (2)

Seminar in the Sciences for NSF participants only. Includes guest speakers, field trips to area Science laboratories, and individual problem work. (Lockard)

FOR GRADUATES

See the Graduate School Catalog for descriptions.

BOTN 301. SPECIAL PROBLEMS IN BOTANY. (1 to 3)

(Staff)

BOTN 302. SEMINAR IN BOTANY. (1)

(Staff)

PLANT PHYSIOLOGY

For Advanced Undergraduates and Graduates

BOTN 101. PLANT PHYSIOLOGY. (4)

First semester. Two lectures and one 4-hour laboratory period a week. Prerequisites, BOTN 001 and General Chemistry. Organic Chemistry strongly recommended. A survey of the general physiological activities of plants. (Patterson, Lockard)

BOTN 172. SPECIAL PROBLEMS IN MARINE RESEARCH

Summer Session. Prerequisites BOTN 001 or general biology plus Organic Chemistry or consent of instructor. Recommended concurrent or previous enrollment in BOTN 171, Marine Plant Biology. An experimental approach to problems in marine research dealing primarily with the phytoplankton, the larger algae, and marine spermatophytes. Emphasis will be placed on their physiological and biochemical activities.

BOTN 204. GROWTH AND DEVELOPMENT (2)

(Staff)

BOTN 209. PHYSIOLOGY OF ALGAE (2)

(Staff)

BOTN 210. PHYSIOLOGY OF ALGAE LABORATORY. (1)

(Staff)

BOTN 230. ADVANCED PLANT PHYSIOLOGY. (2)

(Staff)

BOTN 231. PLANT BIOCHEMISTRY. (2)

(Staff)

BOTN 232. PLANT BIOPHYSICS. (2)

(Staff)

BOTN 233. PLANT BIOCHEMISTRY-BIOPHYSICS LABORATORY. (4)

(Staff)

PLANT PATHOLOGY

BOTN 020. DISEASES OF PLANTS. (4)

First semester. Two lectures and two laboratory periods a week. Prerequisite, BOTN 001, or equivalent. An introductory study of the symptoms and casual agents of plant diseases and measure for their control. (Klarman)

BOTN 122. RESEARCH METHODS IN PLANT PATHOLOGY. (2)

Second semester. Two laboratory periods a week. Prerequisite, BOTN 020, or equivalent. Advanced training in the research techniques and methods of plant pathology. (Curtis)

BOTN 127. DIAGNOSIS AND CONTROL OF PLANT DISEASES. (3)

Second semester. Three lectures per week. A study of various plant diseases grouped according to the manner in which the host plants are affected. Emphasis will be placed on recognition of symptoms of the various types of diseases and on methods of transmission and control of the pathogens involved. (Bean)

BOTN 152S. FIELD PLANT PATHOLOGY. (1)

Summer session. Daily lecture for three weeks. Prerequisite, BOTN 020, or equivalent. Given in accordance with demand. A course for county agents and teachers of vocational agriculture. Discussion and denomination of the important diseases in Maryland crops. (Kantzes)

BOTN 221. PLANT VIROLOGY. (2)

(Staff)

BOTN 223. PHYSIOLOGY OF FUNGI. (2)

(Staff)

BOTN 224. PHYSIOLOGY OF FUNGI LABORATORY. (1)

(Staff)

BOTN 227. PHYSIOLOGY OF PATHOGENS AND HOST-PATHOGEN RELATIONSHIPS. (3)

(Staff)

BOTN 241. PLANT NEMATODOLOGY. (4)

(Staff)

TAXONOMY

BOTN 011 PLANT TAXONOMY. (3)

Second semester. One lecture and two laboratory periods a week. Prerequisite, BOTN 001, or equivalent. An introductory study of plant classification, based on the collection and identification of local plants. (Brown)

BOTN 128. MYCOLOGY. (4)

Second semester. (Not offered 1971-72.) An introductory study of the morphology, classification, life histories, and economics of the fungi. (Motta)

BOTN 153S. FIELD BOTANY AND TAXONOMY. (2)

Summer session. Prerequisite, BOTN 001 or General Biology. Four two-hour laboratory periods a week for eight weeks. The identification of trees, shrubs, and herbs, emphasizing the native plants of Maryland. Manuals, keys, and other techniques will be used. Numerous short field trips will be taken. Each student will make an individual collection. (Brown)

BOTN 161. SYSTEMATIC BOTANY. (2)

Fall semester. (Not offered 1970-71.) Two two-hour laboratory periods a week. Prerequisite, BOTN 011 or equivalent. An advanced study of the principles of systematic botany. Laboratory practice with difficult plant families including grasses, sedges, legumes, and composites. Field trips arranged. (Reveal)

ECOLOGY

BOTN 102. PLANT ECOLOGY. (2)

Second semester. Prerequisite, BOTN 001. Two lectures per week. The dynamics of populations as affected by environmental factors with special emphasis on the structure and composition of natural plant communities, both terrestrial and aquatic. (Terborgh)

BOTN 103. PLANT ECOLOGY LABORATORY. (1)

Prerequisite, BOTN 102 or its equivalent or concurrent enrollment therein. One three-hour laboratory period a week. The application of field and experimental methods of the qualitative and quantitative study of vegetation and environmental factors. (Terborgh)

BOTN 113. PLANT GEOGRAPHY. (2)

First semester. Prerequisite, BOTN 001, or equivalent. A study of plant distribution throughout the world and the factors generally associated with such distribution. (Brown)

FOR GRADUATES

See the Graduate School Catalog for descriptions.

BOTN 219. ADVANCED PLANT ECOLOGY. (3)

(Staff)

BOTN 222. PLANT VIROLOGY LABORATORY (2)

(Staff)

BOTN 223. PHYSIOLOGY OF FUNGI. (2)

ANATOMY—MORPHOLOGY

BOTN 110. PLANT MICROTECHNIQUE. (3)

Second semester. One lecture a week. Laboratory periods by arrangement. Prerequisite, BOTN 001 or equivalent and per-

mission of instructor. Preparation of temporary and permanent mounts, including selection of material, killing and fixing, embedding, sectioning, and staining methods; photomicrography, film and paper processing; and preparation of photographic illustrations for research publication. (Stern)

Chemistry 141	2	Chemistry 14B	2
German 001	3	German 002	3
General Education	3	General Education	3
Electives	4	Electives	4
	16		16

BOTN 111. PLANT ANATOMY. (3)

First semester. One lecture and two laboratory periods a week. Prerequisite, BOTN 110, or equivalent. The origin and development of the organs and tissue systems in the vascular plants. (Rappleye)

	First Semester	Fourth Year	Second Semester
Chemistry 123	3	Chemistry 101	3
German 006	3	German 008	3
General Education	3	Electives	6
Electives	6	General Education	3
		15	15

BOTN 115. STRUCTURE OF ECONOMIC PLANTS. (3)

Second semester. (Not offered 1971-72). One lecture and two laboratory periods a week. Prerequisite, BOTN 111. A detailed microscopic study of the anatomy of the chief fruit and vegetable crops. (Rappleye)

BOTN 212. PLANT MORPHOLOGY. (3)

(Staff)

CHEM 001, 003. GENERAL CHEMISTRY. (4, 4)

Two lectures, one quiz, and one three-hour laboratory period each week. Prerequisite, 1 year high school algebra or equivalent. (Staff)

GENETICS

BOTN 117. GENERAL PLANT GENETICS. (2)

Second semester. Prerequisite, BOTN 009 or equivalent. The basic principles of plant genetics are presented; the mechanics of transmission of the hereditary factors in relation to the life cycle of seed plants, the genetics of specialized organs and tissues, spontaneous and induced mutations of basic and economic significance, gene action, genetic maps, the fundamentals of polyploidy, and genetics in relation to methods of plant breeding are the topics considered. (Smith)

BOTN 215. PLANT CYTOGENETICS (3)

(Staff)

BOTN 216. NUCLEIC ACIDS AND MOLECULAR GENETICS. (2)

(Staff)

BOTN 399. THESIS RESEARCH

(Staff)

BOTN 499. DISSERTATION RESEARCH

Credit according to work done.

CHEM 005. ADVANCED GENERAL CHEMISTRY. (4)

First semester. Three lectures and one three-hour laboratory period per week. Prerequisite, high school chemistry, placement in mathematics group I or II, and permission of the Chemistry Department. An advanced course in general chemistry for chemistry majors, which must be followed by CHEM 015. (Staff)

CHEM 006. INTRODUCTORY COLLEGE CHEMISTRY. (2)

Two lectures and one recitation per week. An introduction to the study of matter. This course is intended to be followed by CHEM 001 or 005. This course may not be taken for credit by students with credit in CHEM 001, 003, 005, or 070 or their equivalents. This course may not be taken to satisfy the General Education science requirement. (Staff)

CHEM 007. CHEMISTRY OF MAN'S ENVIRONMENT. (4)

Three lectures and one three-hour laboratory per week. Non-mathematical presentation of basic chemical principles and applications in cosmochemistry, geochemistry, biochemistry, and nuclear chemistry. Particular emphasis is placed on the development of man's environment and his effect upon it. This course is for the general student and does not satisfy the requirements of the professional schools. (Staff)

CHEMISTRY

PROFESSOR AND CHAIRMAN: Vanderslice.

PROFESSOR AND ASSOCIATE CHAIRMAN: Jaquith.

PROFESSORS: Atkinson, Castellani, Grim, Henery-Logan, Keeney, Lippincott, Pratt, Purdy, Reeve, Rollinson, Stewart, Stuntz, Svirbely, Veitch, White (Emeritus).

VISITING PROFESSORS: Berger, Reimann, Rose.

RESEARCH PROFESSOR: Bailey.

ASSOCIATE PROFESSORS: Boyd, Devoe, Gardner, Gordon, Holmlund, Huheey, Kasler, Lakshmanan, Pickard, Staley, Viola.

ASSISTANT PROFESSORS: Ammon, Barker, Bellama, Davis, Jackson, Jarvis, Khanna, Martin, Mazzocchi, Miller, Moore, Murphy, O'Haver, Olin, Sampugna, Sommer, Weinschenker, Zoller.

VISITING ASSISTANT PROFESSOR: Kundell.

INSTRUCTORS: Perlman and Stuntz.

CHEM 008. COLLEGE CHEMISTRY I. (4)

Three lectures, one recitation, and one three-hour laboratory per week. Prerequisite, CHEM 6 or satisfactory performance on qualifying test. The first semester of a general chemistry sequence intended for students whose curricula require a year or more of chemistry to provide a working knowledge of the science. Nature and composition of matter; chemical calculations; atomic structure, solutions. (Staff)

CHEM 009. COLLEGE CHEMISTRY II. (4)

Three lectures, one recitation, and one three-hour laboratory per week. Prerequisite, CHEM 8 or 18. A continuation of CHEM 8. The chemistry of carbon, aliphatic compounds; acids and bases, aromatic compounds; stereochemistry halides; amines and amides; acids, esters; carbohydrates; natural products.

CHEM 015. QUALITATIVE ANALYSIS. (4)

Two lectures and two three-hour laboratory periods per week. Prerequisite, CHEM 003 or CHEM 005. (Staff)

CHEM 018. PRINCIPLES OF COLLEGE CHEMISTRY I. (4)

Three lectures, one recitation, and one three-hour laboratory per week. A more rigorous treatment of the material of CHEM 8. Admissions by invitation of the Chemistry Department based on performance on a qualifying test.

CHEM 020. PRINCIPLES OF COLLEGE CHEMISTRY II. (4)

Three lectures, one recitation, and one three-hour laboratory per week. Prerequisite, CHEM 8 or 18 and consent of the Chemistry Department. A more rigorous treatment of the material of CHEM 9.

CHEM 019. ELEMENTS OF QUANTITATIVE ANALYSIS. (4)

Two lectures and two three-hour laboratory periods per week. Prerequisite, CHEM 003. An introduction to the basic theory and techniques of volumetric and gravimetric analysis. Primarily for students in engineering, agriculture, pre-medical, and pre-dental curricula. (Stuntz)

CHEM 021. QUANTITATIVE ANALYSIS. (4)

Second semester. Two lectures and two three-hour laboratory periods per week. Prerequisite, CHEM 015. An intensive study of the theory and techniques of inorganic quantitative analysis, covering primarily volumetric methods. Required of all students majoring in chemistry. (Stuntz)

CHEM 031, 033. ELEMENTS OF ORGANIC CHEMISTRY. (3, 3)

Two lectures and one three-hour laboratory period per week.

The Department of Chemistry also offers a program leading to a B.S. with a major in Biochemistry. The student must take at least 9 semester hours in approved biological science courses with at least one course at the 100 level.

	First Year	Second Semester	
First Semester			
Chemistry 008 or 018	4	Chemistry 009 or 020	4
Mathematics 018	3	Mathematics 019	4
English 001 or 021	3	English 003	3
General Education	3	Physics 030	3
Health 005	2	Speech 007	2
Physical Education	1	Physical Education	1
	16		17
	Second Year	Second Semester	
First Semester			
Chemistry 035	2	Chemistry 037	2
Chemistry 040	1	Chemistry 042	1
Mathematics 020	4	Chemistry 021	4
Physics 031	4	Mathematics 021	4
English 004	3	Physics 032	4
	14		15
	Third Year		
First Semester		Second Semester	
Chemistry 187	3	Chemistry 189	3
Chemistry 182	1	Chemistry 184	1

- Prerequisite, CHEM 003, 005, or 013. Organic chemistry for students in agriculture, bacteriology, and home economics. (Reeve)
- CHEM 035, 037. ELEMENTARY ORGANIC CHEMISTRY. (2, 2)
Two lectures per week. Prerequisite, CHEM 003 or 005. A course for chemists, chemical engineers, pre-medical students, and pre-dental students. (Staff)
- CHEM 036, 038. ELEMENTARY ORGANIC LABORATORY. (2, 2)
Two three-hour laboratory periods per week. Prerequisite, CHEM 003, or 005; CHEM 035, 037 must be taken concurrently. (Staff)
- CHEM 040, 042. ORGANIC CHEMISTRY LABORATORY FOR CHEMISTRY MAJORS. (1, 1)
One three-hour laboratory period per week. Prerequisite, CHEM 003 or 005; CHEM 035, 037 must be taken concurrently. (Staff)
- CHEM 101. INORGANIC CHEMISTRY. (3)
Three lectures per week. Prerequisite, CHEM 187. (Staff)
- CHEM 102. INORGANIC PREPARATIONS. (2)
Two three-hour laboratory periods per week. Prerequisite, CHEM 123. (Boyd)
- CHEM 110. RADIOCHEMICAL SAFETY PROCEDURES. (1)
One lecture per week. A lecture and demonstration course. Radiation hazards, principles and practices of radiation safety, federal (AEC, ICC) codes and state public health laws, etc., will be discussed. Consent of the instructor must be obtained. No credit towards a degree allowed for chemistry majors. (Lakshmanan)
- CHEM 111. CHEMICAL PRINCIPLES. (4)
Two lectures and two three-hour laboratory periods per week. Prerequisite, CHEM 003, or equivalent. Not open to students seeking a major in the physical sciences, since the course content is covered elsewhere in their curricula. A course in the principles of chemistry with accompanying laboratory work consisting of simple quantitative experiments. (Credit applicable only toward degree in College of Education.) (Jaquith)
- CHEM 112, 113. SPECIAL PROBLEMS IN CHEMISTRY TEACHING. (3, 3)
One four-hour meeting per week. An intensive study of secondary school chemistry courses with particular attention to the Chemical Education Material Study course. Major emphasis will be placed on the chemical principles and the philosophy underlying the CHEM Study program. Credit applicable toward degrees in the College of Education only. Prerequisite, CHEM 001, 003 or its equivalent, and enrollment in the NSF In-Service Institute for Secondary School Chemistry Teachers, or consent of the instructor. (Jaquith)
- CHEM 115. A SURVEY OF ORGANIC CHEMISTRY. (3)
Summer School only. Open ONLY to registrants in the National Science Foundation Summer Institute. Five one-hour lectures per week; five three-hour laboratory periods per week. A systematic survey of compounds of carbon at the elementary level. (Staff)
- CHEM 121. INTERMEDIATE QUANTITATIVE ANALYSIS. (4)
Two lectures and two three-hour laboratory periods per week. Prerequisites, CHEM 019 or 021, and CHEM 033 or 037. A continuation of CHEM 019 or 021, including volumetric, gravimetric, electrometric, and colorimetric methods. Intended for students in agricultural chemistry, general physical science, science education, etc. Not open to chemistry majors. (Staff)
- CHEM 123. ADVANCED QUANTITATIVE ANALYSIS. (4)
Two lectures and two three-hour laboratory periods per week. Pre- or co- requisite, CHEM 189. A continuation of CHEM 021, including volumetric, gravimetric, electro-metric, and colorimetric methods. Required of all students majoring in chemistry. (Purdy)
- CHEM 125. INSTRUMENTAL ANALYSIS. (4)
Second semester. Two lectures and six hours of laboratory per week. Prerequisite, CHEM 189. A study of the application of physicochemical methods to analytical chemistry. Techniques such as polarography, potentiometry, conductivity and spectrophotometry will be included. (Purdy)
- CHEM 141, 143. ADVANCED ORGANIC CHEMISTRY. (2, 2)
Two lectures per week. Prerequisite, CHEM 037, 038. An advanced study of the compounds of carbon. (Reeve)
- CHEM 144. ADVANCED ORGANIC LABORATORY. (2-4)
Two or four three-hour laboratory periods per week. Prerequisites, CHEM 037, 038. (Pratt)
- CHEM 148. THE IDENTIFICATION OF ORGANIC COMPOUNDS. (2)
Two three-hour laboratory periods per week. Prerequisite, CHEM 141. The systematic identification of organic compounds. (Pratt)
- CHEM 150. ORGANIC QUANTITATIVE ANALYSIS. (2)
Two three-hour laboratory periods per week. Prerequisites, CHEM 019 or 021, and consent of the instructor. The semi-micro determination of carbon, hydrogen, nitrogen, halogen and certain functional groups. (Kasler)
- CHEM 161. CHEMICAL BACKGROUND FOR BIOCHEMISTRY. (2)
Two lectures per week. Prerequisite, CHEM 033 or CHEM 037. Organic and physical chemical properties of biologically important compounds and systems. (Holmlund)
- CHEM 163. BIOCHEMISTRY. (3)
Three lectures per week. Prerequisite, CHEM 161. (Holmlund)
- CHEM 162, 164. BIOCHEMISTRY LABORATORY. (2, 2)
Two three-hour laboratory periods per week. Prerequisite, CHEM 033, CHEM 038 or CHEM 042; CHEM 161 or 163, (or concurrent registration in CHEM 161 or CHEM 163). (Staff)
- CHEM 182, 184. PHYSICAL CHEMISTRY LABORATORY FOR CHEMISTRY MAJORS. (1, 1)
One three-hour laboratory period per week. Prerequisite, CHEM 019 or 021; CHEM 187, 189 must be taken concurrently. (Staff)
- CHEM 186. ADVANCED PHYSICAL CHEMISTRY LABORATORY. (2)
Two three-hour laboratory periods per week. Prerequisites, CHEM 184, CHEM 189. (Staff)
- CHEM 196. SPECIAL TOPICS IN CHEMISTRY. (3)
Three lectures or two lectures and one three-hour laboratory per week. Prerequisite varies with the nature of the topic being considered. Course may be repeated for credit if the subject matter is substantially different, but not more than three credits may be accepted in satisfaction of major or supporting area requirements for chemistry majors. (Staff)
- CHEM 187, 189. PHYSICAL CHEMISTRY. (3, 3)
Three lectures per week. Prerequisite, CHEM 019 or 021, MATH 021, PHYS 032 (PHYS 032 may be taken concurrently with CHEM 187) or consent of instructor. A course primarily for chemists and chemical engineers. This course must be accompanied by CHEM 188, 190. (Staff)
- CHEM 188, 190. PHYSICAL CHEMISTRY LABORATORY. (2, 2)
Two three-hour laboratory periods per week. A laboratory course for chemical engineering students taking CHEM 187, 189. Students who have had CHEM 019, 021, or equivalent can not register for this course. (Staff)
- CHEM 195. ADVANCED PHYSICAL CHEMISTRY. (2)
Prerequisite, CHEM 189. Quantum chemistry and other selected topics. (Staff)
- CHEM 199H. SPECIAL PROJECTS. (2)
Honors projects for undergraduate students. (Staff)

FOR GRADUATES

See the Graduate School Catalog for descriptions.

- CHEM 201. ADVANCED INORGANIC CHEMISTRY. (2)
(Staff)
- CHEM 202, 204. ADVANCED INORGANIC LABORATORY. (2, 2)
(Staff)
- CHEM 203. THE CHEMISTRY OF THE RARER ELEMENTS (2)
(Staff)
- CHEM 203. THE CHEMISTRY OF THE RARER ELEMENTS. (2)
(Staff)
- CHEM 205. RADIOCHEMISTRY. (2)
(Staff)
- CHEM 206, 208. SPECTROGRAPHIC ANALYSIS. (1, 1)
(Staff)
- CHEM 207. CHEMISTRY OF COORDINATION COMPOUNDS (2)
(Staff)
- CHEM 209. NON-AQUEOUS INORGANIC SOLVENTS. (2)
(Staff)
- CHEM 210. RADIOCHEMISTRY LABORATORY. (1-2)
(Staff)
- CHEM 211. CHEMISTRY OF ORGANOMETALLIC COMPOUNDS. (2)
(Staff)
- CHEM 213. SELECTED TOPICS IN INORGANIC CHEMISTRY. (2)
(Staff)
- CHEM 215. NUCLEAR CHEMISTRY. (2)
(Staff)

CHEM 221, 223. CHEMICAL MICROSCOPY. (2, 2) (Staff)

CHEM 227. OPTICAL METHODS OF QUANTITATIVE ANALYSIS. (3) (Staff)

CHEM 229. ELECTRICAL METHODS OF QUANTITATIVE ANALYSIS. (3) (Staff)

CHEM 231. SEPARATION METHODS IN QUANTITATIVE ANALYSIS. (3) (Staff)

CHEM 233. MODERN TRENDS IN ANALYTICAL CHEMISTRY (2) (Staff)

CHEM 237. ORGANIC REACTION MECHANISMS. (3) (Staff)

CHEM 239. PHYSICAL ORGANIC CHEMISTRY. (3) (Staff)

CHEM 240. ORGANIC CHEMISTRY OF HIGH POLYMERS. (2) (Staff)

CHEM 243. MOLECULAR ORBITAL THEORY. (2) (Staff)

CHEM 245. THE CHEMISTRY OF THE STEROIDS. (2) (Staff)

CHEM 251. THE HETEROCYCLICS. (2) (Staff)

CHEM 253. SPECIAL TOPICS IN ORGANIC CHEMISTRY. (2) (Staff)

CHEM 254. ADVANCED ORGANIC PREPARATIONS. (2-4) (Staff)

CHEM 258. THE IDENTIFICATION OF ORGANIC COMPOUNDS, AN ADVANCED COURSE. (3) (Staff)

CHEM 261. PROTEINS, AMINO ACIDS, AND CARBOHYDRATES. (2) (Staff)

CHEM 263. BIOLOGICAL ENERGY TRANSDUCTIONS, VITAMINS, AND HORMONES. (2) (Staff)

CHEM 265. ENZYMES. (2) (Staff)

CHEM 267. THE CHEMISTRY OF NATURAL PRODUCTS. (2) (Staff)

CHEM 268. SPECIAL PROBLEMS IN BIOCHEMISTRY. (2-4) (Staff)

CHEM 269. ADVANCED RADIOCHEMISTRY. (2) (Staff)

CHEM 270. ADVANCED RADIOCHEMISTRY LABORATORY. (1-2) (Staff)

CHEM 271. BIOCHEMISTRY OF LIPIDS. (2) (Staff)

CHEM 273. SPECIAL TOPICS IN BIOCHEMISTRY. (2) (Staff)

CHEM 275. BIOPHYSICAL CHEMISTRY. (2) (Staff)

CHEM 287. INFRARED AND ROMAN SPECTROSCOPY. (2) (Staff)

CHEM 291. SELECTED TOPICS IN PHYSICAL CHEMISTRY. (2) (Staff)

CHEM 293. SPECIAL TOPICS IN PHYSICAL CHEMISTRY. (3) (Staff)

CHEM 299. REACTION KINETICS. (3) (Staff)

CHEM 303. ELECTROCHEMISTRY. (3) (Staff)

CHEM 304. ELECTROCHEMISTRY LABORATORY. (2) (Staff)

CHEM 307. CHEMICAL THERMODYNAMICS. (3) (Staff)

CHEM 311. PHYSIOCHEMICAL CALCULATIONS. (2) (Staff)

CHEM 313. MOLECULAR STRUCTURE. (3) (Staff)

CHEM 317. CHEMICAL CRYSTALLOGRAPHY. (3) (Staff)

CHEM 319, 321. QUANTUM CHEMISTRY. (3, 3) (Staff)

CHEM 323. STATISTICAL MECHANICS AND CHEMISTRY. (3) (Staff)

CHEM 351. SEMINAR. (1) (Staff)

CHEM 399. THESIS RESEARCH. (Staff)

CHEM 499. DISSERTATION RESEARCH (ARRANGED) (Staff)

CLASSICAL LANGUAGES AND LITERATURES

PROFESSOR AND CHAIRMAN: Avery.
ASSOCIATE PROFESSOR: Hubbe.
LECTURER: Iversen.
INSTRUCTOR: Clapper.

MAJOR IN LATIN: LATN 001, 002, 003, and 004 or their equivalent must have been completed before a student may begin work on a major in Latin. A student majoring in Latin will then begin his concentration with LATN 005. A major consists of a minimum of twenty-four hours beginning with LATN 005, twelve hours of which must be taken in 100-level courses. A major student who has taken LATN 001, 002, 003, and 004 may use credit so obtained to fulfill the twelve-hour foreign language requirement of the College of Arts and Sciences. Those registering initially for LATN 005 must fulfill this requirement in another foreign language, preferably Greek. No course with a grade less than C may be used to satisfy major requirements.

No placement tests are given in the Classical Languages. The following schedule will apply in general in determining the course level at which students will register for Latin and Greek. All students whose stage of achievement is not represented below are urgently invited to confer with the Chairman of the Department.

Students offering 0 or 1 unit of Latin will register for course 001.

Students offering 2 units of Latin will register for course 003.

Students offering 3 units of Latin will register for course 004.

Students offering 4 units of Latin will register for course 005. No credit will be given for less than two semesters of Elementary Latin or Greek except as provided below in the course description of LATN 001, 002.

LATIN

LATN 001, 002. ELEMENTARY LATIN. (3, 3)

A student who has had two units of Latin in high school may register for LATN 001 for purposes of review, but not for credit; however, he may, under certain conditions, register for LATN 002 for credit with departmental permission. (Hubbe and Staff)

LATN 003. INTERMEDIATE LATIN (CAESAR). (3)

Prerequisite, LATN 001, 002 or equivalent. (Staff)

LATN 004. INTERMEDIATE LATIN (CICERO). (3)

Prerequisite, LATN 003 or equivalent. (Staff)

LATN 005. VERGIL'S AENEID. (3)

Prerequisite, LATN 004 or equivalent. (Avery)

LATN 051. HORACE. (3)

Prerequisite, LATN 005 or equivalent. (Avery)

LATN 052. LIVY. (3)

Prerequisite, LATN 051 or equivalent. (Avery)

LATN 061. PLINY'S LETTERS. (3)

Prerequisite, LATN 052 or equivalent. (Avery)

LATN 070. GREEK AND ROMAN MYTHOLOGY. (3)

Taught in English, no prerequisite. Cannot be taken for language credit. This course is particularly recommended for students planning to major in Foreign Languages, English, History, the Fine Arts, or Journalism. (Iversen)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

Prerequisite for 100 level courses, LATN 061.

LATN 101. CATULLUS AND THE ROMAN ELEGIAC POETS. (3) (Avery)

LATN 102. TACITUS. (3) (Avery)

LATN 103. ROMAN SATIRE. (3) (Avery)

LATN 104. ROMAN COMEDY. (3) (Avery)

LATN 105. LUCRETIUS. (3) (Avery)

- LATN 111. ADVANCED LATIN GRAMMAR. (3)**
Prerequisite, three years of college Latin or equivalent. An intensive study of the morphology and syntax of the Latin language supplemented by rapid reading. (Avery)
- LATN 199. LATIN READINGS. (3)**
Prerequisite, consent of instructor. The reading of one or more selected Latin authors from antiquity through the Renaissance. Reports. May be repeated with different content. (Avery)
- FOR GRADUATES**
- LATN 210. VULGAR LATIN READINGS. (3)**
Prerequisite, consent of instructor. An intensive review of the phonology, morphology, and syntax of Classical Latin, followed by the study of the deviations of Vulgar Latin from the classical norms, with the reading of illustrative texts. The reading of selections from the *Peregrinatio and loca sancta* and the study of divergences from classical usage therein, with special emphasis on those which anticipate subsequent developments in the Romance Languages. Reports. (Avery)

GREEK

- GREK 001, 002. ELEMENTARY GREEK. (3, 3)** (Hubbe)
- GREK 003. INTERMEDIATE GREEK (XENOPHON). (3)**
Prerequisite, GREK 001, 002 or equivalent. (Hubbe)
- GREK 004. INTERMEDIATE GREEK (HOMER). (3)**
Prerequisite, GREK 003 or equivalent. See GREK 006. (Hubbe)
- GREK 005. HERODOTUS. (3)**
Prerequisite, GREK 004 or equivalent. (Hubbe)
- GREK 006. THE NEW TESTAMENT. (3)**
Prerequisite, GREK 003 or equivalent. GREK 006 will be substituted for GREK 004 upon demand of a sufficient number of students. (Hubbe)
- GREK 051. EURIPIDES. (3)**
Prerequisite, GREK 005 or equivalent. (Hubbe)
- GREK 052. PLATO. (3)**
Prerequisite, GREK 051 or equivalent. (Hubbe)

COMPARATIVE LITERATURE

ADVISORY COMMITTEE ON COMPARATIVE LITERATURE:
PROFESSORS Freedman (Chairman), M. J. Evans, G. Jones, MacBain, D. Smith, Sparks and Manning.
PROFESSORS: Goodwyn, Jones.
ASSOCIATE PROFESSOR: Demaitre, Schaumann, D. Smith.
ASSISTANT PROFESSORS: Evans, Swigger.
LECTURER: Longen.

All literature courses numbered 100 or above in the departments of Classics, Foreign Languages and English as well as courses in Comparative Literature are accepted for a major in comparative literature. Students with this major must have a knowledge of at least one approved foreign language demonstrated by successful completion of a course number 100 or above in that language.

Of the possible 24-40 hours offered as a major, the following courses are required: CMLT 101-102 and 150.

Six hours of other comparative literature courses. Course work may not be limited to the nineteenth and twentieth centuries.

LATN 070 is highly recommended.

FOR ADVANCED UNDERGRADUATES AND GRADUATES
CMLT 101, 102. INTRODUCTORY SURVEY OF COMPARATIVE LITERATURE. (3, 3)

First semester. Survey of the background of European literature through study of the Greek and Latin literature in English translations, discussing the debt of modern literature to the ancients. Second semester: study of medieval and modern continental literature. (Schaumann)

CMLT 103. THE OLD TESTAMENT AS LITERATURE. (3)
A study of sources, development and literary types. (Schaumann)

CMLT 104. THE NEW TESTAMENT AS LITERATURE. (3)
A study of the books of the New Testament, with attention to the relevant historical background and to the transmission of the text. A knowledge of Greek is helpful, but not essential. (Staff)

CMLT 105. ROMANTICISM: EARLY STAGES. (3)
First semester. Emphasis on England, France and Germany. Reading knowledge of French or German required. (Demaitre)

CMLT 106. ROMANTICISM: FLOWERING AND INFLUENCE. (3)
Second semester. Emphasis on England, France and Germany. Reading knowledge of French or German required. (Demaitre)

CMLT 107. THE FAUST LEGEND IN ENGLISH AND GERMAN LITERATURE. (3)
A study of the Faust legend of the Middle Ages and its later treatment by Marlowe in *Dr. Faustus* and by Goethe in *Faust*. (Prah)

CMLT 112. IBSEN AND THE CONTINENTAL DRAMA. (3)
First semester. A study of the life and chief work of Henrik Ibsen with special emphasis on his influence on the modern drama. (D. Smith)

CMLT 114. THE GREEK DRAMA. (3)
The chief works of Aeschylus, Sophocles, Euripides, and Aristophanes in English translations. Emphasis on the historical background, on dramatic structure, and on the effect of the Attic drama upon the mind of the civilized world. (Prah)

CMLT 115, 116. THE CLASSICAL TRADITION AND ITS INFLUENCE IN THE MIDDLE AGES AND THE RENAISSANCE. (3, 3)
Emphasis on major writers. Reading knowledge of Greek or Latin required. (Staff)

CMLT 125. LITERATURE OF THE MIDDLE AGES. (3)
Narrative, dramatic, and lyric literature of the Middle Ages studied in translation. (Cooley)

CMLT 130. THE CONTINENTAL NOVEL. (3)
The novel in translation from Stendhal through the Existentialists, selected from literatures of France, Germany, Italy, Russia, and Spain. (Staff)

CMLT 135. DANTE AND THE ROMANCE TRADITION. (3)
A reading of the *Divine Comedy* to enlighten the discovery of reality in western literature. (Staff)

CMLT 140, 141. LITERATURE OF THE FAR EAST. (3, 3)
A survey of the literature of China and Japan. First semester: an examination of the development of Chinese and Japanese literature up to the Yuan and Kamakura period. Second semester: the literature from the fourteenth century to the present. (Staff)

CMLT 145. MAJOR CONTEMPORARY AUTHORS. (3) (Staff)

CMLT 150. CONFERENCE COURSE IN COMPARATIVE LITERATURE. (3)
Second semester: A tutorial type discussion course, correlating the courses in various literatures which the student has previously taken with the primary themes and masterpieces of world literature. This course is required of undergraduate majors in comparative literature, but must not be taken until the final year of the student's program. (Staff)

FOR GRADUATES

See the Graduate School Catalog for descriptions.

CMLT 201. PROBLEMS IN COMPARATIVE LITERATURE. (3) (Staff)

CMLT 225. THE MEDIEVAL EPIC. (3) (Staff)

CMLT 226. THE MEDIEVAL ROMANCE. (3) (Staff)

CMLT 230. PROBLEMS OF THE BAROQUE IN LITERATURE. (3) (Staff)

CMLT 235. THE ITALIAN RENAISSANCE AND ITS INFLUENCE (3) (Staff)

CMLT 240. LITERARY CRITICISM: ANCIENT AND MEDIEVAL (3) (Staff)

CMLT 241. LITERARY CRITICISM: RENAISSANCE AND MODERN. (3) (Staff)

CMLT 258. FOLKLORE IN LITERATURE. (3) (Staff)

CMLT 268. SEMINAR IN LITERARY SOURCES OF ART HISTORY. (3) (Staff)

CMLT 301. SEMINAR IN THEMES AND TYPES. (3) (Staff)

CMLT 399. THESIS RESEARCH. (1-6) (Staff)

COMPUTER SCIENCE

PROFESSOR AND DIRECTOR: Atchison.

PROFESSORS: Chu¹, Edmundson², Glasser³, Heilprin⁴.

RESEARCH PROFESSORS: Ortega⁵, Rheinboldt⁶, Rosenfeld.

ASSOCIATE PROFESSORS: Glaser⁷, Minker.

ASSISTANT PROFESSORS: Austing, Feldman, Hagerty, Hanani, Owings, Park, Pfaltz, Vandergriff.

INSTRUCTOR AND ASSOCIATE DIRECTOR: Menard.

INSTRUCTORS: Lindamood, Williams.

The Student Chapter of the Association for Computing Machinery meets regularly for the discussion of topics in computer science which are of interest to undergraduates. Its programs are open to the public.

FOR UNDERGRADUATES

CMSC 005. INTRODUCTION TO USE OF THE DIGITAL COMPUTER. (1)

An introduction to the use of FORTRAN for solution of simple computational tasks. The use of a conversational mode to simplify the computational process will be emphasized. Where possible students will be assigned to sections of comparable background. Examples and problems for the sections will be chosen appropriate to the background of the students.

CMSC 012. INTRODUCTORY ALGORITHMIC METHODS. (3)

Two lectures and one two-hour laboratory period per week. Prerequisite, MATH 011 or equivalent. Recommended for students not majoring in mathematics, the physical sciences, or engineering. Study of the algorithmic approach in the analysis of problems and their computational solution. Definition and use of a particular algorithmic language. Computer projects based on elementary algebra and probability; linear equations and matrices; and the ordering, searching, sorting, and manipulating of data.

CMSC 020. ELEMENTARY ALGORITHMIC ANALYSIS. (3)

Two lectures and one two-hour laboratory period per week. Pre- or co-requisite, MATH 020 or equivalent. Recommended for students majoring in mathematics, the physical sciences or engineering. Concept and properties of an algorithm, language and notation for describing algorithms, analysis of computational problems and development of algorithms for their solution, use of specific algorithmic languages in solving problems from numerical mathematics, completion of several projects using a computer.

CMSC 021. NUMERICAL CALCULUS LABORATORY I. (1 or 2)

Two hours laboratory per week for each credit hour. Prerequisite, MATH 021, or concurrent registration therein and CMSC 020, or equivalents. Laboratory work in the development of algorithmic solutions of problems taken from numerical calculus with emphasis on efficiency of computation, and the control of errors. Basic one-credit laboratory includes completion of several machine projects on material related to MATH 021. Second credit involves more comprehensive projects based on similar or related material.

CMSC 022. NUMERICAL CALCULUS LABORATORY II. (1 or 2)

Two hours laboratory per week for each credit hour. Prerequisite, MATH 022 or concurrent registration therein and CMSC 020, or equivalents. Laboratory work in the development of algorithmic solutions of problems taken from numerical linear algebra with emphasis on efficiency of computation and the control of errors. Basic one credit laboratory includes completion of several machine projects on material related to MATH 022. Second credit involves more comprehensive projects based on similar or related material.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

CMSC 100. LANGUAGE AND STRUCTURE OF COMPUTERS. (3)

Two lectures and one two-hour laboratory period per week. Prerequisite, CMSC 012 or CMSC 020 or equivalent. Logical basis of computer structure, machine representation of numbers and characters, flow of control,

instruction codes, arithmetic and logical operations, indexing and indirect addressing, input-output, push-down stacks, symbolic representation of programs and assembly systems, subroutine linkage, macros, interpretive systems, and recent advances in computer organization. Several computer projects to illustrate basic concepts.

NOTE: CMSC 100 may not be counted for credit in the graduate program in computer science.

CMSC 102. INTRODUCTION TO DISCRETE STRUCTURES. (3)

Prerequisite, CMSC 020 or equivalent. This is the same course as ENEE 102. Review of set algebra including relations, partial ordering and mappings. Algebraic structures including semigroups and groups. Graph theory including trees and weighted graphs. Boolean algebra and propositional logic. Applications of these structures to various areas of computer science and computer engineering.

NOTE: CMSC 102 may not be counted for credit in the graduate program in computer science.

CMSC 110. SPECIAL COMPUTATIONAL LABORATORY. (1 or 2)

Two hours laboratory per week for each credit hour. Prerequisite, CMSC 012 or equivalent. Arranged for special groups of students to give experience in developing algorithmic solutions of problems or using particular computational systems. May be taken for cumulative credit up to a maximum of six hours where different material is covered. NOTE: CMSC 110 may not be counted for credit in the graduate program in computer science.

CMSC 120. INTRODUCTION TO COMPUTER LANGUAGES AND SYSTEMS. (3)

Prerequisite, MATH 022 or equivalent. Organization and characteristics of computers. Procedure oriented and assembly languages. Representation of data, characters and instructions. Introduction to logic design and systems organization. Macro definition and generation. Program segmentation and linkage. Extensive use of the computer to complete projects illustrating programming techniques and machine structure.

NOTE: CMSC 120 may not be counted for credit in the graduate program in computer science.

CMSC 132. SIMULATION OF CONTINUOUS SYSTEMS. (3)

Prerequisites, CMSC 020 and MATH 066, or equivalent. Introduction to digital simulation; simulation by MIMIC programming; simulation by FORTRAN programming; simulation by DSL-90 (or CSMF) programming; logic and construction of a simulation processor; similarity between digital simulations of continuous and discrete systems.

CMSC 140. STRUCTURE OF PROGRAMMING LANGUAGES. (3)

Prerequisite, CMSC 100 or equivalent. Formal definition of languages including specification of syntax and semantics. Syntactic structure and semantics of simple statements including precedence, infix, prefix, and postfix notation. Global structure and semantics of algorithmic languages including declarations and storage allocation, grouping of statements and binding time of constituents, subroutines, routines, tasks and parameters. List processing and data description languages.

CMSC 144. ELEMENTARY LOGIC AND ALGORITHMS. (3)

Prerequisite, MATH 021 or consent of instructor. This is the same course as MATH 144. An elementary development of propositional logic, predicate logic, set algebra, and Boolean algebra, with a discussion of Markov algorithms, Turing machines and recursive functions. Topics include Post productions, word problems, and formal languages.

CMSC 150. DATA AND STORAGE STRUCTURES. (3)

Prerequisite, CMSC 100 and CMSC 102 or equivalent. A study of intrinsic structures of data, such as arrays, strings, trees, and lists, and their relation to storage media. Representation of data structures in storage by records, files, etc. Special storage structures such as content addressed, trie, and associative memories. Referencing, processing, and management techniques based on the structuring, e.g., list processing. Storage and accessing efficiency, as well as dynamic flexibility of various methods.

CMSC 160. COMPUTER ORGANIZATION. (3)

Prerequisite, CMSC 100 or equivalent. This is the same course as ENEE 166. Introduction, Computer elements. Parallel adders and subtractors. Micro-operations. Sequences. Computer simulation. Organization of a commercially available stored program computer. Microprogrammed computers. A large-scale batch-processing system.

CMSC 168. NUMERICAL METHODS FOR SCIENTISTS AND ENGINEERS. (3)

Prerequisites, MATH 022 or 162, MATH 066, and CMSC 020 or equivalent. This is the same course as MATH 168. Interpolation, numerical differentiation and integration, numeri-

¹Joint appointment with Electrical Engineering

²Joint appointment with Mathematics

³Joint appointment with Physics and Astronomy

⁴Joint appointment with Library and Information Services

⁵Joint appointment with Institute for Fluid Dynamics and Applied Mathematics

⁶Joint appointment with Physiology

cal solution of polynomial and transcendental equations, least squares, systems of linear equations, numerical solution of ordinary differential equations, errors in numerical calculations.

CMSC 170. NUMERICAL ANALYSIS I. (3)

Pre- or co-requisite, MATH 110. This is the same course as MATH 170. Solution of linear systems of equations and non-linear equations in one variable. Least square and Chebyshev approximation, Numerical differentiation, integration, and solution of ordinary differential equations.

CMSC 171. NUMERICAL ANALYSIS II. (3)

Prerequisites, MATH 100 or 104, MATH 110, and CMSC/M 170. This is the same course as MATH 171. Linear systems of equations: norms, condition numbers, rounding error analysis, iterative methods; introduction to numerical solution of partial differential equations. Non-linear systems of equations: Newton's method, convergence and rate of convergence. Eigenvalue problems.

CMSC 190. SPECIAL PROBLEMS IN COMPUTER SCIENCE (1-3)

Prerequisite, permission of instructor. An individualized course designed to allow a student or students to pursue a specialized topic or project under the supervision of the senior staff. Credit according to work done.

FOR GRADUATES

See the Graduate School Catalog for descriptions.

CMSC 200. COMPUTER AND PROGRAMMING SYSTEMS. (3)

CMSC 202. COMPUTER SYSTEMS. (3)

CMSC 204. INFORMATION PROCESSING. (3)

CMSC 206. COMPUTABILITY AND AUTOMATA. (3)

CMSC 210. THEORIES OF INFORMATION. (3)

CMSC 215. THEORY OF COMPUTATION. (3)

CMSC 220. AUTOMATA THEORY. (3)

CMSC 225. COMPUTER APPLICATIONS TO THE PHYSICAL SCIENCES. (3)

CMSC 230. SIMULATION OF COMPUTER ORGANIZATION. (3)

CMSC 235. MODELING AND SIMULATION OF PHYSICAL SYSTEMS. (3)

CMSC 240. COMPILER CONSTRUCTION. (3)

CMSC 245. FORMAL LANGUAGES AND SYNTACTIC ANALYSIS. (3)

CMSC 250. MATHEMATICAL LINGUISTICS. (3)

CMSC 252. COMPUTATIONAL LINGUISTICS. (3)

CMSC 255. INFORMATION RETRIEVAL. (3)

CMSC 258. SEMINAR ON INFORMATION RETRIEVAL. (3)

CMSC 263. THEORY OF SEQUENTIAL MACHINES. (3)

CMSC 265. ADVANCED AUTOMATA THEORY. (3)

CMSC 266. ALGORITHMIC NUMERICAL ANALYSIS. (3)

CMSC 280. ARTIFICIAL INTELLIGENCE. (3)

CMSC 285. COMPUTER PROCESSING OF PICTORIAL INFORMATION. (3)

CMSC 290. ADVANCED TOPICS IN COMPUTER SCIENCE.

CMSC 295. GRADUATE SEMINAR IN COMPUTER SCIENCE. (1-3)

CMSC 399. THESIS RESEARCH. (ARRANGED)

CMSC 499. DISSERTATION RESEARCH. (ARRANGED)

INSTITUTE OF

CRIMINAL JUSTICE AND CRIMINOLOGY

PROFESSOR AND DIRECTOR: Lejins (Professor of Sociology)
LECTURER: Tomlin.

Advisory Council: The Advisory Council is made up of representatives of the areas of education, law, psychiatry, psychology, public administration, social work, sociology, and University College: Dr. Richard P. Claude, Department of Government and Politics, College of Business and Public Administration; Associate Dean Stanley J. Drazek, University College; Professor Robert G. Fisher, School of Law; Dr. Franz Huber, College of Education; Dr. Jonas Rapoport, Psychiatric Institute; Dean Daniel Thursz, School of Social Work; Dr. Robert S. Waldrop, Department of Psychology.

Advisory Board: The Advisory Board is made up of representatives of the State Agencies in the field of law enforcement and corrections, representatives of appropriate private agencies and organizations as well as representatives of national agencies and organizations.

The purpose of the Institute is to provide an organizational and administrative basis for the interests and activities of the University, its faculty and students in the general area of crime and delinquency, comprising the areas usually designated as law enforcement, criminology, and corrections. The institute is to promote study and teaching concerning the problems of crime and delinquency and their prevention and control by offering and coordinating academic programs in the area of law enforcement, criminology and corrections, managing research in these areas and conducting demonstration projects.

The Institute comprises as its component parts:

1. The Criminology Program, which is a Division of the Department of Sociology.
2. The Law Enforcement Curriculum.
3. The program leading to a Bachelor of Arts in General Studies with specializations in Law Enforcement and Corrections offered by the University College.
4. Other appropriate divisions of the Institute to be developed for the areas of research and demonstration projects.

LAW ENFORCEMENT CURRICULUM

LENF 001. INTRODUCTION TO LAW ENFORCEMENT. (3)

Introduction to the administration of criminal justice in a democratic society with emphasis upon the theoretical and historical development of law enforcement. The principles of organization and administration for law enforcement; functions and specific activities; planning and research; public relations; personnel and training; inspection and control; direction; policy formulation.

LENF 020. INVESTIGATION IN LAW ENFORCEMENT. (3)

Investigation as a process of communication. Principles and problems in information collection and evaluation: impartial gathering and evaluation of data. Crime scene search and recording; collection and preservation of physical evidence; scientific aids; modus operandi; sources of information; interviewing; follow-up and case preparation.

LENF 030. CRIMINAL LAW. (3)

Law as one of the methods of social control. Criminal law: its nature, sources, and types; theories and historical developments. Behavioral and legal aspects of criminal acts. Classification and analysis of selected criminal offenses.

LENF 031. CRIMINAL PROCEDURE AND EVIDENCE. (3)

Prerequisite, LENF 030. General principles and theories of criminal procedure. Due process. Arrest, search and seizure. Recent developments. Study and evaluation of evidence and proof.

DANCE

PROFESSOR AND CHAIRMAN: Madden.

ASSISTANT PROFESSORS: Mack, Moehlenkamp, Rosen.

VISITING LECTURERS: Nagrin and Rosenberg.

INSTRUCTORS: Brunner, Goodman, Reynolds, Steckler, Weisbrod, Witt, Yeo.

The Department of Dance offers courses to general students which serve to develop their knowledge of different cultures and arts by studying the role of dance in diverse societies and in relation to other art forms. Minors, supporting courses, and electives in dance, therefore, are also valuable to students majoring in such disciplines as sociology and anthropology as well as in music, art, and drama. For those students who major in dance, the Department provides courses of training which prepare them to practice their craft in concert or in the theatre, to pursue their studies of dance and related arts at the graduate level, or to become critics, historians, and archivists of dance.

A teacher certification program in dance is presently being developed in conjunction with the College of Education.

The available Bachelor of Arts degree is given by the College of Arts and Sciences and is awarded to those whose interest is basically in the cultural, performing, and composing aspects of the dance. The Department also offers courses which fulfill the Physical Education requirement.

Courses in dance theory, literature, and technique are open to all students who have completed the specified prerequisites, acquired the equivalent experience, or secured the permission of the Chairman of the Department of Dance. The Elementary Laboratory Group, the Apprentice Group, and the Dance Concert Group are also open to qualified students.

THE BACHELOR OF ARTS DEGREE

The Department requirement includes a core program of 14 hours in dance techniques and 24 hours in theory and literature. Dance majors are also required to take 12 hours in related disciplines.

No course with a grade of less than "C" may be applied toward the fulfillment of the course requirements for a major in dance.

DANC 032. INTRODUCTION TO DANCE. (3)

First and second semesters. Three lectures a week. A study of dance as a form of communication and as an art form. The course includes a survey of the theories and styles of dance, and of their relationships to other art forms. Lectures will be supplemented by observations, films, and guest speakers. May be taken to fulfill the 3 semester hours requirement in Fine Arts or Philosophy of the general Education requirement.

DANC 050. RHYTHMIC INVENTION FOR DANCE. (2)

First and second semester. Three hours a week. A course designed to show how rhythm affects the total dance movement picture and develops the dancer's rhythmic awareness and response. Understanding of rhythmic principles; movement isolation; design; phrasing; syncopation.

DANC 052, 054. DANCE TECHNIQUES. (2, 2)

First and second semesters. DANC 052, a study of dance movement in terms of placement, rhythm, dynamics, space, improvisation, and dance phrases. DANC 054, further development of the materials in DANC 052. Prerequisite, DANC 052 or equivalent.

DANC 055, 057. DANCE TECHNIQUES. (2, 2)

First and second semesters. Prerequisite, DANC 054, or equivalent. DANC 955, a study of dance techniques and styles. DANC 057, further development of materials in DANC 055. Prerequisite, DANC 055 or equivalent.

DANC 060. ELEMENTARY DANCE COMPOSITION. (3)

First and second semesters. Prerequisite, DANC 054 or equivalent. The study of basic principles of dance composition in terms of space, time, dynamics, and movement invention. The development of critical awareness and judgment with regard to composing.

DANC 070. INTERMEDIATE MODERN DANCE. (2)

First and second semesters. Prerequisite, DANC 060 or equivalent. Study of more advanced dance techniques and some compositional problems. May be repeated for credit.

DANC 080. ADVANCED MODERN DANCE. (2)

First and second semesters. Prerequisite, DANC 070 or equivalent. Continuation of DANC 070 in further advanced form. May be repeated for credit.

DANCE 084. MOVEMENT FOR THE THEATRE. (3)

First and second semesters. Lecture and laboratory. Prerequisite, one semester of dance technique. Movement for actors, dancers, directors, singers in the theatre. Dynamics, qualities, styles, and space as related to movement on the stage.

DANC 090. WORKSHOP. (1-6)

First and second semesters. Admission by consent of instructor. Planning, choreography, and presentation of demonstrations and concerts. May be repeated for credit until 6 credits have been earned.

DANC 100. ADVANCED CHOREOGRAPHIC FORMS. (3)

First and second semesters. Prerequisite, DANC 060 or equivalent and adequate dance technique. Lectures and studio work in modern sources as they apply to dance. Solo and group choreography.

DANC 104. ETHNIC STYLES. (3)

First and second semesters. Prerequisite, DANC 054. Lecture and actively in styles expressive of various cultures. May be repeated for credit by permission of instructor.

DANC 114. DEVELOPMENT OF DANCE PROGRESSION. (3)

First and second semesters. Prerequisite, DANCE 060 or equivalent. The application and building of dance progression both in terms of dance techniques and in choreographic studies. Students have the opportunity to observe and assist the instructor in conducting lower-level dance classes.

DANC 170. CREATIVE DANCE FOR CHILDREN. (3)

First and second semesters. Prerequisite, DANC 060 or equivalent. Directing the essential elements of dance to the level of the child's experience and facilitating the creative response. The development of movement into simple forms to serve as a symbol of individual expression.

DANC 180. DANCE PRODUCTION. (3)

First and second semesters. Prerequisites, DANC 100 or equivalent and an adequate understanding of dance techniques. Advanced choreography. Independent work with periodic criticism.

DANC 182, 183. HISTORY OF DANCE. (3, 3)

The development of dance from primitive to contemporary times and the relationship of dance forms to patterns of culture. DANC 182, the Primitive period through the Middle Ages. DANC 183, the Renaissance period to the present times. May be taken to fulfill the 3 semester hours requirement in Fine Arts or Philosophy of the General Education requirement.

DANC 184. THEORY AND PHILOSOPHY OF DANCE. (3)

First and second semesters. The study of the theories, philosophies and aesthetics of dance. Investigation of form, content, and structure. Interrelationships of the arts, and their role in man's world. May be taken to fulfill the 3 semester hours requirement in Fine Arts or Philosophy of the General Education requirement.

DANC 190. NOTATION. (3)

First and second semesters. Prerequisite, DANC 050 or equivalent. Movement analysis for purposes of recording dance; notation fundamentals; elementary writing of technique; reading of simple folk, modern, and ballet studies.

DANC 192. PERCUSSION AND MUSIC SOURCES FOR DANCE. (3)

First and second semesters. Prerequisite, DANC 050 or equivalent. Techniques of percussion playing, and its use as dance accompaniment. Learning to use the instruments in composition and improvisation. Study of music sources for dance.

DANC 194. DIRECTED STUDIES IN DANCE. (1-6)

First and second semesters. Hours arranged. For advanced students who have the permission of the Chairman of the Department of Dance.

ECONOMICS

Students registered in the College of Arts and Sciences may major in economics. During the freshman and sophomore years prospective economics majors should consult with their lower division advisor in Arts and Sciences concerning preparation for the major. Normally ECON 004—Economic Developments (3) is taken during the freshman year and ECON 031, 032—Principles of Economics (3, 3), during the sophomore year. Economics majors are required to take six hours of mathematics.

Juniors and seniors are advised by the faculty of the Department of Economics, which is administered in the College of Business and Public Administration. In addition to the nine lower division credits listed above, economics majors must complete a minimum of 27 credits with an average grade of not less than "C." ECON 102—National Income Analysis (3); ECON 132—Advanced Economic Principles (3); and either BSAD 130—Business Statistics I (3) or ECON 111—Quantitative Methods in Economics (3) are required. Other courses to meet the requirements of the major are to be selected with the aid of a faculty advisor. Descriptions of courses in economics will be found in the catalog of the College of Business and Public Ad-

ministration. Additional information about the curriculum in economics may be obtained at the departmental office.

ENGLISH LANGUAGE AND LITERATURE

PROFESSOR AND CHAIRMAN: Freedman.

ASSISTANT PROFESSOR AND ASSOCIATE CHAIRMAN: Howard.

PROFESSORS: Bode, Cooley, Harman (Emerita), Hovey, Korg, McManaway, Manning, Mish (Director of Graduate Studies), Murphy, Myers, Panichas, Russell, Whittemore, Zeeveld.

ASSOCIATE PROFESSORS: Andrews (Emerita), Barnes (Representative of University College), Birdsall, Brown, Bryer, Carey, Cooper, Fleming, Gravely, Herman, Houppert, Jellema, Kinnaird, Lawson, Lutwack, Portz, Salamanca, Schaumann, D. Smith, G. Smith, Thorberg, Vitzthum, Ward, Wilson.

ASSISTANT PROFESSORS: Beauchamp, Cate, Coulter, Dunn, Fry, Greenwood, G. Hamilton, Holton, Johnson, James, Kenney, Kleine, Lounsbury, Martin, Miller, Mintz, Robb, Rutherford, Saltz, Spurgeon, Steinberg, Swigger, Tinsley, Tyson, VanEgmond, Walt, Weigant.

LECTURERS: Andreadis, LaVia, Longen, Reed.

INSTRUCTORS: Allen, Anderson, Capshaw, Cardaci, Demaree, Detrick, Diomed, Fitzpatrick, Flynn, Friedman, Gardiner, Gaunt, Grunder, D. Hamilton (P. T.), Kenny, Kirkpatrick, Leatherbarrow, Leonard, McKewin, Meszaros, Norton, O'Brien, Olesky, Ostrowski, Ozolins, Pylon, Ramsey, Schmeissner, Singleton, Stevenson, Stone, Towsend, Trusdale, Vitale, Weissman, Whitaker, Zelenka.

The English major requires 30 credits, suitably distributed as indicated in Departmental announcements, beyond the General Education requirements. A student may pursue a major with emphasis in English, American, or Comparative Literature; in folklore, creative writing, or in linguistics; or in preparation for secondary school teaching.

No course with a grade less than "C" may be used to satisfy major requirements.

In selecting minor or elective subjects, students majoring in English, particularly those who plan to do graduate work, should give special consideration to courses in French, German, Latin, philosophy, and history.

HONORS

The Department of English offers an honors program, primarily for majors but open to others with the approval of the departmental honors committee. Interested students should ask for detailed information from an English Department advisor no later than the beginning of their junior year.

ENGLISH

ENGL 001, 021 or HONR 001 is prerequisite to courses numbered 003 through 056.

ENGL 001. COMPOSITION. (3)

Required of freshmen. See ENGL 021. The study and application of rhetorical principles in expository prose; frequent themes. (Herman, Staff)

ENGL 021. HONORS COMPOSITION. (3)

May be elected by eligible students in place of ENGL 001 to satisfy General Education requirement. Survey of principles of composition, rhetoric, and techniques of research; reading in essays, short stories, poetry; frequent themes. (Thorberg, Staff)

ENGL 003. WORLD LITERATURE. (3)

Fulfills part of the General Education requirement. See ENGL 034. Homer to the Renaissance, foreign classics being read in translation. (Staff)

ENGL 033. HONORS WORLD LITERATURE. (3)

May be elected by eligible students in place of ENGL 003 to satisfy General Education requirement. Homer to the Renaissance, foreign classics being read in translation. (Staff)

ENGL 004. WORLD LITERATURE. (3)

Fulfills part of the General Education requirement. See ENGL 034. Shakespeare to the present, foreign classics being read in translation. (Staff)

ENGL 034. HONORS WORLD LITERATURE. (3)

May be elected by eligible students in place of ENGL 004 to satisfy General Education requirement. Shakespeare to the present, foreign classics being read in translation. (Staff)

ENGL 007. TECHNICAL WRITING. (2)

(Staff)

ENGL 008. INTRODUCTION TO ENGLISH GRAMMAR. (3)

A brief review of traditional English grammar, and an introduction to structural grammar, including phonology, morphology, and syntax. (Robb, James, Staff)

ENGL 009. INTRODUCTION TO NARRATIVE LITERATURE. (3)

Prerequisite: ENGL 001 or 021. An intensive study of representative stories, with lectures on the history and technique of the short story and other narrative forms. (Staff)

ENGL 010. COMPOSITION AND LITERARY TYPES. (3)

Not open to students who have taken ENGL 021. A study of literary genres with writing based on the readings. (Herman, Staff)

ENGL 012. INTRODUCTION TO CREATIVE WRITING. (3)

Additional prerequisite, sophomore standing and departmental permission. (Schaumann, Van Egmond, Staff)

ENGL 014. EXPOSITORY WRITING. (3)

(Herman, Staff)

ENGL 015. READINGS IN BIOGRAPHY. (3)

An analytical study in the form and technique of biographical writing in Europe and America. (Ward)

ENGL 030. INTRODUCTION TO POETRY AND POETICS. (3)

(G. Smith, Jellema)

ENGL 055. ENGLISH LITERATURE FROM THE BEGINNINGS TO 1800. (3)

May be elected by eligible students in place of ENGL 003 or 004 to satisfy the General Education requirement. (Cooper, Staff)

ENGL 056. ENGLISH LITERATURE FROM 1800 TO THE PRESENT. (3)

May be elected by eligible students in place of ENGL 003 or 004 to satisfy the General Education requirement. (Cooper, Staff)

ENGL 57. AMERICAN LITERATURE, BEGINNING TO 1865. (3)

May be elected by eligible students in place of ENGL 003 or 004 to satisfy General Education requirement.

ENGL 58. AMERICAN LITERATURE, 1865 TO THE PRESENT. (3)

May be elected by eligible students in place of ENGL 003 or 004 to satisfy General Education requirement.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

ENGL 003-004 (033-034) or 055-056 are prerequisites to courses numbered 101 through 199.

ENGL 101. HISTORY OF THE ENGLISH LANGUAGE. (3)

(Birdsall, Robb, James)

ENGL 102. OLD ENGLISH. (3)

ENGL 104. CHAUCER. (3)

(Cooley, Birdsall)

ENGL 105. INTRODUCTION TO LINGUISTICS. (3)

Listed also as LING 101.

ENGL 107. AMERICAN ENGLISH. (3)

(Robb)

ENGL 108. ADVANCED ENGLISH GRAMMAR. (3)

Credit may not be granted in both ENGL 108 and LING 103 (Robb, James)

ENGL 109. ENGLISH MEDIEVAL LITERATURE IN

TRANSLATION. (3)

(Staff)

ENGL 110, 111. ELIZABETHAN AND JACOBAN DRAMA. (3, 3)

(Zeeveld, Houppert)

ENGL 112, 113. LITERATURE OF THE RENAISSANCE. (3, 3)

(Zeeveld, Cooper)

ENGL 115, 116. SHAKESPEARE. (3, 3)

(Zeeveld, Cooper, Houppert, D. Smith, Spurgeon)

ENGL 117. THE MAJOR WORKS OF SHAKESPEARE. (3)

(Staff)

ENGL 120. ENGLISH DRAMA FROM 1660 TO 1800. (3)

(Ward)

ENGL 121. MILTON. (3)

(Murphy, Freedman, G. Hamilton, Wilson)

ENGL 122. LITERATURE OF THE SEVENTEENTH CENTURY

1600-1660. (3)

(Murphy, Mish, Wilson, G. Hamilton)

ENGL 123. LITERATURE OF THE SEVENTEENTH CENTURY,

1660-1700. (3)

(Wilson)

ENGL 125, 126. LITERATURE OF THE EIGHTEENTH CENTURY. (3, 3)
(Myers, Howard)

ENGL 129, 130. LITERATURE OF THE ROMANTIC PERIOD. (3, 3)
(Kinnaird, G. Smith)

ENGL 134, 135. LITERATURE OF THE VICTORIAN PERIOD. (3, 3)
(Brown, Cate)

ENGL 136. LATE VICTORIAN AND EDWARDIAN LITERATURE. (3)
A study of the literary movements and techniques which effected the transition from Victorian to modern literature.
(Staff)

ENGL 139, 140. THE ENGLISH NOVEL. (3, 3)
(Ward, Kenney, Kleine)

ENGL 141, 142. MAJOR BRITISH WRITERS. (3, 3)
Two writers studied intensively each semester.
(Fleming, Panichas, Jellema)

ENGL 143. MODERN POETRY. (3)
(Fleming, Jellema)

ENGL 144. MODERN DRAMA. (3)
(Freedman, Bryer)

ENGL 145. THE MODERN NOVEL. (3)
(Panichas, Lawson, Holton)

ENGL 146. AMERICAN DRAMA. (3)
(Bryer)

ENGL 147. AMERICAN POETRY, BEGINNING TO THE PRESENT (3)
(Staff)

ENGL 148. THE LITERATURE OF AMERICAN DEMOCRACY. (3)
(Barnes)

ENGL 152. THE NOVEL IN AMERICA TO 1910. (3)
(Hovey, Thorberg)

ENGL 153. THE NOVEL IN AMERICA SINCE 1910. (3)
(Hovey, Thorberg)

ENGL 154. LITERATURE OF THE SOUTH. (3)
A historical survey, from eighteenth-century beginnings to the present.
(Lawson)

ENGL 155, 156. MAJOR AMERICAN WRITERS. (3, 3)
Two writers studied intensively each semester.
(Manning, Gravely, Lutwack, Barnes, Holton, Bryer)

ENGL 157. INTRODUCTION TO FOLKLORE. (3)
(Birdsall, Carey)

ENGL 158. FOLK NARRATIVE. (3)
Studies in legend, tale, and myth.
(Birdsall)

ENGL 159. FOLKSONG AND BALLAD. (3)
(Carey)

ENGL 160. ADVANCED EXPOSITORY WRITING. (3)
(Herman, Walt, Trousdale, Stevenson)

ENGL 161. ADVANCED ENGLISH STRUCTURE. (3)

ENGL 165. AMERICAN FOLKLORE. (3)
Prerequisite, ENGL 157. An examination of American folklore in terms of history and regional folk cultures. Exploration of collections of folklore from various areas to reveal the difference in regional and ethnic groups as witnessed in their oral and literary traditions.
(Staff)

ENGL 166. AFRO-AMERICAN FOLKLORE AND CULTURE. (3)
An examination of the culture of the Negro in the United States in terms of history (antebellum to the present) and social changes (rural to urban). Exploration of aspects of Negro culture and history via oral and literary traditions and life histories.

ENGL 167. AFRO-AMERICAN LITERATURE. (3)
An examination of the literary expression of the Negro in the United States, from its beginning to the present.

ENGL 168. URBAN FOLKLORE. (3)
Prerequisite, ENGL 157. An examination of the folklore currently originating in white urban American culture.

ENGL 170. CREATIVE WRITING. (3)
(Fleming, Jellema, Holton)

ENGL 171. ADVANCED CREATIVE WRITING. (3)
(Fleming, Salamanca)

ENGL 172. PLAYWRITING. (3)
(Fleming)

ENGL 175. LITERARY CRITICISM. (3)

ENGL 179. SELECTED TOPICS IN ENGLISH AND AMERICAN LITERATURE. (3)

ENGL 180. AMERICAN LITERATURE, BEGINNING TO 1810, THE COLONIAL AND FEDERAL PERIODS. (3)

ENGL 181. AMERICAN LITERATURE, 1810 to 1865, THE AMERICAN RENAISSANCE. (3)

ENGL 182. AMERICAN LITERATURE, 1865 to 1914, REALISM AND NATURALISM. (3)

ENGL 183. AMERICAN LITERATURE 1914 TO THE PRESENT THE MODERN PERIOD. (3)

ENGL 190, 191. HONORS CONFERENCE AND READING. (1, 1)
Second semester. Prerequisite, candidacy for honors in English. Candidates will take ENGL 190 in their junior year and ENGL 191 in their senior year.
(Staff)

ENGL 195. INDEPENDENT RESEARCH IN ENGLISH. (1-3)
This course is designed to provide qualified majors in English, an opportunity to pursue Specific English readings under the supervision of a member of the Department. Restricted to undergraduates.

ENGL 199. SENIOR PRO-SEMINAR IN LITERATURE. (3)
Open only to seniors. First semester. Required of candidates for honors and strongly recommended to those who plan to do graduate work. Individual reading assignments; term paper.
(Staff)

FOR GRADUATES
See the Graduate School Catalog for descriptions.

ENGL 201. BIBLIOGRAPHY AND METHODS. (3)
(Staff)

ENGL 202. MIDDLE ENGLISH. (3)
(Staff)

ENGL 204. SEMINAR IN MEDIEVAL LITERATURE. (3)
(Staff)

ENGL 206, 207. SEMINAR IN RENAISSANCE LITERATURE. (3, 3)
(Staff)

ENGL 210, 211. SEMINAR IN SEVENTEENTH-CENTURY LITERATURE. (3, 3)
(Staff)

ENGL 212, 213. SEMINAR IN EIGHTEENTH-CENTURY LITERATURE. (3, 3)
(Staff)

ENGL 214, 215. SEMINAR IN NINETEENTH-CENTURY LITERATURE. (3, 3)
(Staff)

ENGL 216, 217. LITERARY CRITICISM. (3, 3)
(Staff)

ENGL 218. SEMINAR IN LITERATURE AND THE OTHER ARTS. (3)
(Staff)

ENGL 225, 226. SEMINAR IN AMERICAN LITERATURE. (3, 3)
(Staff)

ENGL 227, 228. PROBLEMS IN AMERICAN LITERATURE. (3, 3)
(Staff)

ENGL 241, 242. STUDIES IN TWENTIETH-CENTURY LITERATURE. (3, 3)
(Staff)

ENGL 244. STUDIES IN DRAMA. (3)
(Staff)

ENGL 245. STUDIES IN FICTION. (3)
(Staff)

ENGL 257. SEMINAR IN FOLKLORE. (3)
(Staff)

ENGL 260. SPECIAL STUDIES IN ENGLISH LITERATURE: THE MEDIEVAL PERIOD to 1500. (3)
(Staff)

ENGL 261. SPECIAL STUDIES IN ENGLISH LITERATURE: RENAISSANCE LITERATURE. (3)
(Staff)

ENGL 262. SPECIAL STUDIES IN ENGLISH LITERATURE: SEVENTEENTH-CENTURY LITERATURE. (3)
(Staff)

ENGL 263. SPECIAL STUDIES IN ENGLISH LITERATURE: EIGHTEENTH-CENTURY LITERATURE. (3)
(Staff)

ENGL 264. SPECIAL STUDIES IN ENGLISH LITERATURE: ROMANTIC LITERATURE. (3)
(Staff)

ENGL 265. SPECIAL STUDIES IN ENGLISH LITERATURE: VICTORIAN LITERATURE. (3)
(Staff)

ENGL 266. SPECIAL STUDIES IN AMERICAN LITERATURE: AMERICAN LITERATURE BEFORE 1865. (3)
(Staff)

ENGL 267. SPECIAL STUDIES IN AMERICAN LITERATURE: AMERICAN LITERATURE SINCE 1865. (3)
(Staff)

ENGL 302. SEMINAR IN THEMES AND TYPES IN ENGLISH LITERATURE. (3)
(Staff)

ENGL 302. SEMINAR IN THEMES AND TYPES IN ENGLISH LITERATURE. (3)

(Staff)

ENGL 399. THESIS RESEARCH. (1-6)

Arranged.

(Staff)

ENGL 499. DISSERTATION RESEARCH (ARRANGED)

(Staff)

FOREIGN LANGUAGES AND LITERATURES

MAJORS

Two types of undergraduate majors are offered in French, German, Russian or Spanish: one for the general student or the future teacher, and the other for those interested in a rounded study of a foreign area for the purpose of understanding another nation through its literature, history, sociology, economics, and other aspects. Both of these majors confer the B.A. degree. (The Department also offers M.A. and Ph.D. degrees in language and literature, but not in area study.)

An undergraduate major in either language and literature or area studies requires a total of 33 hours, with a "C" average, above the basic Arts and Sciences College foreign language requirement.

LANGUAGE AND LITERATURE MAJOR

Course 011 is prerequisite to this major unless waived by the Chairman of the Department. Specific minimum requirements in the program in French, German, and Spanish are: three semester courses in advanced language (two to be selected from Courses 012, 080, 081 and one from Courses 103, 104); two semesters of the survey of literature (Courses 075, 076; or 077, 078); four semester courses selected from literature numbered 100 to 199 in addition to the required four semester courses selected from this group, or two semester courses in English or Comparative Literature courses numbered 101 to 157, or one semester course from the former group and one from the latter—total of 33 hours. Requirements for a language major in Russian comprise: three semesters of advanced Russian (Courses 012 or 013; 071 or 072; and 080 or 081), plus two semesters of the survey of literature, Russian 075 and 076; four semesters in 100-level courses; and two semester courses numbered 103 to 142 in addition to the required four semester courses selected from this group or two semester courses in English or Comparative Literature courses numbered 101 to 157, or one semester course from the former group and one from the latter—a total of 33 hours.

FOREIGN AREA MAJOR

The area study major in French, German, Russian, or Spanish endeavors to provide the student with the knowledge of the various aspects of the country whose language he is studying. Specific requirements in this major are: five semester courses in advanced language (Courses 012, 071, 072, 080, 081); two semester courses in civilization (Courses 171, 172; or 173, 174); two semester courses in literature numbered 100 to 199; and two semester courses in literature numbered 100 to 199 in addition to the required two semester courses selected from this group, or two semester courses in English or Comparative Literature courses numbered 101 to 157, or one semester course from the former group and one from the latter—a total of 33 hours.

HONORS IN FRENCH, GERMAN OR SPANISH

A student whose major is in French, German, or Spanish and who, at the time of application, has a general academic average of 3.0 to 3.5 in his major

field may apply to the Chairman of the Honors Committee for admission to the Honors Program of the Department. Honors work normally begins in the first semester of the junior year, but a qualified student may enter as early as the sophomore year or as late as the second semester of the junior year. Honors students are required to take two courses from those numbered 195, 196, 197 and the seminar numbered 199, as well as to meet other requirements for a major in Foreign Languages. There will be a final comprehensive examination, covering the honors reading list, which must be taken by all graduating seniors who are candidates for honors. Admission of students to the Honors Program, their continuance in the program, and the final award of honors are the prerogative of the Departmental Honors Committee.

ELEMENTARY HONORS

Course 003 in French, German, and Spanish is limited to specially approved candidates who have passed Course 001 with high grades, and will allow them to by-pass Course 006 to complete their requirement by completing Course 007.

LOWER DIVISION COURSES

Course 005 must complete, in addition to 005, Courses 006 and 007; those who place in 006 must complete, in addition to 006, Course 007; those who place in 007 must complete Course 007 or its equivalent. Students who place higher than 007 thereby fulfill by examination the College language requirement. In German the course sequence is 005, 006, 007, 008, 011, and 012. Neither German 011 nor 012 may be taken to meet the College requirement unless the student has completed German 007.

Transfer students with college credit have the option of continuing at the level for which they are theoretically prepared, or of taking a placement examination, or of electing Course 005. If a transfer student takes Course 005 for credit, he may retain transfer credit **only** for the equivalent of Course 001. A transfer student placing lower than his training should warrant may ignore the placement but **DOES SO AT HIS OWN RISK**.

If a student has received a "D in a course, advanced and completed the next higher course, he cannot go back and repeat the original "D."

NO CREDIT WILL BE GIVEN, EVEN ELECTIVE, FOR A SINGLE SEMESTER OF LANGUAGE 001.

A student whose native language is taught at the University may not meet the college requirement by taking Courses 001, 002, 006, 007, 080 and 081. There is a special option by which foreign students may offer a combination of FLOA 001 and 002 (English for Foreign Students) and 12 hours of other English courses to satisfy both the Arts and Sciences English and Foreign Language requirements. This option may not be used by pre-medical students.

The Civilization courses (171, 172) cannot be used toward the foreign language requirement except by students who **begin** language at the University with a fifth semester course (008) or higher.

SPECIAL COURSES FOR FOREIGN STUDENTS

FOLA 001-002. ENGLISH FOR FOREIGN STUDENTS. (3, 3)

An introduction to English usage, adapted to the needs of the non-English-speaking student. Pronunciation, spelling, syntax; the difference between English and various other languages are stressed. (Bridgers)

CHINESE PROGRAM

ASSISTANT PROFESSOR: Chin. (DIRECTOR, Chen, Evans, Shen.

CHIN 001-002. ELEMENTARY CHINESE. (3, 3)

Three recitations and one laboratory period per week. Elements of pronunciation, simple ideograms, colloquial conversation, translation. (Shen)

CHIN 006-007. INTERMEDIATE CHINESE. (3, 3)

Three recitations per week; additional electronic laboratory in CHIN 006. Prerequisite, CHIN 002 or equivalent. Reading of texts designed to give some knowledge of Chinese life, thought, and culture. (Staff)

CHIN 101-102. READING FROM CHINESE HISTORY. (3, 3)

Prerequisite, CHIN 007 or equivalent. Based on anthology of historians from the Chou to the Ching dynasties. (McCaskey)

CHIN 117-118. CHINESE LINGUISTICS. (3, 3)

Prerequisite, CHIN 007 or equivalent. (Shen)

CHIN 171-172. CHINESE CIVILIZATION. (3, 3)

This course supplements GEOG 134 and 135, **Cultural Geography of East Asia**. It deals with Chinese literature, art, folklore, history, government, and great men. Second semester: developments in China since 1911. The course is given in English translation. (Staff)

HEBREW PROGRAM

VISITING PROFESSOR: Iwry.

ASSISTANT PROFESSOR: Greenberg.

INSTRUCTORS: Klein and Liferman.

HEBR 001-002. ELEMENTARY HEBREW. (3, 3)

Elements of grammar; pronunciation and conversation; exercises in translation. (Greenberg, Klein, Liberman)

HEBR 006-007. INTERMEDIATE HEBREW. (3, 3)

Three recitations per week; additional electronic laboratory in HEBR 006. Prerequisite, HEBR 002 or equivalent. Texts designed to give some knowledge of Hebrew life, thought, and culture. (Iwry, Klein)

HEBR 012-013. CONVERSATION AND COMPOSITION. (3, 3)

Prerequisite, HEBR 007 or equivalent. A practical language course recommended for all students continuing with Hebrew. (Iwry)

*Students who have studied Chinese, Italian, or Russian may apply to the Department for special examination, since there is no Course 005 in these languages, and all students who have studied Hebrew must take a placement examination.

HEBR 075-076. SURVEY OF HEBREW LITERATURE. (3, 3)

Prerequisite, HEBR 007 or equivalent. (Iwry)

HEBR 101. THE HEBREW BIBLE. (3)

Reading of selected portions of the Pentateuch. (Greenberg)

HEBR 102. THE HEBREW BIBLE. (3)

Reading of selected portions of the Prophets. (Greenberg)

HEBR 103. MODERN HEBREW LITERATURE. (3)

The period of the Haskalah (Enlightenment). (Iwry)

HEBR 104. MODERN HEBREW LITERATURE. (3)

The period of the Tehiah (Modern Revival). (Iwry)

FRENCH AND ITALIAN LANGUAGE AND LITERATURE

PROFESSOR AND CHAIRMAN: MacBain.

PROFESSORS: Bingham, Quynn, Rosenfield.

ASSOCIATE PROFESSORS: Demaire and Hall.

ASSISTANT PROFESSORS: Bridgers, Fink, Salchenberger, Tarica.

LECTURERS: Gilbert, Johnson, Lebreton-Savigny, Lloyd-Jones, Meijer.

INSTRUCTORS: Barrabini, Beique, Bondurant, Brachet, Brodsky, Carnes, Christov, Deburghraeve, Eardley, Edmonds, Gieue, Luiggi, Lundy, Motta, Nespoulous-Neuville, Quilici, Thibault, Tubbs, Weil-Malherbe.

FRENCH

FREN 000. ELEMENTARY FRENCH FOR GRADUATE

STUDENTS. (Audit)

Intensive elementary course in the French language designed particularly for graduate students who wish to acquire a reading knowledge. (Staff)

FREN 001-002. ELEMENTARY FRENCH. (3, 3)

Each semester, given as intensive course in summer session. Three recitations and one drill per week. Study of spoken and written language and development of the four language skills. (Meyer, Staff)

FREN 003H. ELEMENTARY FRENCH. HONORS COURSE. (3)

Two recitations and two audio-lingual drills per week. Enrollment limited to specially approved candidates from FREN 001. Students taking this course will normally continue in FREN 007. (Staff)

FREN 005. REVIEW OF ELEMENTARY FRENCH. (3)

Two recitations and two audio-lingual drills per week, or three recitations and one audio-lingual drill, depending on circumstances. Enrollment limited to students who, having taken placement examination, have failed to qualify for FREN 006. (Gray, Staff)

FREN 006-007. INTERMEDIATE FRENCH. (3, 3)

Three recitations per week; additional electronic laboratory in FREN 006. Given as intensive course in summer session. Prerequisite, FREN 002 or equivalent, or FREN 005, except that recommended students may enter FREN 007 from FREN 003. Study of linguistic structure, further development of audio-lingual and writing ability, and reading of literary texts with discussion in French. Usually there will be an honors section for qualified students. (Johnson)

FREN 010. SCIENTIFIC FRENCH. (3)

Prerequisite, FREN 006. Reading of technical and scientific prose with some attention to audio-lingual and linguistic objectives. (Johnson)

FREN 011. INTRODUCTION TO FRENCH LITERATURE. (3)

Prerequisite, FREN 007. Required of all students who continue in advanced courses of the Department, with the exception of superior students who are permitted to by-pass an introduction to French literature. May be taken concurrently with FREN 012. (Meyer)

FREN 012. CONVERSATION AND COMPOSITION. (3)

Prerequisite, FREN 007. A practical language course recommended for all students continuing in French. May be taken concurrently with FREN 011. (Fink)

FOR ADVANCED UNDERGRADUATES

FREN 041. FRENCH PHONETICS. (3)

Prerequisite, FREN 007 or equivalent. Elements of French phonetics, diction and intonation. (Gray)

FREN 071-072. REVIEW GRAMMAR AND COMPOSITION. (3, 3)

Prerequisite, FREN 011 and 012 or equivalent. For students who, having a good knowledge of French, wish to become more proficient in the written and spoken language. (Staff)

FREN 075-076. SURVEY OF FRENCH LITERATURE. (3, 3)

Prerequisite, FREN 011 or equivalent. An elementary survey of the chief authors and movements in French literature. To be taken in sequence. (Staff)

FREN 080-081. ADVANCED CONVERSATION. (3, 3)

Prerequisite, FREN 011 and 012 or consent of instructor. For students who wish to develop fluency and confidence in speaking the language. To be taken in sequence. (Meyer, Fink)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

FREN 101. APPLIED LINGUISTICS. (3)

The nature of Applied Linguistics and its contribution to the effective teaching of foreign languages. Comparative study of English and French, with emphasis upon points of divergence. Analysis, evaluation and construction of related drills. (Mendeloff)

FREN 103. ADVANCED COMPOSITION. (3)

Study of word formation, specialized vocabularies, idiomatic constructions, review of certain points of grammar, translation from English to French, and free composition. (Staff)

FREN 104. EXPLICATION DE TEXTES. (3)

Oral and written analysis of short literary works, or of excerpts from longer works chosen for their historical, structural, or stylistic interest, with the purpose of training the major to understand and literature in depth and to make mature esthetic evaluations of it. (Staff)

FREN 107, 108. INTRODUCTION TO MEDIEVAL LITERATURE. (3, 3)

French literature from the ninth through the fifteenth century. First semester: la chanson epique, le roman courtois, le lai. Second semester: la litterature bourgeoise, le theatre, la poesie lyrique. (Lamarque)

FREN 111-112. FRENCH LITERATURE OF THE SIXTEENTH CENTURY. (3, 3)

The Renaissance in France: Humanism, Rabelais, Calvin, the Pleiade, Montaigne, Baroque poetry. (Staff)

FREN 115-116. FRENCH LITERATURE OF THE SEVENTEENTH CENTURY. (3, 3)

First semester: Descartes, Pascal, Corneille, Racine. Second semester: the remaining great classical writers, with special attention to Moliere. (Quynn, Rosenfield)

- FREN 125-126. FRENCH LITERATURE OF THE EIGHTEENTH CENTURY. (3, 3)
 First semester: development of the philosophical and scientific movement; Montesquieu. Second semester: Voltaire, Diderot, Rousseau. (Voltaire,)
- FREN 131-132. FRENCH LITERATURE OF THE NINETEENTH CENTURY. (3, 3)
 First semester: drama and poetry from Romanticism to Symbolism. Second semester: the major prose writers of the same period.
- FREN 143. STUDIES IN TWENTIETH CENTURY LITERATURE: THE EARLY YEARS. (3)
 French poetry, theater and the novel during the age of Proust and Gide.
- FREN 144. STUDIES IN TWENTIETH CENTURY LITERATURE: MID-CENTURY WRITERS. (3)
 Modern French poetry, theater and the novel, with special emphasis on the literature of anxiety and Existentialism.
- FREN 145. STUDIES IN TWENTIETH CENTURY LITERATURE: THE CONTEMPORARY SCENE. (3)
 French writers and literary movements since about 1950, with special emphasis on new forms of the novel and theater.
- FREN 171-172. FRENCH CIVILIZATION. (3, 3)
 French life, customs, culture, traditions. First semester: the historical development. Second semester: present-day France. (Staff)
- FREN 181-182. PRO-SEMINAR IN GREAT LITERARY FIGURES. (3, 3)
 Each semester a specialized study will be made of one great French writer chosen from some representative literary period or movement since the middle ages. (Staff)
- FREN 198H. HONORS INDEPENDENT STUDY. (3)
 Honors Independent Study involves guided readings based on an Honors reading list and tested by a 6 hour written examination. Honors 198 and Honors 199 are required to fulfill the Departmental Honors requirement in addition to two out of the following: 195H, 196H, 197H. Open only to students admitted to the Departmental Honors Program.
- FREN 199H. HONORS THESIS RESEARCH. (3)
 Honors Thesis Research involves the writing of a paper under the direction of a professor of the department and an oral examination. Honors 198 and 199 are required to fulfill the Departmental Honors requirement in addition to two out of the following: 195H, 196H, 197H. Open only to students admitted to the Departmental Honors Program.
- FOR GRADUATES**
 See the Graduate School Catalog for descriptions.
 The requirements of students will determine which courses will be offered.
- FREN 201. THE HISTORY OF THE FRENCH LANGUAGE. (3)
 (Staff)
- FREN 203. COMPARATIVE ROMANCE LINGUISTICS. (3)
 Same as SPAN 203. (Staff)
- FREN 207. ELEMENTARY OLD FRENCH. (3)
 (Staff)
- FREN 208. OLD FRENCH PHONOLOGY AND MORPHOLOGY. (3)
 (Staff)
- FREN 209. MEDIEVAL FRENCH CULTURE. (3)
 (Staff)
- FREN 210. ELEMENTARY OLD PROVENÇAL. (3)
 (Staff)
- FREN 213-214. SEMINAR IN FRENCH RENAISSANCE. (3, 3)
 (Staff)
- FREN 215-216. SEMINAR IN MOLIÈRE. (3, 3)
 (Staff)
- FREN 218-219. SEMINAR IN FRENCH CLASSICISM. (3, 3)
 (Staff)
- FREN 220-221. THE AGE OF ENLIGHTENMENT. (3, 3)
 (Staff)
- FREN 230. SEMINAR IN ROMANTICISM. (3)
 (Staff)
- FREN 231. SEMINAR IN NINETEENTH CENTURY POST-ROMANTIC WRITERS. (3, 3)
 (Staff)
- FREN 235-236. THE REALISTIC NOVEL IN THE NINETEENTH CENTURY. (3, 3)
 (Staff)
- FREN 243-244. THE CONTEMPORARY FRENCH THEATER. (3, 3)
 (Staff)
- FREN 245-246. SEMINAR IN THE CONTEMPORARY NOVEL. (3, 3)
 (Staff)
- FREN 251-252. THE HISTORY OF IDEAS IN FRANCE. (3, 3)
 (Staff)
- FREN 253. PROBLEMS IN BIBLIOGRAPHY AND RESEARCH METHODS. (3)
 (Staff)
- FREN 261-262. SEMINAR IN A GREAT LITERARY FIGURE. (3, 3)
 (Staff)
- FREN 271-272. ADVANCED WRITING AND STYLISTICS. (3, 3)
 (Staff)
- FREN 281-282. READING COURSE. (3)
 (Staff)
- FREN 291-292. SEMINAR. (3, 3)
 (Staff)
- FREN 399. THESIS RESEARCH. (1-6)
 (Staff)
- FREN 499. DISSERTATION RESEARCH (arranged)
 (Staff)
- ITALIAN**
- ITAL 001-002. ELEMENTARY ITALIAN. (3, 3)
 Three recitations and one laboratory hour per week. Elements of grammar and exercises in translation. (Motta)
- ITAL 006-007. INTERMEDIATE ITALIAN. (3, 3)
 Three recitations per week; additional electronic laboratory in ITAL 006. Prerequisite, ITAL 002 or equivalent. Reading of texts designed to give some knowledge of Italian life, thought, and culture. (Motta)
- ITAL 008-009. ACCELERATED ITALIAN. (3, 3)
 Open only to students who have fulfilled language requirements in French, Spanish or Portuguese, or with permission of Department Chairman. An intensive beginning course in the fundamentals of Italian grammar to develop a high degree of skill in reading Italian. Must be taken in sequences. Cannot be used to satisfy college language requirements. (Staff)
- ITAL 011. INTRODUCTION TO ITALIAN LITERATURE. (3)
 Prerequisite, ITAL 007. Required of all students who continue in advanced courses of the Department with the exception of superior students who are permitted to by-pass an introduction to Italian literature. Conducted in Italian. Reading of literary texts, discussion and brief essays. Fall semester only. (Motta)
- ITAL 012. CONVERSATION AND COMPOSITION. (3)
 Prerequisite, ITAL 007. A practical language course recommended for all students continuing in Italian. May be taken concurrently with ITAL 011. Spring semester only. (Motta)
- ITAL 075-076. SURVEY OF ITALIAN LITERATURE. (3, 3)
 Prerequisite, ITAL 007 or equivalent. Basic survey of history of Italian literature. (Motta)
- SPANISH AND PORTUGUESE LANGUAGES AND LITERATURES**
PROFESSOR AND CHAIRMAN: Hesse.
PROFESSORS: Goodwyn, Gramberg, Marra-Lopez, Mendeloff, Nemes, Parsons, Rand.
VISITING PROFESSOR: Bartra.
ASSOCIATE PROFESSOR: Rovner.
ASSISTANT PROFESSOR: Norton.
LECTURERS: Diaz, Natella, Suszynski.
INSTRUCTORS: Crissman, Diz, Forbes, Mur, Navarrete, Raggio, Rentz, Scheiderer, Tarwater, Villavicencio, Willoughby-Macdonald, Wooldridge.
- SPANISH**
- SPAN 001-002. ELEMENTARY SPANISH. (3, 3)
 Each semester: given as intensive course in summer session. Three recitations and one laboratory hour per week. Study of linguistic structure and development of audio-lingual and writing ability. (Rovner, Staff)
- SPAN 003H. ELEMENTARY SPANISH, HONORS COURSE. (3)
 Three recitations and one laboratory hour per week. Enrollment limited to specially approved candidates from SPAN 001. Students taking this course will normally continue in SPAN 007. (Rovner)
- SPAN 005. REVIEW OF ELEMENTARY SPANISH. (3)
 Three recitations and one laboratory hour per week. Enrollment limited to students who, having taken the placement examination, have failed to qualify for SPAN 006. (Rentz, Staff)
- SPAN 006-007. INTERMEDIATE SPANISH. (3, 3)
 Three recitations per week; additional electronic laboratory in SPAN 006. Given as intensive course in summer session. Prerequisite, SPAN 002 or equivalent, or SPAN 005, except that recommended students may enter SPAN 007 from SPAN 003. Study of linguistic structure, further development of audio-lingual and writing ability, and reading of literary texts with discussion in Spanish. Usually there will be an honors section for qualified students. (Armstrong)

SPAN 011. INTRODUCTION TO SPANISH LITERATURE. (3)
Prerequisite, SPAN 007. Required of all students who continue in advanced courses of Department, with the exception of superior students who are permitted to by-pass an introduction to Spanish literature. Conducted in Spanish. Reading of literary texts, discussion, and brief essays. (Suszyzinski)

SPAN 012. REVIEW OF ORAL AND WRITTEN SPANISH. (3)
Prerequisite, SPAN 007. A practical language course recommended for all students continuing in Spanish. May be taken concurrently with SPAN 011. (LeVine)

FOR ADVANCED UNDERGRADUATES

SPAN 041-042. SPANISH PHONETICS. (1, 1)
Prerequisite, SPAN 007 or equivalent. Descriptive study of the Spanish sound system. Practice in phonetic perception, transcription and articulation. Particular attention to sentence phonetics; juncture, rhythm, stress, pitch. (Mendeloff)

SPAN 051-052. COMMERCIAL SPANISH. (3, 3)
Prerequisite, SPAN 012 and consent of instructor. Designed to give knowledge of correct Spanish usage, commercial letters and business forms. Fundamental principles of Spanish shorthand will be included if warranted by the interest and ability of the class. (Rovner, Mur)

SPAN 071-072. REVIEW GRAMMAR AND COMPOSITION. (3, 3)
Prerequisite, SPAN 011 and 012 or equivalent. Intended to give an intensive and practical drill in Spanish composition. (Staff)

SPAN 075-076. SURVEY OF SPANISH LITERATURE. (3, 3)
Prerequisite, SPAN 011 or equivalent. Basic survey of the history of Spanish literature. (Staff)

SPAN 077-078. SURVEY OF SPANISH-AMERICAN LITERATURE. (3, 3)
Prerequisite, SPAN 011 or equivalent. Basic survey of the history of Spanish-American literature. (Staff)

SPAN 080-081. ADVANCED CONVERSATION. (3, 3)
Prerequisite, SPAN 011 and 012 or consent of instructor. For students who wish to develop fluency and confidence in speaking the language. (Staff)

FOR ADVANCED UNDERGRADUATES

SPAN 101. APPLIED LINGUISTICS. (3)
Nature of Applied Linguistics and its contribution to the effective teaching of foreign languages. Comparative study of English and Spanish with emphasis upon points of divergence. Analysis, evaluation, and construction of related drills. (Mendeloff)

SPAN 103-104. ADVANCED COMPOSITION. (3, 3)
Free composition, literary translation and practical study of syntactical structure. (Staff)

SPAN 105, 106. GREAT THEMES OF THE HISPANIC LITERATURES. (3, 3)
The evolution of the pervading themes in the literature of Spain or Spanish-America. (Nemes, Panico)

SPAN 107, 108. LITERATURE OF THE MIDDLE AGES. (3, 3)
Prerequisite, SPAN 075. Spanish literary history from the eleventh through the fifteenth century. Reading of representative texts. First semester: to 1350. Second semester: from 1350 to 1500. (Cagigao)

SPAN 109. THE ROMANCERO. (3)
Prerequisite, SPAN 075. Origin, nature and influence. Extensive reading in each of the respective sub-genres. (Cagigao)

SPAN 111-112. PROSE AND POETRY OF THE SIXTEENTH CENTURY. (3, 3)
Selected readings and literary analysis. (Goodwyn, Staff)

SPAN 113. DRAMA OF THE SIXTEENTH CENTURY. (3)
From the earliest autos and pasos, the development of Spanish drama anterior to Lope de Vega, including Cervantes. (Rovner)

SPAN 115-116. CERVANTES: NOVELAS EJEMPLARES AND DON QUIXOTE. (3)
(Goodwyn)

SPAN 117-118. PROSE AND POETRY OF THE SEVENTEENTH CENTURY. (3, 3)
Selected readings, literary analysis, and discussion of the outstanding prose and poetry of the period, in the light of the historical background. (Goodwyn)

SPAN 119-120. DRAMA OF THE SEVENTEENTH CENTURY. (3, 3)
First semester devoted to Lope de Vega, dramatic theory, and the Spanish stage. Second semester: drama after Lope de Vega to Calderon de la Barca and the decay of the Spanish theater. (Rovner)

SPAN 125-126. LITERATURE OF THE EIGHTEENTH CENTURY. (3, 3)
Traditionalism, neo-classicism, and pre-Romanticism in prose, poetry, and the theater; esthetics and poetics of the enlightenment. Recommended primarily for graduate students. Undergraduates by consent of the instructor. (Staff)

SPAN 130. THE ROMANTIC MOVEMENT IN SPAIN. (3)
Poetry, prose and drama of the Romantic and post-Romantic periods. (Gramberg)

SPAN 131. NINETEENTH CENTURY FICTION. (3)
Significant novels of the nineteenth century. (Gramberg)

SPAN 132. NINETEENTH CENTURY DRAMA AND POETRY. (3)
Prerequisite, SPAN 075 and 076 or 075 and 078. Significant dramas and poetry of the realistic period. (Gramberg)

SPAN 133-134. MODERNISM AND POST-MODERNISM IN SPAIN AND SPANISH AMERICA. (3, 3)
A study of the most important works and authors of both movements in Spain and Spanish America. (Nemes)

SPAN 136. TWENTIETH CENTURY DRAMA. (3)
Prerequisite, SPAN 075 and 076 or 075 and 078. Significant plays of the twentieth century. (Marra-Lopez, Gramberg)

SPAN 141-142. THE GENERATION OF 1898 AND ITS SUCCESSORS. (3, 3)
Authors and works of all genres of the generation of 1898 and those of the immediately succeeding generation. (Gramberg, Marra-Lopez)

SPAN 143. THE CONTEMPORARY SPANISH NOVEL. (3)
The novel and the short story from 1940 to the present. (Gramberg)

SPAN 144. CONTEMPORARY SPANISH POETRY. (3)
Spanish poetry from the generation of 1927 to the present. (Gramberg, Marra-Lopez)

SPAN 159-160. SPANISH-AMERICAN FICTION. (3, 3)
Representative novels and/or short stories from the Wars of Independence to the present. (Nemes, Staff)

SPAN 162. SPANISH-AMERICAN POETRY. (3)
Main trends, authors, and works from the Conquest to Ruben Dario. (Staff)

SPAN 163, 164. SPANISH-AMERICAN ESSAY. (3, 3)
A study of the socio-political contents and aesthetic qualities of representative works from the Colonial to the Contemporary period, with emphasis on the essay of the twentieth century in these second semester. (Nemes, Panico)

SPAN 171-172. SPANISH CIVILIZATION. (3, 3)
A survey of two thousand years of Spanish history, outlining the cultural heritage of the Spanish people, their great men, traditions, customs, art and literature, with special emphasis on the interrelationship of social and literary history. (Staff)

SPAN 173-174. LATIN AMERICAN CIVILIZATION. (3, 3)
The cultural heritage of the Latin American people. Pre-Columbian civilizations. Hispanic and other European influences. (Nemes, Panico)

SPAN 195H-196H-197H. HONORS READING COURSE. (3, 3, 3)
Supervised reading to be taken normally only by students admitted to the Honors Program: 195 is poetry; 196 is the novel, 197 is the drama. (Staff)

SPAN 199H. HONORS SEMINAR. (3)
Required of all students in the Honors Program. Other students will be admitted on special recommendation. Conducted in Spanish. Discussion of a central theme with related investigation by students. (Staff)

FOR GRADUATES

See the Graduate School Catalog for descriptions. In order to be accepted in the Graduate School for specialization in Spanish, a student must already have a substantial knowledge of Spanish literature. Accordingly, the special studies courses and the open seminar are not surveys covering the periods indicated. They are intensive investigations within these periods, in which the class acts as a research team concentrating on a different specific theme each semester. The requirements of students will determine which courses will be offered.

SPAN 201. THE HISTORY OF THE SPANISH LANGUAGE. (3)
(Staff)

SPAN 203. COMPARATIVE ROMANCE LINGUISTICS. (3)
(Staff)

SPAN 207-208. MEDIEVAL SPANISH LITERATURE. (3)
(Staff)

SPAN 211-212. POETRY OF THE GOLDEN AGE. (3, 3)
(Staff)

SPAN 215-216. SEMINAR: THE GOLDEN AGE IN SPANISH LITERATURE. (3, 3) (Staff)

SPAN 225-226. THE EIGHTEENTH CENTURY. (3, 3) (Staff)

SPAN 233-234. THE NINETEENTH CENTURY. (3, 3) (Staff)

SPAN 237-238. HISPANIC POETRY OF THE NINETEENTH AND TWENTIETH CENTURIES. (3, 3) (Staff)

SPAN 241-242. THE TWENTIETH CENTURY. (3, 3)

SPAN 245. THE DRAMA OF THE TWENTIETH CENTURY. (3) (Staff)

SPAN 263-264. COLONIAL SPANISH-AMERICAN LITERATURE. (3, 3)

SPAN 265-266. NATIONAL SPANISH-AMERICAN LITERATURE. (3, 3)

SPAN 281-282. READING COURSE FOR MINORS IN SPANISH. (3, 3)

SPAN 283-284. READING COURSE FOR MINORS IN SPANISH-AMERICAN LITERATURE. (3, 3) (Staff)

SPAN 291-292. OPEN SEMINAR. (3, 3)
Topic to be determined. (Staff)

SPAN 297. TEACHING SPANISH IN INSTITUTIONS OF HIGHER LEARNING. (3) (Staff)

SPAN 399. THESIS RESEARCH. (1-6) (Staff)

SPAN 499. DISSERTATION RESEARCH (ARRANGED) (Staff)

PORTUGUESE

PORT 001-002. ELEMENTARY PORTUGUESE. (3, 3)
First and second semesters. Three recitations and one laboratory per week. Study of linguistic structure and development of audio-lingual and writing ability. (Thorpe)

PORT 006-007. INTERMEDIATE PORTUGUESE. (3, 3)
First and second semesters. Three recitations per week; additional electronic laboratory in PORT 006. Prerequisite: PORT 002 or equivalent. Study of linguistic structure, further development of audio-lingual and writing ability, and reading of literary texts with discussion in Portuguese. (Thorpe)

GERMANIC AND SLAVIC LANGUAGES AND LITERATURES

GERMAN

PROFESSOR AND CHAIRMAN: Hering.
PROFESSORS: Dohert, Jones, Prahel (Emeritus).
ASSOCIATE PROFESSOR: Best.
ASSISTANT PROFESSORS: Berry, Hitchcock, Irwin, Knoche, Morris.
LECTURERS: Elder and Kostovski.
INSTRUCTORS: Apitz, Conway, Dulbe, Hahn, Hoffmeister, Juran, Klapouchy, Schmeissner, Stanich.

GERMAN

GERM 000. ELEMENTARY GERMAN FOR GRADUATE STUDENTS. (AUDIT)
Intensive elementary course in the German language designed particularly for graduate students who wish to acquire a reading knowledge. (Schmeissner)

GERM 001-002. ELEMENTARY GERMAN. (3, 3)
Each semester; given as intensive course in summer session. Three recitations and one audio-lingual drill per week. Study of linguistic structure. Extensive drill in pronunciation and conversation. (Knoche, Hoffmeister)

GERM 003H. ELEMENTARY GERMAN, HONORS COURSE. (3)
Three recitations and one audio-lingual drill per week. Enrollment limited to specially approved candidates from GERM 001. Students taking this course will normally continue in GERM 007. (Knoche)

GERM 005. REVIEW OF ELEMENTARY GERMAN. (3)
Three recitations and one audio-lingual drill per week. Limited to students who, having taken placement examination, have failed to qualify for GERM 007. (Stanich)

GERM 006-007. INTERMEDIATE LITERARY GERMAN. (3, 3)
Three recitations per week; additional electronic laboratory in GERM 006. Given as intensive course in summer session. Prerequisite: GERM 002 or equivalent, or GERM 005, except that recommended students may enter GERM 007 from GERM 003. Usually there will be an honors section for qualified students. (Schmeissner)

GERM 008. SCIENTIFIC GERMAN. (3)
Prerequisite: GERM 006. Reading of technical and scientific prose. (Stanich)

GERM 011. INTRODUCTION TO GERMAN LITERATURE. (3)
Prerequisite, GERM 007. Required of all students who continue in advanced courses, with the exception of superior students who are permitted to by-pass an introduction to German literature. May be taken concurrently with GERM 012. (Irwin)

GERM 012. CONVERSATION AND COMPOSITION. (3)
Prerequisite, GERM 007. A practical language course recommended for all students continuing in German. May be taken concurrently with GERM 011. (Irwin)

FOR ADVANCED UNDERGRADUATES

GERM 071-072. REVIEW GRAMMAR AND COMPOSITION. (3, 3)
Prerequisite, GERM 007, or equivalent. A thorough study of the more detailed points of German grammar with ample practice in composition. (Schmeissner)

GERM 075-076. SURVEY OF GERMAN LITERATURE. (3, 3)
Prerequisite, GERM 007, or equivalent. A survey of the chief authors and movements in German literature. (Morris)

GERM 080-081. ADVANCED CONVERSATION. (3, 3)
Prerequisite, GERM 007, or consent of instructor. For students who wish to develop fluency and confidence in speaking the language. (Apitz)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

GERM 101. APPLIED LINGUISTICS. (3)
The nature of Applied Linguistics and its contribution to the effective teaching of foreign languages. Comparative study of English and German. Analysis, evaluation and construction of related drills. (Staff)

GERM 103-104. ADVANCED COMPOSITION. (3, 3)
Translation from English into German, free composition, letter writing. (Staff)

GERM 125-126. GERMAN LITERATURE OF THE EIGHTEENTH CENTURY. (3, 3)
The main works of Klopstock, Wieland, Lessing, Herder, Goethe, Schiller. (Hering)

GERM 131-132. GERMAN LITERATURE OF THE NINETEENTH CENTURY. (3, 3)
Study of the literary movements from romanticism to naturalism. (Staff)

GERM 141-142. GERMAN LITERATURE OF THE TWENTIETH CENTURY. (3, 3)
Prose and dramatic writings from Gerhart Hauptmann to the present. Modern literary and philosophical movements will be discussed. (Dobert, Staff)

GERM 171-172. GERMAN CIVILIZATION. (3, 3)
Study of the literary, educational, artistic traditions; great men, customs, and general culture. (Morris)

GERM 191. BIBLIOGRAPHY AND METHODS. (3)
Second semester. Especially designed for German majors. (Staff)

GERM 195H-196H-197H. HONORS READING COURSE. (3, 3, 3)
Supervised reading to be taken normally only by students admitted to Honors Program: 195 is poetry; 196 is the novel; 197 is the drama. (Staff)

GERM 199H. HONORS SEMINAR. (3)
Required of all students in the Honors Program. Other students will be admitted on special recommendation. Conducted in German. Discussion of a central theme with related investigations by students. (Staff)

FOR GRADUATES

See the Graduate School Catalog for descriptions.
The requirements of students will determine which courses will be offered.

GERM 200. INTRODUCTION TO GERMAN STUDIES. (3) (Staff)

GERM 201. HISTORY OF THE GERMAN LANGUAGE. (3) (Staff)

GERM 203. GOTHIC. (3) (Staff)

GERM 204. OLD HIGH GERMAN. (3) (Staff)

GERM 205, 206. MIDDLE HIGH GERMAN. (3, 3) (Staff)

GERM 211-212. LITERATURE OF THE SIXTEENTH AND SEVENTEENTH CENTURIES. (3, 3) (Staff)

GERM 224-225. GOETHE AND HIS TIME. (3, 3) (Staff)

GERM 226. SCHILLER. (3) (Staff)

- GERM 230. GERMAN ROMANTICISM. (3) (Staff)
 GERM 234. THE GERMAN DRAMA OF THE NINETEENTH CENTURY. (3) (Staff)
 GERM 250. THE GERMAN LYRIC. (3) (Staff)
 GERM 255-256. THE GERMAN NOVEL. (3, 3) (Staff)
 GERM 258. SEMINAR IN THE GERMAN NOVELLE. (3) (Staff)
 GERM 281-282. READING COURSE. (3, 3) (Staff)
 GERM 291-292. SEMINAR. (3, 3) (Staff)
 GERM 295, 296. SPECIAL STUDIES IN GERMAN LITERATURE. (3, 3) (Staff)
 GERM 399. THESIS RESEARCH. (1-6) (Staff)
 GERM 499. DISSERTATION RESEARCH (ARRANGED) (Staff)

RUSSIAN

- RUSS 001-002. ELEMENTARY RUSSIAN. (3, 3)
 Three recitations and one laboratory hour per week. Elements of grammar, pronunciation and conversation; exercises in translation. (Hitchcock, Staff)
 RUSS 006-007. INTERMEDIATE RUSSIAN. (3, 3)
 Three recitations per week; additional electronic laboratory in RUSS 006. Prerequisite, RUSS 002 or equivalent. Reading of texts designed to give some knowledge of Russian life, thought and culture. (Hitchcock, Staff)
 RUSS 010. SCIENTIFIC RUSSIAN. (3)
 Prerequisite, RUSS 007 or equivalent. Reading of technical and scientific prose. (Hitchcock)
 RUSS 012-013. CONVERSATION AND COMPOSITION. (3, 3)
 Prerequisite, RUSS 007 or equivalent. A practical language course recommended for all students continuing in Russian. (Hitchcock)
 RUSS 071-072. REVIEW GRAMMAR AND COMPOSITION. (3, 3)
 Prerequisite, RUSS 007 or equivalent. Designed to give a thorough training in the structure of the language; drill in Russian composition. (Hitchcock, Staff)
 RUSS 075-076. SURVEY OF RUSSIAN LITERATURE. (3, 3)
 Prerequisite, RUSS 007 or equivalent. An elementary survey of Russian literature. (Hitchcock)
 RUSS 080-081. ADVANCED CONVERSATION. (3, 3)
 Prerequisite, RUSS 012, 013, or consent of instructor. For students who wish to develop fluency and confidence in speaking the language. (Hitchcock, Staff)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

- RUSS 101. APPLIED LINGUISTICS. (3)
 The nature of Applied Linguistics and its contributions to the effective teaching of foreign languages. Comparative study of English and Russian, with emphasis upon points of divergence. Analysis, evaluation and construction of related drills. (Hitchcock)
 RUSS 103-104. ADVANCED COMPOSITION. (3, 3) (Hitchcock)
 RUSS 125. RUSSIAN LITERATURE OF THE EIGHTEENTH CENTURY. (3, 3) (Hitchcock)
 RUSS 135. MODERN RUSSIAN POETRY. (3) (Hitchcock)
 RUSS 136. MODERN RUSSIAN DRAMA. (3) (Hitchcock)
 RUSS 137. MODERN RUSSIAN FICTION. (3) (Hitchcock)
 RUSS 141-142. SOVIET RUSSIAN LITERATURE. (3, 3) (Hitchcock)

GENERAL BIOLOGICAL SCIENCES

The program has been prepared for the student who is interested in biology but whose interest has not yet centered in any one of the biological sciences. It is suitable for the pre-dental or pre-medical student who plans to earn the B.S. degree before entering professional school. The program includes work in botany, entomology, microbiology, and zoology, and introduces the student to the general principles and methods of each of these biological sciences. The

student may then emphasize one of these areas in completing his program.

By proper selection of courses during the junior and senior years, a student may concentrate his work sufficiently in one area of biology to be able to continue graduate work in that field. However, a student who is planning to do graduate work should major in one specific field of biology.

The student following this program must meet the general requirements for a degree in the College of Arts and Sciences. He should select French or German to meet the foreign language requirements and SPCH 007 (or SPCH 001) to fulfill the requirement in speech.

Required introductory courses in the biological sciences: BOTN 001; ENTM 015; MICB 001; ZOOL 001. These courses must be passed with an average grade of at least "C." The pre-professional student must take ZOOL 002 as well.

Required supporting courses in mathematics and physical sciences: MATH 010, 011; CHEM 001, 003; PHYS 010, 011. The student working in most areas of biology will also need a year of organic chemistry (CHEM 031, 033, or CHEM 035, 036, 037, 038). Additional work in chemistry may also be required by the student's advisor, in accordance with the needs of the student's field of emphasis. The pre-professional student must include CHEM 035, 036, 037, 038 in his program.

Advanced courses in the biological sciences: The student must complete at least 30 semester hours of advanced work selected from the fields of botany, entomology, microbiology, and zoology. Of these credits at least 18 must be at the 100 level and taken in at least two of the four departments. The following courses in psychology may be counted as part of the required 30 semester hours but may not be used to satisfy the requirement of 18 semester hours at the 100 level: PSYC 136, 145, 180, 181, 195.

A junior or senior following this curriculum will be advised by the department in which he plans to do the most work.

GENERAL PHYSICAL SCIENCES

This program has been prepared for the student who desires an introduction to the physical sciences but whose interest has not yet centered in any one field of the physical sciences. The program includes work in chemistry, mathematics, and physics, and permits the student to emphasize one of these fields without having to meet the full requirements for a major in one specific field. The program is not recommended for students who may later do graduate work in mathematics or in one of the physical sciences.

The student following this program must meet the general requirements for a degree in the College of Arts and Sciences. He should select French, Russian or German to meet the foreign language requirement and SPCH 007 (or SPCH 001) to fulfill the requirement in speech.

Required introductory courses in mathematics and the physical sciences: MATH 019; CHEM 001, 003; PHYS 010, 011 (or 030, 031 or 015, 016). These courses must be passed with an average grade of at least "C" for the student to be eligible to continue with the program.

Advanced courses in mathematics and the physical sciences: The student must complete at least 36 semester hours of advanced work selected from the Departments of Chemistry, Mathematics, and Physics and Astronomy. Of these credits at least 18 must be at

the 100 level and taken in at least two of the three departments with no less than three credits in the second department. The student should normally take Analysis II and III (MATH 020, 021) inasmuch as practically all the advanced work in mathematics and physics requires calculus.

GEOGRAPHY

Geography is a recognized major field in Arts and Sciences leading to the B.A. degree, although the Department is administered by the College of Business and Public Administration. Freshmen and sophomores wishing to major in geography should consult their lower division advisors and the Department of Geography. The following courses are required for a major: Geog. 010—Introduction to Physical Geography (3); Geography 011—Introduction to Cultural Geography (3); Geography 015—Introduction to Economic Geography (3); and Geography 109—Introduction to Research and Writing in Geography (3). In addition, the major must take three hours of field study from the courses numbered 170 and 171 and one regional course. The remainder of the 33 hour minimum for the major can be made up of elective systematic and technique courses. Geography 001—Introduction to Geography (3), taken as part of the University's general education program does not count toward the 33 hour major requirement. Descriptions of courses in geography will be found in the section of the College of Business and Public Administration. For supporting course requirements in other departments please contact an advisor in the Geography Department.

GOVERNMENT AND POLITICS

Students in Arts and Sciences may major in Government and Politics even though the department is administratively located in the College of Business and Public Administration.

Freshmen wishing to major in government and politics should consult their Lower Division advisors about preparation for the major; additional information about the government and politics program may be obtained at the Departmental office.

Arts and Sciences students may pursue the general GVPT curriculum or the more specialized International Affairs curriculum. (Only BPA students may pursue a specialized curriculum in Public Administration.)

Government and Politics majors must take a minimum of 36 semester hours in Government and Politics and may not count more than 42 hours in GVPT toward graduation. No course with a grade less than "C" may be used to satisfy major requirements.

The Government and Politics fields are as follows: (1) American Government and Politics; (2) Comparative Government; (3) International Affairs; (4) Political Theory; (5) Public Administration; (6) Public Law; and (7) Public Policy and Political Behavior.

The distribution of courses within fields is as follows: I. American Government and Politics—GVPT 60, GVPT 124, GVPT 133, GVPT 160, GVPT 161, GVPT 175; II. Comparative Government—GVPT 90, GVPT 103, GVPT 185, GVPT 189, GVPT 190, GVPT 191, GVPT 192, GVPT 193, GVPT 194, GVPT 195, GVPT 197; III. International Affairs—GVPT 101, 102, 103, 104, 105, 106, GVPT 107 GVPT 108, GVPT 109, GVPT 154; IV. Political Theory—GVPT 140, GVPT 141, GVPT 142, GVPT 143, GVPT 144, GVPT 145, V. Public Administration—GVPT 110, GVPT 111, GVPT 112, GVPT 113, GVPT 160, GVPT 161, GVPT 162, GVPT 181, GVPT 185; VI. Public Law—GVPT

131, GVPT 132, GVPT 133, GVPT 134, GVPT 181; VII. Public Policy and Political Behavior—GVPT 120, GVPT 122, GVPT 124, GVPT 127, GVPT 171, GVPT 174, GVPT 175, GVPT 178.

All GVPT majors are required to take GVPT 001—American Government (3); GVPT 003—Principles of Government and Politics (3); GVPT 020—Introduction to Political Behavior (3); and GVPT 141—History of Political Theory (3); or GVPT 142—Recent Political Theory (3). They must also take one course from three of the fields enumerated above (exclusive of Political Theory).

In addition (a) GVPT majors (general) must take at least 15 GVPT semester hours at the 100 level; (b) GVPT majors taking the International Affairs curriculum must complete at least 15 semester hours at the 100 level in international affairs and comparative government courses, including GVPT 101—International Political Relations (3).

All students majoring in GVPT (general) must complete the intermediate level in one foreign language. Students majoring in GVPT with specialization in International Affairs must take a minimum of 12 semester hours in one foreign language above the first year elementary course.

All students majoring in GVPT must fulfill the requirements of a minor. The general requirement is the completion of 15 semester hours from approved Arts and Sciences departments other than GVPT. At least six of the 15 hours must be taken at the 100 level from a single department.

Students majoring in GVPT with specialization in International Affairs may choose to take all minor courses in geographical area studies or may take them all on a departmental basis.

Students who major in Government and Politics may apply for admission to the GVPT Honors Program during the second semester of their sophomore year. Additional information concerning the Honors Program may be obtained at the departmental office.

Descriptions of courses in government and politics will be found in the listings of the Department under the College of Business and Public Administration.

HISTORY

PROFESSOR AND CHAIRMAN: Haber.
ASSISTANT PROFESSOR AND ASSOCIATE CHAIRMAN: Olson.

PROFESSORS: Bauer, Cole, Gordon, Harlan, Jashemski, Koch, Merrill, Prange, E. Smith, Sparks.

ASSOCIATE PROFESSORS: Belz, Berry, Breslow, Brush, Callcott, Carter, Folsom, Giffin, Gilbert, Grimsted, Mayo, Schuessler, Yaney.

ASSISTANT PROFESSORS: Beverage, Bradbury, Brann, Cockburn, Farrell, Flack, Greenberg, Harris, Matossian, McCusker, Nicklason, Perinbam, Robertson, Shoufani, Stowasser, VanNess, Warren, W. Williams, Wright.

VISITING ASSISTANT PROFESSORS: Couturier, Hoffman, Lavender.

LECTURERS: Barillan, Dunbar, Herbert, Perry, Vasquez.

VISITING LECTURERS: Cannon, Condon, Huston, Kent, Knachel, Ridgway, Rosenberg, C. Smith, L. Williams.

INSTRUCTORS: Browne and Daniel.

The Department of History seeks to provide students with the broadest possible cultural background. In a more specific way, the curriculum provides preparation for men and women interested in secondary school teaching, journalism, research and archival work, government and foreign service. In addition, the curriculum offers preparation for those who intend to pursue graduate study.

A faculty advisor will assist each major in planning a curriculum to meet his personal interests. Students should meet regularly with their advisors

to discuss the progress of their studies.

Requirements for History Majors:

1. As prerequisites, majors must complete HIST 021, 022, 041, and 042. Students who are exempt from HIST 021 and 022 may take any one US. history course in their place.
2. In addition to the prerequisites, majors must complete a minimum of 27 hours of history with grades of C or better. These 27 hours must include (a) at least nine hours of American history, which may include Latin American and Canadian history, (b) at least nine hours of European or Asian history, (c) three hours of HIST 199, (d) at least 18 of the 27 hours must be in 100 level courses.
3. Majors must complete not less than 9 hours of upper level courses outside of the History Department approved by a departmental advisor. Generally this will comprise work in related departments such as government and politics, economics, sociology, literature, philosophy, and fine arts. Grades in these courses must average C or better.

HONORS IN HISTORY

Students who major or minor in history may apply for admission to the History Honors Program during the second semester of their sophomore year. Those who are admitted to the program substitute discussion courses and a thesis for some of their required lecture courses, and they take an oral and written comprehensive examination prior to graduation. Successful candidates are awarded either honors or high honors in history.

The History Department offers pre-honors work in American history (HIST 057, 058) and pre-honors sections in Western Civilization (HIST 041, 042). 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 recommended for students in General Honors, subject only to the instructor's approval. Students who intend to apply for admission to the History Honors Program should take as many of them as possible during their freshman and sophomore years.

GENERAL EDUCATION REQUIREMENTS IN HISTORY

The courses with numbers up to 100 (except HIST 057 and 058) are particularly recommended to students seeking to meet the General Education requirements. These courses are especially designed for the student who wishes to enrich his knowledge and understanding of a particular society or culture in a comparatively broad chronological framework, even though he might have no professional interest in history. They may be taken during the sophomore, junior or senior years.

Students with an exceptionally good background in history may substitute 100-level courses where there are no stated prerequisites.

HIST 017. AFRO-AMERICAN HISTORY. (3)

A survey of the Negro in American history, covering the African background, slavery, the role of the Negro in the social, political, economic, cultural and artistic life of the United States. Emphasis will be placed on the enduring themes and the black experience in race relations, including contemporary problems in race relations. (Staff)

HIST 021. HISTORY OF THE UNITED STATES TO 1865. (3)

A survey of the history of the United States from colonial times to the end of the Civil War. Emphasis on the establishment and development of American institutions. (American History Staff)

HIST 022. HISTORY OF THE UNITED STATES SINCE 1865. (3)
A survey of economic, social, intellectual, and political developments since the Civil War. Emphasis on the rise of industry and the emergence of the United States as a world power. (American History Staff)

HIST 023. SOCIAL AND CULTURAL HISTORY OF EARLY AMERICA. (3)

A study of the social and cultural history of the United States as a predominantly agricultural society. Examination of how the social milieu shapes the cultural development of the nation and its institutions. (American History Staff)

HIST 024. SOCIAL AND CULTURAL HISTORY OF MODERN AMERICA. (3)

A study of the social and cultural history of the United States as a society in transition. Examination of the social and cultural changes that accompanied industrial and scientific development. (American History Staff)

HIST 029. THE UNITED STATES IN WORLD AFFAIRS. (3)

A study of the United States as an emerging world power and the American response to changing status in world affairs. Emphasis on the relationship between internal and external development of the nation. (American History Staff)

HIST 031, 032. LATIN AMERICAN HISTORY. (3, 3)

A survey of the history of Latin America from colonial origins to the present, covering political, cultural, economic, and social development, with special emphasis upon relations with the United States. First semester: Colonial Latin America. Second semester: the Republics. (Latin American History Staff)

HIST 041, 042. WESTERN CIVILIZATION. (3, 3)

This course is designed to give the student an appreciation of the civilization in which he lives in its broadest setting. The study begins with the collapse of classical civilization and comes to the present. (European History Staff)

HIST 051, 052. THE HUMANITIES. (3, 3)

In surveying history from prehistoric times to the present, man's cultural development is emphasized. The course is a study of the achievements of the common cultural heritage of western civilization. It is designed as an introductory course in history which will make a more direct contribution to the other liberal arts fields. First semester, to the Renaissance. Second semester, since the Renaissance. (Jashemski)

HIST 053, 054. HISTORY OF ENGLAND AND GREAT BRITAIN. (3, 3)

A history of the development of British life and institutions. Open to all classes. Especially recommended for English majors and minors and pre-law students. First semester, to 1485. Second semester, since 1485. (English History Staff)

HIST 057. PRE-HONORS COLLOQUIUM IN EARLY AMERICAN HISTORY. (3)

Selected reading in modern American history with emphasis on independent discussion and writing. May be taken for credit by students exempt from American history. Permission of instructor required. (American History Staff)

HIST 058. PRE-HONORS COLLOQUIUM IN MODERN AMERICAN HISTORY. (3)

Selected readings in modern American history with emphasis on independent study, discussion and writing. May be taken for credit by students exempt from American history. Permission of instructor required. (American History Staff)

HIST 061, 062. FAR EASTERN CIVILIZATION. (3, 3)

This course seeks to give the student an understanding of a great civilization radically different from our own, and an appreciation of the complex problems of the Far East and of American policy there. The approach is interdisciplinary within a historical framework. (Folsom, Mayo)

HIST 071, 072. ISLAMIC CIVILIZATION. (3, 3)

This course seeks to give the student an insight into a cultural heritage that dominates the lives of over four hundred million people today. The study covers Islam in Spain, North Africa, Africa below the Sahara, India, and Indonesia as well as the Middle East. The approach is humanistic within a historical framework. (Stowasser)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

HIST 101. AMERICAN COLONIAL HISTORY. (3)

The settlement and development of colonial America to the middle of the eighteenth century. (Staff)

HIST 102. THE AMERICAN REVOLUTION. (3)

The background and course of the American Revolution through the formation of the Constitution. (Bradbury)

- HIST 103. THE FORMATIVE PERIOD IN AMERICA, 1489-1824. (3)
The evolution of the Federal government, the origins of political parties, problems of foreign relations in an era of international conflict, beginnings of the industrial revolution in America, and the birth of sectionalism. (Bradbury)
- HIST 107, 108. ECONOMIC HISTORY OF THE UNITED STATES. (3, 3)
The development of the American economy and its institutions. First semester, to 1865; second semester, since 1865. (Staff)
- HIST 109, 110. SOCIAL HISTORY OF THE UNITED STATES. (3, 3)
Formation of regional societies; immigration and nativism; the Negro; urban movement; social responses to technological change. First semester to 1865; second semester, since 1865. (Beveridge)
- HIST 111, 112. HISTORY OF MEXICO AND THE CARIBBEAN (3, 3)
The history of Mexico, Central America and the Antilles, beginning with the pre-Spanish Indian cultures and continuing through the Spanish colonial period and the national period to the present day. The division point between the two courses in the year 1810, the beginning of the Mexican wars for independence. (Staff)
- HIST 114. THE MIDDLE PERIOD OF AMERICAN HISTORY, 1824-1860. (3)
An examination of the political history of the United States from Jackson to Lincoln with particular emphasis on the factors producing Jacksonian democracy, Manifest Destiny, the Whig Party, the anti-slavery movement, the Republican Party, and secession. (Sparks)
- HIST 116. THE CIVIL WAR. (3)
Military aspects; problems of the Confederacy; political, social, and economic effects of the war upon American society. (Sparks)
- HIST 117. THE NEGRO IN AMERICAN LIFE. (3)
The role of the Negro in America since slavery, with emphasis on twentieth-century developments: the migration from farm to city; the growth of the civil rights movement; the race question as a national problem. (Harlan, Carter, Blasingame)
- HIST 118. THE PROGRESSIVE PERIOD: THE UNITED STATES. 1896-1919. (3)
(Merrill, Harlan, Olson)
- HIST 119. BETWEEN THE WARS: THE UNITED STATES, 1919-1945. (3)
(Merrill, Harlan, Olson)
- HIST 120. THE UNITED STATES SINCE WORLD WAR II. (3)
Problems and issues of American society, foreign and domestic, of the past generation. (Olson)
- HIST 122, 123. HISTORY OF THE SOUTH. (3, 3)
Prerequisite, HIST 021, 022, or equivalent. The golden age of the Chesapeake, the institution of slavery, the antebellum plantation society, the experience of defeat, the impact of industrialization, and the modern racial adjustment. (Staff)
- HIST 124. RECONSTRUCTION AND THE NEW NATION, 1865-1896. (3)
Prerequisite, six credits of American history, or permission of instructor. Problems of construction in both South and North. Emergence of big business and industrial combinations. Problems of the farmer and laborer. (Staff)
- HIST 127, 128. DIPLOMATIC HISTORY OF THE UNITED STATES. (3, 3)
A historical study of the diplomatic negotiations and foreign relations of the United States. First semester, from the Revolution to 1898. Second semester, from 1898 to the present. Students who have taken HIST 020 are admitted only by permission of instructor. (Cole)
- HIST 133, 134. THE HISTORY OF IDEAS IN AMERICA. (3, 3)
A history of basic beliefs about religion, man, nature, and society. Consent of the instructor is required for HIST 134. (Koch)
- HIST 135, 136. CONSTITUTIONAL HISTORY OF THE UNITED STATES. (3, 3)
A study of the historical forces resulting in the formation of the Constitution, and development of American constitutionalism in theory and practice thereafter. (Belz)
- HIST. 137. THE SCIENTIFIC REVOLUTION: FROM COPERNICUS TO NEWTON. (3)
Major developments in the history of physics and astronomy during the 16th and 17th centuries and critical evaluations of the Copernican Revolution, the "mechanical philosophy" of the 17th century scientists, and the
- Newtonian synthesis and its impact on 18th century thought. (Brush)
- HIST 138. THE DEVELOPMENT OF MODERN PHYSICAL SCIENCE: FROM LAVOISIER TO EINSTEIN. (3)
Prerequisites, MATH 010 and PHYS 002 or 003. History of chemistry, physics, and geology during the period from about 1775 to about 1925. (Brush)
- HIST 141. HISTORY OF MARYLAND. (3)
Political, social, and economic history of Maryland from seventeenth century to the present. (Staff)
- HIST 142, 143. HISTORY OF SPAIN. (3, 3)
Political, social, and economic development of Spain; the Spanish empire; Spain's role in Europe. Some attention will be paid to Portuguese history. First semester: 1469-1700. Second semester: 1700-present. (Vasques)
- HIST 144. HISTORY OF TECHNOLOGY. (3)
A survey course designed for junior, senior and graduate students with a solid base in either engineering or history; it will cover the time span from Greek antiquity to the First World War. Technology will be studied as a cultural force controlled by laws of its own and operating within a distinctive conceptual framework. The course will concentrate on the changing character of technology in history and on the interactions between technology and other cultural forces such as science, philosophy, art, material culture, and the economy. (Staff)
- HIST 146. DIPLOMATIC HISTORY OF LATIN AMERICA. (3)
A survey of the political, economic, and cultural relations of the Latin American nations with emphasis on their relations with the United States and the development of the inter-American system. (Wright)
- HIST 148. HISTORY OF CANADA. (3)
Prerequisites, HIST 041, 042, or HIST 053, 054. A history of Canada, with special emphasis on the nineteenth century and upon Canadian relations with Great Britain and the United States. (Gordon)
- HIST 149. HISTORY OF BRAZIL. (3)
The history of Brazil with emphasis on the national period. (Giffin)
- HIST 150. HISTORY OF ARGENTINA AND THE ANDEAN REPUBLICS. (3)
The history of the nationalist period of selected South American countries. (Staff)
- EUROPEAN HISTORY**
- HIST 151. HISTORY OF THE ANCIENT ORIENT AND GREECE. (3)
A survey of the ancient civilizations of Egypt, the Near East, and Greece, with particular attention to their institutions, life, and culture. (Jashemski)
- HIST 153. HISTORY OF ROME. (3)
A study of Roman civilization from the earliest beginnings through the Republic and down to the last centuries of the Empire. (Jashemski)
- HIST 155, 156. HISTORY OF MEDIEVAL EUROPE. (3, 3)
A study of medieval government, society, and thought from the collapse of classical civilization to the Renaissance. (Robertson)
- HIST 157. THE AGE OF ABSOLUTISM, 1648-1748. (3)
Europe in the Age of Louis XIV and the Enlightened Despots. (Williams)
- HIST 158. THE OLD REGIME AND THE FRENCH REVOLUTION, 1748-1815. (3)
Europe in the era of the French Revolution. (Williams)
- HIST 159, 160. HISTORY OF EUROPEAN IDEAS. (3, 3)
Prerequisites, HIST 041, 042 or HIST 053, 054, or the equivalent. Beginning with a review of the basic Western intellectual traditions as a heritage from the Ancient World, the courses will present selected important currents of thought from the scientific revolution of the sixteenth and seventeenth centuries down to the twentieth century. First semester, through the eighteenth century. Second semester, nineteenth and twentieth centuries. (Haber)
- HIST 161, 162. THE RENAISSANCE AND REFORMATION. (3, 3)
Prerequisite, HIST 041, 042, or 053, or consent of instructor. City-states and the rise of nation-states, the culture and thought of the Renaissance, the Reformation and their impact into the seventeenth century. (Brann)
- HIST 163, 164. HISTORY OF THE BRITISH EMPIRE. (3, 3)
Prerequisite, HIST 041, 042, or HIST 053, 054. First semester, the development of England's Mercantilist Empire and its fall in the war for American Independence (1783). Second semester, the rise of the Second British Empire and the solution of the problem of responsible self-government (1783-1867), the evolution of the British Empire into a Commonwealth of Nations, and the development and problems of the dependent Empire. (Gordon)

- HIST 165, 166. CONSTITUTIONAL HISTORY OF GREAT BRITAIN.** (3, 3)
Constitutional development in England, with emphasis on the history of the royal prerogative, the growth of the common law, the development of Parliament, and the emergence of systematized government. First semester, to 1485; second semester, since 1485. (Cockburn)
- HIST 167, 168. HISTORY OF RUSSIA.** (3, 3)
A history of Russia from earliest times to 1917. (Yaney)
- HIST 169, 170. EUROPE IN THE NINETEENTH CENTURY, 1815-1919.** (3, 3)
Prerequisite 041, 042, or HIST 053, 054. A study of the political, economic, social and cultural development of Europe from the Congress of Vienna to the First World War. (Bauer)
- HIST 171, 172. EUROPE IN THE WORLD SETTING OF THE TWENTIETH CENTURY.** (3, 3)
Prerequisites, HIST 041, 042, or HIST 053, 054. A study of political, economic, and cultural developments in twentieth-century Europe with special emphasis on the factors involved in the two World Wars and their global impacts and significance. (Prange)
- HIST 173. THE SOVIET UNION.** (3)
A history of the Bolshevik Revolution and the founding of the Soviet Union; the economic policy and foreign policy of the U.S.S.R. to the present. (Yaney)
- HIST 175. MODERN FRANCE.** (3)
A survey of French history from 1815 to the present. The emphasis is upon such topics as the population problem, the economic and social structure of French society, and the changing political and cultural values of this society in response to recurrent crises through the nineteenth and twentieth centuries. (Greenberg)
- HIST 176. TUDOR ENGLAND.** (3)
An examination of the political, religious, and social forces in English life, 1485-1603, with special emphasis on Tudor government, the English Reformation, and the Elizabethan era. (Breslow)
- HIST 177. STUART ENGLAND.** (3)
An examination of the political, religious, and social forces in English life, 1603-1714, with special emphasis on Puritanism and the English revolutions. (Breslow)
- HIST 178. BRITAIN IN THE EIGHTEENTH CENTURY.** (3)
Developments in Great Britain from the Revolution of 1688 to the end of the Napoleonic wars. (Cockburn)
- HIST 179. MODERN BRITAIN.** (3)
A survey of British history from the age of the French Revolution to World War I with emphasis upon such subjects as Britain's role in the world, the democratization of the state, the problems arising from industrialism and urbanism, and Irish and imperial problems. (Gordon)
- HIST 183. A SURVEY OF AFRICAN HISTORY.** (3)
A brief survey of the history of sub-Saharan Africa from pre-historic times to the end of the colonial era. Special focus on neolithic civilizations, major migrations, and political and commercial developments in pre-colonial and colonial Africa. (Perinbam)
- HIST 184. A HISTORY OF WEST AFRICA.** (3)
HIST 183 is recommended though not required. A regional study of the western Sudan, forest and coastal regions from pre-historic times to the nineteenth century. A discussion of neolithic and iron age civilizations, trans-Saharan and other trade, introduction of Islam, medieval Sudanese empires, forest kingdoms, nineteenth-century empires and kingdoms, and the impact of European penetration. (Perinbam)
- ASIAN HISTORY**
- HIST 187, 188. HISTORY OF CHINA.** (3, 3)
A history of China from earliest times to the present. The emphasis is on the development of Chinese institutions that have molded the life of the nation and its people. (Folsom)
- HIST 189, 190. HISTORY OF JAPAN.** (3, 3)
First semester: Japanese civilization from the age of Shinto mythology, introduction of continental learning, and rule of military overlords. Second semester: renewed contact with the western world and Japan's emergence as a modern state. (Mayo)
- HIST 191. HISTORY OF THE ARABS.** (3)
HIST 071 and 072 recommended but not required. Arab history from the pre-Islamic period to modern times. (Staff)
- HIST 192. HISTORY OF THE TURKS.** (3)
HIST 071 and 072 recommended but not required. Survey of Turkish history from earliest times to the present, with special emphasis on the Seljuks, the Ottoman Empire, and the Republic of Turkey. (Staff)

- HIST 193. HISTORY OF IRAN.** (3)
HIST 071 and 072 recommended but not required. Survey of Iranian history from earliest times to the present with emphasis on period since the rise of the Safavids in the sixteenth century. (Staff)
- HIST 194. HISTORY OF THE JEWS AND THE STATE OF ISRAEL.** (3)
A survey of Jewish history from the second century Diaspora to the present with special attention to an analysis of Zionism, the creation of a Jewish home in Palestine, the establishment of the State of Israel, and modern developments. (Staff)
- HIST 195, 196. HONORS COLLOQUIUM.** (3, 3)
Enrollment limited to students admitted by the departmental Honors Committee. Reading in sources and secondary work centering about the development of the modern world. Discussions of reading and written work in weekly seminar meetings. (Staff)
- HIST 197. STUDIES IN MIDDLE EASTERN CULTURE.** (3)
Systematic treatment of aspects of literature and culture of the Middle East. May be repeated. (Rivlin, Stowasser)
- HIST 198. HONORS THESIS.** (3)
Limited to students who have completed HIST 195. Normally repeated for a total of six hours credit during the senior year by candidates for honors in history. (Staff)
- HIST 199. PRO-SEMINAR IN HISTORICAL WRITING.** (3)
Discussions and research papers designed to acquaint the student with the methods and problems of research and presentation. The student will be encouraged to examine those phases of history which he regards as his specialties. (Staff)

FOR GRADUATES

- See the Graduate School Catalog for descriptions.
- HIST 200. HISTORIOGRAPHY: TECHNIQUES OF HISTORICAL RESEARCH AND WRITING.** (3)
- HIST 201. READINGS IN COLONIAL AMERICAN HISTORY.** (3)
- HIST 202. SEMINAR IN COLONIAL AMERICAN HISTORY.** (3)
- HIST 203. READINGS IN THE AMERICAN REVOLUTION AND THE FORMATIVE PERIOD.** (3)
- HIST 204. SEMINAR IN THE AMERICAN REVOLUTION AND THE FORMATIVE PERIOD.** (3)
- HIST 205. READINGS IN AMERICAN SOCIAL AND ECONOMIC HISTORY.** (3)
- HIST 206. SEMINAR IN AMERICAN SOCIAL AND ECONOMIC HISTORY.** (3)
- HIST 213. READINGS IN SOUTHERN HISTORY.** (3)
- HIST 214. SEMINAR IN SOUTHERN HISTORY.** (3)
- HIST 215. READINGS IN THE MIDDLE PERIOD AND CIVIL WAR.** (3)
- HIST 216. SEMINAR IN THE MIDDLE PERIOD AND CIVIL WAR.** (3)
- HIST 217. READINGS IN RECONSTRUCTION AND THE NEW NATION.** (3)
- HIST 218. SEMINAR IN RECONSTRUCTION AND THE NEW NATION.** (3)
- HIST 223. READINGS IN RECENT AMERICAN HISTORY.** (3)
- HIST 224. SEMINAR IN RECENT AMERICAN HISTORY.** (3)
- HIST 227. READINGS IN THE HISTORY OF AMERICAN FOREIGN POLICY.** (3)
- HIST 228. SEMINAR IN THE HISTORY OF AMERICAN FOREIGN POLICY.** (3)
- HIST 233. READINGS IN AMERICAN INTELLECTUAL HISTORY.** (3)
- HIST 234. SEMINAR IN AMERICAN INTELLECTUAL HISTORY.** (3)
- HIST 236. SEMINAR IN AMERICAN CONSTITUTIONAL AND POLITICAL HISTORY.** (3)
- HIST 239. READINGS IN THE HISTORY OF MODERN SCIENCE.** (3)
- HIST 240. SEMINAR IN THE HISTORY OF MODERN SCIENCE.** (3)
- HIST 242. SEMINAR IN THE HISTORY OF MARYLAND.** (3)
- HIST 245. READINGS IN LATIN AMERICAN HISTORY.** (3)
- HIST 246. SEMINAR IN LATIN AMERICAN HISTORY.** (3)
- HIST 251. SEMINAR IN GREEK HISTORY.** (3)
- HIST 253. SEMINAR IN ROMAN HISTORY.** (3)
- HIST 255. READINGS IN MEDIEVAL HISTORY.** (3)
- HIST 256. SEMINAR IN MEDIEVAL HISTORY.** (3)
- HIST 257. READINGS IN 17TH CENTURY EUROPEAN HISTORY.** (3)

- HIST 258. SEMINAR IN 17TH CENTURY EUROPEAN HISTORY. (3)
- HIST 259. READINGS IN MODERN EUROPEAN INTELLECTUAL HISTORY. (3)
- HIST 260. SEMINAR IN MODERN EUROPEAN INTELLECTUAL HISTORY. (3)
- HIST 261. READINGS IN THE HISTORY OF THE RENAISSANCE AND REFORMATION. (3)
- HIST 262. SEMINAR IN THE HISTORY OF THE RENAISSANCE AND REFORMATION. (3)
- HIST 263. READINGS IN THE HISTORY OF GREAT BRITAIN AND THE BRITISH EMPIRE-COMMONWEALTH. (3)
- HIST 264. SEMINAR IN THE HISTORY OF GREAT BRITAIN AND THE BRITISH EMPIRE-COMMONWEALTH. (3)
- HIST 266. SEMINAR IN TUDOR AND STUART ENGLAND. (3)
- HIST 268. SEMINAR IN RUSSIAN HISTORY. (3)
- HIST 269. READINGS IN NINETEENTH CENTURY EUROPE. (3)
- HIST 270. SEMINAR IN NINETEENTH CENTURY EUROPE. (3)
- HIST 271. SEMINAR IN THE HISTORY OF WORLD WAR I. (3)
- HIST 272. SEMINAR IN THE HISTORY OF WORLD WAR II. (3)
- HIST 274. READINGS IN MODERN FRENCH HISTORY. (3)
- HIST 275. SEMINAR IN MODERN FRENCH HISTORY. (3)
- HIST 281. READINGS IN MIDDLE EASTERN HISTORY. (3)
- HIST 282. SEMINAR IN MIDDLE EASTERN HISTORY. (3)
- HIST 285. READINGS IN JAPANESE HISTORY. (3)
- HIST 286. SEMINAR IN JAPANESE HISTORY. (3)
- HIST 287. READINGS IN CHINESE HISTORY. (3)
- HIST 288. SEMINAR IN CHINESE HISTORY. (3)
- HIST 290. THE TEACHING OF HISTORY IN INSTITUTIONS OF HIGHER LEARNING. (1)
- HIST 399. THESIS RESEARCH. (1-6)
- HIST 499. THESIS RESEARCH. (Arranged)

GENERAL HONORS PROGRAM

DIRECTOR: Portz

The General Honors Program is administered by the Director of the Arts and Sciences Honors Programs and by the College Honors Committee which also acts as an advisory and regulatory body for all Honors Programs within the College. Admission to the General Honors Program shall ordinarily be at the beginning of the first or second semester of the student's freshman year. Students are selected on the basis of SAT scores, grades, rank in graduating class, recommendations from high school teachers and counselors, and other factors dealing with academic achievement in high school. Students transferring from other institutions are accepted into General Honors upon presentation of a distinguished academic record.

General Honors students are assigned to Honors sections of basic General Education courses, and are given the opportunity of participating in special General Honors seminars. Continuance in the Program is based upon maintaining a B average or better. Successful General Honors students are graduated with a citation in General Honors and notation of this accomplishment is made upon their transcripts. For further information and admission to General Honors, see the Director of Honors, Francis Scott Key Hall.

SPECIAL GENERAL HONORS SEMINARS

Open to General and Departmental Honors students and to other students with the consent of the instructor or of the Director of Honors.

HONR 001. HONORS ORIENTATION COLLOQUIUM. (3)

A colloquium on composition and on current topics in the humanities, the natural sciences, and the social sciences. The topics will vary with the interest of the instructors. Writing and analysis of weekly themes on, and in-class discussions of, assigned reading will be stressed. Ordinarily taken by all General Honors freshmen. Open to other stu-

dents with the consent of the Director of Honors. (Staff)

HONR 050-051. SEMINAR IN AMERICAN STUDIES. AMERICAN TASTE IN THE TWENTIETH CENTURY. (3, 3)

An interdisciplinary course to investigate the development of public taste in modern America, especially the relationship between popular expression—the motion picture, jazz, best sellers, Broadway theatre—and the more traditional forms of the fine arts and literature. Not open to freshmen.

HONR 100. CONTINENTAL BACKGROUNDS OF THE ENGLISH RENAISSANCE. (3)

Prerequisite: ENGL001, 003, and 004; or ENGL021, 033, and 034. An interdisciplinary study of the painting, architecture, philosophy, and literature of the Continental Renaissance and its influence on English literature of the period. Not open to freshmen.

HONR 110. SEMINAR IN SCIENCE AND MODERN SOCIETY. (3)

A seminar dealing with the impact of science upon modern society. Subjects and faculty to vary from semester to semester. Intended for both non-science and science majors. Not open to freshmen.

HONR 120. SEMINAR IN THE FINE ARTS. (3)

To be participated in by various members of the Fine Arts Departments. The subject to vary from semester to semester. Prerequisite: A General Education course in one of the participating departments. A course in a second participating department is recommended but not required. Open to General and Departmental Honors students at the junior and senior level and to other students with the consent of the instructor or the Director of Honors.

HONR 130. SEMINARS IN THE SOCIAL SCIENCES. (1-4)

A series of seminars in the social sciences. Often interdisciplinary in character and often team-taught. The subjects of the seminars and the faculty may vary from semester to semester. Seminars may be repeated for credit, with the permission of the Director of Honors, if the content of the course alters appreciably. Open to General and Departmental Honors students and to other students with the consent of the instructor and the Director of Honors.

HONR 140. SEMINARS IN THE NATURAL SCIENCES. (1-4)

A series of seminars in the natural sciences. Often interdisciplinary in character and often team-taught. The subjects of the seminars and the faculty may vary from semester to semester. Seminars may be repeated for credit, with the permission of the Director of Honors, if the content of the course alters appreciably. Open to General and Departmental Honors students and to other students with the consent of the instructor and the Director of Honors. (Staff)

HONR 150. SEMINARS IN THE HUMANITIES. (1-3)

A series of seminars in the humanities. Often interdisciplinary in character and often team-taught. The subjects of the seminars and the faculty may vary from semester to semester. Seminars may be repeated for credit, with the permission of the Director of Honors, if the content of the course alters appreciably. Open to General and Departmental Honors students and to other students with the consent of the instructor and the Director of Honors. (Staff)

HONR 160. HONORS THESIS RESEARCH. (3)

A thesis preparation course for General Honors seniors, under the direction of individual faculty members. HONR 160 or HONR 170, but not both, may be used once to fulfill the General Honors Seminar requirement. Graded pass-fail. May not be repeated. Open only to General Honors students. (Staff)

HONR 170. HONORS INDEPENDENT STUDY. (3)

Honors Independent Study involves reading or research, directed by individual faculty, especially in areas outside of the student's major. HONR 170 or HONR 160, but not both, may be used once to fulfill the General Honors Seminar requirement. Graded pass-fail. May be repeated only with consent of the Director of Honors. Open only to General Honors students. (Staff)

LINGUISTICS PROGRAM

Advisory Committee on Linguistics:

Faculty:

PROFESSORS: Dingwall, Edmundson, Horton, Manning, Sparks, and Williams.

ASSISTANT PROFESSORS: Dingwall (Director) and Shen (Chinese-Linguistics).

The program in linguistics is designed to provide students with a comprehensive and consistent view of the accomplishments, methodology and problems of

modern linguistic science which has as its aim the explication of the facts of specific natural languages as well as natural language in general. While any educated man will benefit from an understanding of the structure and development of language, those who expect to become scholars and teachers of anthropology, English, foreign languages, philosophy or speech will find a background in linguistics invaluable. Although there is not an undergraduate major in linguistics at this time, courses in linguistics may be used to fulfill the supporting courses requirement in some programs leading to the B.A. or B.S. degree.

LING 071. LANGUAGE AND CULTURE. (3)

Prerequisite sophomore standing. A non-technical introduction to linguistics, with special consideration of the relations between language and other aspects of culture. (Listed also as ANTH 071.) (Dingwall)

LING 101. INTRODUCTION TO LINGUISTICS. (3)

Introduction to the basic concepts of modern descriptive linguistics. Phonology, morphology, syntax. Examinations of the methods of comparative linguistics, internal reconstruction, dialect geography. (Listed also as ANTH 171 and as ENGL 105.)

LING 102. PHONETICS AND PHONEMICS. (3)

Training in the identification, description, and symbolization of various sounds found in language. Study of scientific techniques for classifying sounds into units which are preceptually relevant for a given language. (Dingwall)

LING 103. MORPHOLOGY AND SYNTAX. (3)

A detailed study of language structure. No student may receive credit for both LING 103 and ENGL 108. (Dingwall)

LING 106. HISTORICAL LINGUISTICS. (3)

Prerequisite LING 102 and 103, or equivalent. A study of change in the phonological, grammatical and semantic structures of natural languages; language typology; reconstruction and various allied topics will be treated. (Dingwall)

LING 201. SEMINAR IN LINGUISTICS. (3)

Topic to be selected each semester. (Dingwall)

Other programs also offer courses in linguistics that may be of interest to the student:

CMSC 190 C. MATHEMATICAL LINGUISTICS. (3)

(Edmundson)

HONR 130C. SEMINAR IN THE SOCIAL SCIENCES:

PSYCHOLINGUISTICS. (3)

(Dingwall, Horton)

MATHEMATICS

PROFESSOR AND CHAIRMAN: Goldhaber.

PROFESSORS: Auslander, Brace, Chu, Cohen, Douglis, Edmundson, Ehrlich, Goldberg, Good, Greenberg, Horvath, Huet, Hummel, Jackson, Karp, Kleppner, Kuroda, G. Lehner, J. Lehner, Maltese, Martin Pearl, Reinhart, Schaefer, Steilmacher, Sytki, Walsh, Zedek.

VISITING PROFESSORS: Maass, Remmert, Vesentini.

ASSOCIATE PROFESSORS: Adams, Benedetto, Bernstein, Cook, Correl, Daniel, Goldstein, Gray, Gulick, Henkelman, Jaquet, Kirwan, Lipsman, Lopez Escobar, Mikulski, Osborn, Sather, Strause, Warner, Wolfe.

ASSISTANT PROFESSORS: Berg Cole, Connell, Currier, Dancis, Davidson, Egan, Ellis, Fey, Gowen, Green, Helzer, Holzsaeger, Johnson, Lay, Markley, Neri, Owings, Powell, Rastogi, Schneider, Sedgewick, Shepherd, Sweet, Thaler, Timmons, Wagner, Yang.

VISITING ASSISTANT PROFESSORS: Guntzer, Nagel, Niebur.

RESEARCH ASSOCIATES: Alexander and Schlotterbeck.

POSTDOCTORAL RESEARCH ASSOCIATES: Reddy and Schneider.

INSTRUCTORS: Bernhardt, Brown, (P. T.), Dutton, Eisenberg (P. T.), Kilborn, Lepson, Mar, McClay, McKeen, Meyers, Steely (P. T.), Sorensen, Vanderslice (P. T.).

FACULTY RESEARCH ASSISTANT: Locksley.

The Mathematics Department Colloquium meets frequently throughout the academic year for reports on current research by the resident staff, visiting lecturers, and graduate students. In addition, the Institute for Fluid Dynamics and Applied Mathematics Colloquium meets at frequent intervals for reports on research in those fields. All colloquium meetings are open to the public.

The local chapter of Pi Mu Epsilon, national honorary mathematics fraternity, meets regularly for the discussion of mathematical topics of interest to the undergraduates. Its programs are open to the public.

MATHEMATICS MAJOR

The program in mathematics leading to the degree of Bachelor of Science in Mathematics offers training in the fundamentals of mathematics in preparation for graduate work or teaching, and for positions in governmental or industrial laboratories.

A student intending to major in mathematics must complete the introductory sequence: MATH 019, 020, 021, 022 or the corresponding honors sequence: MATH 050, 051, 052, 053. In addition, the normal requirements for a mathematics major include 24 credit hours of upper division (100-level) work and at least 22 credit hours of supporting courses.

Mathematics majors who have completed the introductory sequence MATH 019 thru MATH 022 after September, 1, 1966, are required to take at least eight 100-level courses including MATH 103 (Introduction to Abstract Algebra), MATH 110 (Advanced Calculus), MATH 119 (Several Real Variables) and either MATH 100 (Vector and Matrices) or MATH 104 (Introduction to Linear Algebra). In the remaining four required courses, at least two must be selected from the following groups: Group III, Geometry and Topology; Group IV, Statistics and Probability; Group V, Applied Mathematics: Group VI, Foundations.

Mathematics majors who have completed the departmental honors sequence MATH 050-053 since September 1, 1966, will have covered the content of MATH 110 and therefore may not take MATH 110 for credit. For these students the above requirement of "eight 100-level courses including MATH 103, 110, 119 and either MATH 100 or 104" is changed to "seven 100-level courses including MATH 103, 119 and either MATH 100 or 104."

Candidates for departmental honors are permitted to include MATH 190, 191 and 200-level courses among the eight (or seven) required courses. The Department of Mathematics is expanding its program in statistics to make it possible for majors in mathematics to specialize in statistics and probability. The prefix STAT rather than MATH is used to designate these courses.

Students intending to major in mathematics should complete the lower division course work with an average grade of at least B.

A grade of at least C must be attained in each of the upper division mathematics courses presented to fulfill the requirements for a major in mathematics.

Mathematics majors are required to take a minimum of 10 hours of Physics. This will consist of PHYS 030, 031, 032 (3, 4, 4) or PHYS 015, 016, 017 (4, 4, 4); or 2 out of 3 in one of the preceding sequences plus ASTR 10. In addition, each student must select a supporting area outside of the Department of Mathematics in which he will take a minimum of 12 credits, at least six of which will be in one department at the 100-level. The average grade for courses in the supporting area must be at least C.

Since departmental requirements for majors are changed from time to time, each student is urged to consult his advisor to obtain the most recent requirements. Each student's program must be approved by his mathematics department advisor.

Since most of the non-English mathematical literature is written in French, German or Russian, the Foreign Language requirement should be met in one of these languages.

HONORS IN MATHEMATICS

The honors program is designed for students showing exceptional ability and interest in mathematics. Its aim is to give a student the best possible mathematical education. Participants are selected by the Honors Committee of the Department of Mathematics on the basis of recommendations from high school teachers and members of the faculty.

Wherever possible, honors students are placed in special mathematics courses, or in special sections of regular courses. Independent work is encouraged and can be done in place of formal course work. A final written and oral comprehensive examination in mathematics is given at the end of the program.

Introductory Mathematics Courses

Beginning students normally enroll in one of the courses MATH 003, 010, 018 or 019. A student may enroll in any one of these courses if he has the necessary high school mathematics and a suitable score on the mathematics section of the general classification test.

Students interested in majoring in mathematics or the physical or engineering sciences are urged to begin their Mathematics with MATH 018 or MATH 019. MATH 018 is open to students who offer for entrance two and one-half years of college preparatory mathematics. MATH 019 is open to students who offer for entrance three and one-half years of college preparatory mathematics, including a course in trigonometry.

Students whose curriculum calls for MATH 003, 010 or 018 and who do not have the necessary prerequisites should enroll in MATH 001.

In general, students should enroll in only one of the course sequences MATH 010-011-014-015, MATH 018-019-020-021-022. In case this rule is not followed, proper assignment of credit will be made on application to the Department of Mathematics.

MATH 001. REVIEW OF HIGH SCHOOL ALGEBRA. (0)

Recommended for students who fail the qualifying examination for MATH 010, MATH 003 and MATH 018. Special fee of \$45. (Sorensen)

MATH 003. FUNDAMENTALS OF MATHEMATICS. (4)

Prerequisite, satisfactory performance on the SAT mathematics test, or MATH 001. This course is designed to provide an introduction to mathematical thinking, stressing ideas rather than techniques. Where possible, connections are drawn with other disciplines, such as philosophy, logic and art. (Douglass)

MATH 010, 011. INTRODUCTION TO MATHEMATICS. (3, 3)

Prerequisite, 2½ years of college preparatory mathematics and satisfactory performance on the SAT mathematics test, or MATH 001. Open to students not majoring in mathematics or the physical or engineering sciences. Logic, sets, counting, probability, sequences, sums, elementary algebraic and transcendental functions and their geometric representation; systems of linear equations, vectors, matrices. (Good)

MATH 014, 015. ELEMENTARY CALCULUS (3, 3)

Prerequisite, MATH 011 or equivalent. Open to students not majoring in mathematics or the physical or engineering sciences. Basic ideas of differential and integral calculus; elementary techniques and applications. (Bernhardt)

MATH 018. INTRODUCTORY ANALYSIS. (3)

(2 lectures, 2 drill periods per week.) Prerequisite, 2½ years of college preparatory mathematics and an appropriate score on the SAT mathematics test, or MATH 001. An introductory course for students not qualified to start MATH 019. Real numbers, functions, coordinate systems. Trigonometric functions. Plane analytic geometry. (Cook)

MATH 019. ANALYSIS I. (4)

(3 lectures, 2 drill periods per week.) Prerequisite, 3½ years of college preparatory mathematics or MATH 018. Sets and inequalities, Cartesian coordinates in the plane, the straight line, the circle, translation of coordinate axes, functions and their graphs, limits, continuity, the derivative and application of the derivative, antiderivatives, definite integral. (Goldberg)

MATH 020. ANALYSIS II. (4)

(3 lectures, 2 drill periods per week.) Prerequisite, MATH 019 or equivalent. Applications of integration, techniques of integration, polar coordinates, basic properties of the elementary functions, improper integrals and indeterminate forms, sequences and infinite series. (Helzer)

MATH 021L. LINEAR ALGEBRA. (4)

(3 lectures, 2 drill periods per week.) Prerequisite, MATH 020 or equivalent. Basic concepts of linear algebra: vector spaces, applications to line and plane geometry, linear equations and matrices, similar matrices, linear transformations, eigenvalues, determinants and quadratic forms. (Staff)

MATH 022. ANALYSIS III. (4)

(3 lectures, 2 drill periods per week.) Prerequisite, MATH 021 L or equivalent. Calculus of functions of vectors: partial derivatives, multiple integration, surface integrals, classical theorems of Green, Gauss and Stokes. (Staff)

MATH 030. ELEMENTS OF MATHEMATICS. (4)

Prerequisite, one year of college preparatory algebra. Required for majors in elementary education, and open only to students in this field. Topics from algebra and number theory, designed to provide insight into arithmetic: inductive proof, the natural number system based on the Peano axioms; mathematical systems, groups, fields; the system of integers; the system of rational numbers; congruence, divisibility; systems of numeration. (Garstens)

MATH 031. ELEMENTS OF GEOMETRY. (4)

Prerequisite, MATH 030 or equivalent. Structure of mathematics systems, algebra of sets, geometrical structures, logic, measurement, congruence, similarity, graphs in the plane, geometry on the sphere. (Garstens)

MATH 050. CALCULUS I. (Honors) (4)

Prerequisite, approval of department. A rigorous treatment, with applications, of differential and integral calculus in one variable.

MATH 051. CALCULUS II. (Honors) (4)

Prerequisite, approval of department. A rigorous treatment, with applications, of differential and integral calculus in one variable.

MATH 052. CALCULUS III. (Honors) (4)

Prerequisite, approval of department. Elements of linear algebra, Euclidean and other metric spaces; Multi-variable calculus; implicit function theorem; theorems of Green, Gauss and Stokes. Riemann-Stieltjes integral and, as time permits, ordinary differential equations, Fourier series, orthogonal functions.

MATH 053. CALCULUS IV. (Honors) (4)

Prerequisite, approval of department. Elements of linear algebra, Euclidean and other metric spaces; Multi-variable calculus; implicit function theorem; theorems of Green, Gauss and Stokes. Riemann-Stieltjes integral and, as time permits, ordinary differential equations, Fourier series, orthogonal functions. (Staff)

MATH 066. DIFFERENTIAL EQUATIONS FOR SCIENTISTS AND ENGINEERS. (3)

Prerequisite, MATH 021 or equivalent. Exact solutions for first order equations; basic theory, techniques, and applications of linear systems and higher order linear equations; power series solutions; Laplace transform solutions. (Strauss)

STAT 050. INTRODUCTION TO RANDOM VARIABLES. (3)

Prerequisite, MATH 015 or MATH 021. Introductory mathematical concepts. Probabilistic concepts. Basic properties of probability. Discrete random variables and their distributions. Continuous variables (intuitive analytic approach). Joint distributions and transformations. Moments and moment generating functions. Law of large numbers and de Moivre's theorem. (Syski)

Courses 100-199

Algebra and Number Theory. 100, 101, 103, 104, 106, 107
Analysis. 110, 112, 113, 114, 117, 118, 119

Geometry and Topology. 120, 121, 122, 123, 124, 126, 128

Foundations of Mathematics. 144, 146, 147, 148

Applied Mathematics. 101, 162, 163, 164, 165, 168, 170, 171

Courses for Teachers of Mathematics and Science. 181, 182, 183, 184, 185, 189

Seminars, Selected Topics, Research. 190, 191

Statistics and Probability. STAT 100, 101, 110, 111, 120, 121, 150, 164, 170

MATH 100. VECTORS AND MATRICES. (3)

Prerequisite, MATH 021 or MATH 015. Algebra of vector spaces and matrices. Recommended for students interested in the applications of mathematics. (Not for graduate credit in mathematics.) (Schneider)

- MATH 101. APPLIED LINEAR ALGEBRA. (3)**
Prerequisite, MATH 100, or consent of the instructor. Various applications of linear algebra; theory of finite games, linear programming, matrix methods as applied to finite Markov chains, random walk, incidence matrices, graphs and directed graphs, networks, transportation problems. (Pearl)
- MATH 103. INTRODUCTION TO ABSTRACT ALGEBRA. (3)**
Prerequisite, MATH 022 or equivalent. Integers; groups, rings, integral domains, fields. (Goldhaber)
- MATH 104. INTRODUCTION TO LINEAR ALGEBRA. (3)**
Prerequisite, MATH 103 or consent of instructor. An abstract treatment of finite dimensional vector spaces. Linear transformations and their invariants. (Timsans)
- MATH 106. INTRODUCTION TO NUMBER THEORY. (3)**
Prerequisite, MATH 022. Rational integers, divisibility, prime numbers, modules and linear forms, unique factorization theorem, Euler's function, Mobius' function, cyclotomic polynomial, congruences and quadratic residues, Legendre's and Jacobi's symbol, reciprocity law of quadratic residues, introductory explanation of the method of algebraic number theory. (Roselle)
- MATH 107. THEORY OF QUADRATIC NUMBER FIELDS. (3)**
Prerequisite, MATH 106 and MATH 103. Quadratic number fields, integers, ideals, units, ideal class groups, unimodular transformations and algorithms of the determination of ideal class groups and fundamental units, class number formula, Gauss' theory of genera and Kronecker's symbol. (Kuroda)
- MATH 110. ADVANCED CALCULUS. (3)**
Prerequisite, MATH 022. Real number system, open sets and compact sets on the real line, limits and continuity of real valued functions of one real variable, differentiation, functions of bounded variation, Riemann-Stieltjes integration, sequences and series of functions. (McGuinness)
- MATH 112. INFINITE PROCESSES. (3)**
Prerequisite, MATH 021 or equivalent. Construction of the real numbers from the rational numbers, sequences of numbers, series of positive and arbitrary numbers, infinite products, conditional and absolute convergence, sequences and series of functions, uniform convergence, integration and differentiation of series, power series, and analytic functions. Fourier series, elements of the theory of divergent series, extension of the theory of complex numbers and functions. (Kirwan)
- MATH 113. INTRODUCTION TO COMPLEX VARIABLES. (3)**
Prerequisite, MATH 119. The algebra of complex numbers, analytic functions mapping properties of the elementary functions. Cauchy's theorem and the Cauchy integral formula. Residues. (Credit will be given for only one of the courses MATH 113 and MATH 163.) (G. Lehner)
- MATH 114. DIFFERENTIAL EQUATIONS. (3)**
Prerequisite, MATH 110. A general introduction to the theory of differential equations. Constructive methods of solution leading to existence theorems and uniqueness theorems. Other topics such as: systems of linear equations, the behavior of solutions in the large, the behavior of solutions near singularities, periodic solutions, stability, and Sturm-Liouville problems. (Berg)
- MATH 117. INTRODUCTION TO FOURIER ANALYSIS. (3)**
Prerequisite, MATH 113. Fourier series. Fourier and Laplace transforms. (McGuinness)
- MATH 118. INTRODUCTION TO REAL VARIABLES. (3)**
Prerequisite, MATH 110. The Lebesgue integral. Fubini's theorem. Convergence theorems. The L_p spaces. (Neri)
- MATH 119. SEVERAL REAL VARIABLES. (3)**
Prerequisite, MATH 110. A brief review of scalar and vector valued functions of several real variables (as done in MATH 022). Implicit function theorem, change of variable theorem for multiple integrals, a detailed study of surfaces and surface integrals in n -dimensional Euclidean space, including integration by parts. Applications to partial differential equations and potential theory. (Brannan)
- MATH 120. INTRODUCTION TO GEOMETRY I. (3)**
Prerequisite, MATH 022 or consent of instructor. Axiomatic development of plane geometries, Euclidean and non-Euclidean. Groups of isometries and similarities. (Chu)
- MATH 121. INTRODUCTION TO GEOMETRY II. (3)**
Prerequisite, MATH 120. Non-Euclidean transformation groups, the Erlangen program, projective planes, cubics and quartics. (Reinhart)
- MATH 122. INTRODUCTION TO POINT SET TOPOLOGY. (3)**
Prerequisite, MATH 110 or 146, or equivalent. Connectedness, compactness, transformations, homeomorphisms; application of these concepts to various spaces, with particular attention to the Euclidean plane. (Dancic)
- MATH 123. INTRODUCTION TO ALGEBRAIC TOPOLOGY. (3)**
Prerequisite, MATH 103 and 122, or equivalent. Chains, cycles, homology groups for surfaces, the fundamental group. (Green)
- MATH 124. INTRODUCTION TO PROJECTIVE GEOMETRY. (3)**
Prerequisite, MATH 022 or equivalent. Recommended for students in the College of Education. Elementary projective geometry, combining synthetic algebraic approaches, projective transformations, harmonic division, cross ratio, projective coordinates, properties of conics. (Jackson)
- MATH 126. INTRODUCTION TO DIFFERENTIAL GEOMETRY. (3)**
Prerequisite, MATH 022 or equivalent. The differential geometry of curves and surfaces, curvature and torsion, moving frames, the fundamental differential forms, intrinsic geometry of a surface. (Correl)
- MATH 128. EUCLIDEAN GEOMETRY. (3)**
Prerequisite, MATH 021 or consent of instructor. Recommended for students in the College of Education. Axiomatic method, models, properties of axioms; proofs of some basic theorems from the axioms; modern geometry of the triangle, circle, and sphere. (Reinhart)
- MATH 144. ELEMENTARY LOGIC AND ALGORITHMS. (3)**
Prerequisites, MATH 021 or consent of instructor. An elementary development of propositional logic, predicate logic, set algebra, and Boolean algebra, with a discussion of Markov algorithms, Turing machines and recursive functions. Topics include Post productions, word problems, and formal languages. (Also listed as CMSC 144.) (Staff)
- MATH 146. FUNDAMENTAL CONCEPTS OF MATHEMATICS. (3)**
Prerequisite, MATH 021 or consent of instructor. Sets, relations, mappings. Construction of the real number system starting with Peano postulates; algebraic structures associated with the construction; Archimedean order, sequential completeness and equivalent properties of ordered fields. Finite and infinite sets, denumerable and non-denumerable sets. (Ehrlich)
- MATH 147. AXIOMATIC SET THEORY. (3)**
Prerequisite, MATH 103 or 146 or consent of instructor. Development of a system of axiomatic set theory, choice principles, induction principles, ordinal arithmetic including discussion of cancellation laws, divisibility, canonical expansions, cardinal arithmetic including connections with the axiom of choice, Hartog's theorem, König's theorem, properties of regular, singular, and inaccessible cardinals. (Lopez-Escobar)
- MATH 148. INTRODUCTION TO MATHEMATICAL LOGIC. (3)**
Prerequisite, MATH 103 or 146 or 110. Formal propositional logic, completeness, independence, decidability of the system, formal quantificational logic, first-order axiomatic theories, extended Gödel Completeness theorem, Löwenheim-Skolem theorem, model-theoretical applications. (Karp)
- MATH 162. ANALYSIS FOR SCIENTISTS AND ENGINEERS I. (3)**
Prerequisite, MATH 021 or consent of instructor. Credit will be given for only one of the courses MATH 022 and MATH 162. Calculus of functions of several real variables; limits, continuity, partial differentiation, multiple integrals, line and surface integrals, vector-valued functions, theorems of Green, Gauss and Stokes. Physical applications. (This course cannot be counted toward a major in mathematics.) (Martin)
- MATH 163. ANALYSIS FOR SCIENTISTS AND ENGINEERS II. (3)**
Prerequisite, MATH 162 or 022 or consent of instructor. Credit will be given for only one of the courses MATH 113 or MATH 163. The complex field. Infinite processes for real and complex numbers. Calculus of complex functions. Analytic functions and analytic continuation. Theory of residues and application to evaluation of integrals. Conformal mapping. (This course cannot be counted toward a major in mathematics.) (Sedgewick)
- MATH 164. ANALYSIS FOR SCIENTISTS AND ENGINEERS III. (3)**
Prerequisite, MATH 066 and MATH 163, or consent of instructor. Fourier and Laplace transforms. Evaluation of the complex inversion integral by the theory of residues. Applications to systems of ordinary and partial differential equations. (This course cannot be counted toward a major in mathematics.) (Berg)
- MATH 165. INTRODUCTION TO PARTIAL DIFFERENTIAL EQUATIONS. (3)**
Prerequisites, MATH 110 or MATH 162. Topics will include one dimensional wave equation; linear second order equations in two variables, separations of variables and Fourier series; Sturm-Liouville theory. (Mackie)
- MATH 168. NUMERICAL METHODS FOR SCIENTISTS AND ENGINEERS. (3)**

- Prerequisite, MATH 022 or 162 and MATH 066. Interpolation, numerical differentiation and integration, numerical solution of polynomial and transcendental equations, least squares, systems of linear equations, numerical solution of ordinary differential equations, errors in numerical calculations. (This course cannot be counted toward a major in mathematics.) (Thaler)
- MATH 170. NUMERICAL ANALYSIS I. (3)**
Pre- or co-requisite: MATH 110. Solution of linear systems of equations and nonlinear equations in one variable. Least square and Chebyshev approximation. Numerical differentiation, integration, and solution of ordinary differential equations. (Listed also as CMSC 170.) (Vandergraft)
- MATH 171. NUMERICAL ANALYSIS II. (3)**
Prerequisites: MATH 100 or 104, MATH 110, CMSC/M 170. Linear systems of equations: norms, condition numbers, rounding error analysis, iterative methods; introduction to numerical solution of partial differential equations. Nonlinear systems of equations: Newton's method, convergence and rate of convergence. Eigenvalue problems. (Listed also as CMSC 171.) (Vandergraft)
- MATH 181. INTRODUCTION TO NUMBER THEORY. (3)**
Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. Axiomatic developments of the real numbers. Elementary number theory. (Staff)
- MATH 182. INTRODUCTION TO ALGEBRA. (3)**
Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. Modern ideas in algebra and topics in the theory of equations. (Staff)
- MATH 183. INTRODUCTION TO GEOMETRY. (3)**
Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. A study of the axioms for Euclidean and non-Euclidean geometry. (Staff)
- MATH 184. INTRODUCTION TO ANALYSIS. (3)**
Prerequisite, one year of college mathematics or consent of instructor. Designed primarily for those enrolled in programs with emphasis in the teaching of mathematics and science. Not open to students seeking a major directly in the physical sciences, since the course content is usually covered elsewhere in their curriculum. A study of the limit concept and the calculus. (Previous knowledge of calculus is not required.) (Staff)
- MATH 185. SELECTED TOPICS FOR TEACHERS OF MATHEMATICS. (1-3)**
Prerequisite, one year of college mathematics or consent of instructor. (Staff)
- MATH 189. NATIONAL SCIENCE FOUNDATION SUMMER INSTITUTE FOR TEACHERS OF SCIENCE AND MATHEMATICS. SEMINAR. (1-3)**
Lectures and discussion to deepen the student's appreciation of mathematics as a logical discipline and as a medium of expression. Special emphasis on topics relevant to current mathematical curriculum studies and revisions. (Staff)
- MATH 190. HONORS SEMINAR. (2)**
Prerequisite, permission of the departmental Honors Committee. Reports by students on mathematical literature; solution of various problems. (Brace)
- MATH 191. SELECTED TOPICS IN MATHEMATICS. (VARIABLE CREDIT)**
Prerequisite, permission of the instructor. Topics of special interest to advanced undergraduate students will be offered occasionally under the general guidance of the departmental Committee on Undergraduate Studies. Honors students register for reading courses under this number. (Brace)
- STAT 100. APPLIED PROBABILITY AND STATISTICS I. (3)**
Prerequisite, MATH 021. Basic concepts of probability. Random variables and distribution functions. Standard distributions. Moments. Conditional distributions and their moments. Sampling distributions. Laws of large numbers and Lindeberg-Levy's theorems. (Not for graduate credit in mathematics.) (Syski)
- STAT 101. APPLIED PROBABILITY AND STATISTICS II. (3)**
Prerequisite, STAT 100. Point estimation, sufficient unbiased and consistent estimators. Minimum variance and maximum likelihood estimators. Multivariate normal distribution. Sampling distributions. Interval estimation. Testing hypotheses. Regression and linear hypotheses. Experimental designs. Sequential tests, elements of nonparametric methods. (Not for graduate credit in mathematics.) (Connell)
- STAT 110. INTRODUCTION TO PROBABILITY THEORY. (3)**
Prerequisite, MATH 110 or if MATH 110 taken concurrently, STAT 050. Probability space and basic properties of probability measure. Random variables and their distribution functions, induced probability spaces. Multi-dimensional distribution functions. Characteristic functions. Limit theorems. (Syski)
- STAT 111. INTRODUCTION TO STOCHASTIC PROCESSES. (3)**
Prerequisite, STAT 110, or MATH 110 and STAT 050. Elementary stochastic processes. Renewal process random walks, branching process, discrete Markov chains, first passage times. Markov chains with a continuous parameter, birth and death processes. Stationary processes and their spectral properties. (Mikulski)
- STAT 120. INTRODUCTION TO STATISTICS I. (3)**
Prerequisite, STAT 110, or STAT 100 and MATH 110 Short review of probability concepts including sampling distributions. Interval estimation. Theory of order statistics. Tolerance limits. Limit distributions and stochastic convergence. Sufficient statistics. Completeness and stochastic independence. Rao-Blackwell theorem. (Rastogi)
- STAT 121. INTRODUCTION TO STATISTICS II. (3)**
Prerequisite, STAT 120, or STAT 101 and MATH 110. Loss and risk functions. Statistical decisions. Optimality criteria. Uniformly minimum risk procedures. Bayesian risk, minimax principle, Point, estimation theory. Statistical hypotheses and optimal tests. Likelihood ratio tests. Elements of linear hypotheses, analysis of variance and sequential theory. (Connell)
- STAT 150. REGRESSION AND VARIANCE ANALYSIS. (3)**
Prerequisite, STAT 101 or STAT 120. One, two, three and four way layouts in analysis of variance fixed effects models, linear regression in several variables, Gauss-Markov theorem, multiple regression analysis, experimental designs. (Mikulski)
- STAT 164. INTRODUCTION TO BIostatISTICS. (3)**
Prerequisite, one semester of calculus and junior standing. Probabilistic models. Sampling. Some applications of probability in genetics. Experimental designs. Estimation of effects of treatment. Comparative experiments. Fisher-Irwin test. Wilcoxon tests for paired comparisons. (Syski)
- STAT 170. LINEAR AND NONLINEAR PROGRAMMING. (3)**
Prerequisite, MATH 021 or MATH 100. Duality theorem and minimax theorem for finite matrix games. Structure of linear and nonlinear solutions with perturbations. Various solution techniques of linear, quadratic, and convex programming methods. Special integer programming models (transportation and traveling salesman problems.). Network theory with max-flow-min-cut theorem. (Mikulski)
- For Graduate Students**
See the Graduate School Catalog for descriptions.
- Algebra.** 200, 201, 202, 203, 206, 207, 208, 209, 271, 290, 291
- Analysis.** 212, 215, 216, 218, 219, 272, 278, 280, 281, 286, 287, 288, 289
- Geometry and Topology.** 204, 205, 221, 222, 223, 224, 225, 226, 227, 228, 229, 273, 290, 291
- Applied and Numerical Mathematics.** 252, 255, 256, 257, 258, 259, 261, 262, 263, 264, 265, 266, 267, 268, 269, 274
- Statistics and Probability.** (STAT) 200, 201, 210, 212, 213, 220, 221, 223, 240, 241, 270, 275
- Logic and Foundations.** 240, 244, 277, 298
- Research.** 399, 499
- MATH 200. ABSTRACT ALGEBRA I. (3)** (Staff)
- MATH 201. ABSTRACT ALGEBRA II. (3)** (Staff)
- MATH 202. HOMOLOGICAL ALGEBRA. (3)** (Staff)
- MATH 203. COMMUTATIVE ALGEBRA. (3)** (Staff)
- MATH 204, 205. TOPOLOGICAL GROUPS. (3, 3)** (Staff)
- MATH 206. ALGEBRAIC NUMBER THEORY I. (3)** (Staff)
- MATH 207. ALGEBRAIC NUMBER THEORY II. (3)** (Staff)

MICROBIOLOGY

- MATH 208. RING THEORY. (3)
MATH 209. GROUP THEORY. (3)
MATH 212. SPECIAL FUNCTIONS. (3)
MATH 215, 216. ADVANCED ORDINARY DIFFERENTIAL EQUATIONS. (3, 3)
MATH 217. BANACH ALGEBRAS. (3)
MATH 218, 219. FUNCTIONAL ANALYSIS. (3, 3)
MATH 221. DIFFERENTIABLE MANIFOLDS. (3)
MATH 222. DIFFERENTIAL GEOMETRY. (3)
MATH 223, 224. ALGEBRAIC TOPOLOGY. (3, 3)
MATH 225. TOPOLOGY I. (3)
MATH 226. TOPOLOGY II. (3)
MATH 227, 228. ALGEBRAIC GEOMETRY. (3, 3)
MATH 229. DIFFERENTIAL TOPOLOGY. (3)
MATH 240. CONSISTENCY PROOFS IN SET THEORY. (3)
MATH 244. MATHEMATICAL LOGIC I. (3)
MATH 245. MATHEMATICAL LOGIC II. (3)
MATH 246. MODEL THEORY. (3)
MATH 247. RECURSIVE FUNCTION THEORY. (3)
MATH 250, 251. EIGENVALUE AND BOUNDARY VALUE PROBLEMS. (3, 3)
MATH 252. VARIATIONAL METHODS. (3)
MATH 255, 256. NUMERICAL METHODS IN ORDINARY DIFFERENTIAL EQUATIONS. (3, 3)
MATH 259. INTRODUCTION TO CONTINUUM MECHANICS (3)
MATH 261, 262. FLUID DYNAMICS. (3, 3)
MATH 263. LINEAR ELASTICITY. (3)
MATH 264. NON-LINEAR ELASTICITY. (3)
MATH 265. PARTIAL DIFFERENTIAL EQUATIONS. (3)
MATH 266. ELLIPTIC DIFFERENTIAL EQUATIONS. (3)
MATH 267, 268. ADVANCED LINEAR NUMERICAL ANALYSIS. (3, 3)
MATH 269. ADVANCED MATHEMATICAL PROGRAMMING. (3)
MATH 271. SELECTED TOPICS IN ALGEBRA. (3)
MATH 272. SELECTED TOPICS IN ANALYSIS. (3)
MATH 273. SELECTED TOPICS IN GEOMETRY AND TOPOLOGY. (3)
MATH 274. SELECTED TOPICS IN APPLIED MATHEMATICS. (3)
MATH 277. SELECTED TOPICS IN MATHEMATICAL LOGIC. (3)
MATH 278. SELECTED TOPICS IN COMPLEX ANALYSIS. (3)
MATH 280, 281. LINEAR SPACES. (3, 3)
MATH 282, 283. INTERPOLATION AND APPROXIMATION. (3, 3)
MATH 286. REAL ANALYSIS I. (3)
MATH 287. COMPLEX ANALYSIS I. (3)
MATH 288. COMPLEX ANALYSIS II. (3)
MATH 289. REAL ANALYSIS II. (3)
MATH 290, 291. LIE GROUPS. (3, 3)
MATH 292. COMMUTATIVE ALGEBRA. (3)
MATH 293. HOMOLOGICAL ALGEBRA. (3)
MATH 294, 295. ADVANCED CLASSICAL ANALYSIS. (3, 3)
MATH 296. POINT SET TOPOLOGY. (3)
MATH 298. PRO-SEMINAR IN RESEARCH. (1)
MATH 399. THESIS RESEARCH.
MATH 499. DISSERTATION RESEARCH.

- STAT 200. PROBABILITY THEORY I. (3)
STAT 201. PROBABILITY THEORY II. (3)
STAT 210. APPLIED STOCHASTIC PROCESSES. (3)
STAT 212. STOCHASTIC PROCESSES I. (3)
STAT 213. STOCHASTIC PROCESSES II. (3)
STAT 220. MATHEMATICAL STATISTICS I. (3)
STAT 221. MATHEMATICAL STATISTICS II. (3)
STAT 222. ADVANCED STATISTICS I. (3)
STAT 223. ADVANCED STATISTICS II. (3)
STAT 240. MULTIVARIATE ANALYSIS. (3)
STAT 241. SAMPLING THEORY. (3)
STAT 250. NONPARAMETRIC STATISTICS. (3)
STAT 270. SELECTED TOPICS IN STATISTICS. (3)
STAT 275. SELECTED TOPICS IN PROBABILITY

PROFESSOR AND ACTING CHAIRMAN: Hetrick.
PROFESSORS: Doetsch, Faber (Emeritus), Hansen, Laffer, Pelczar.
ASSOCIATE PROFESSOR: Young.
ASSOCIATE PROFESSORS: Cook, MacQuillan, Roberson, Vaituzis.
LECTURERS: Faber, Janicki, Stadtman.
ASSISTANT INSTRUCTOR: Howell.

The Department of Microbiology has as its primary aim providing the student with thorough and rigorous training in microbiology. This entails knowledge of the basic concepts of bacterial cytology, physiology, taxonomy, and genetics, as well as an understanding of the biology of infectious disease, immunology, general virology, and various applications of microbiological principles to public health and industrial processes. In addition, the Department pursues a broad and vigorous program of basic research, and encourages original thought and investigation in the above mentioned areas.

The Department also provides desirable courses for students majoring in allied departments who wish to obtain vital, supplementary information. Every effort has been made to present the subject matter of Microbiology as a basic core of material that is pertinent to all biological sciences.

MICROBIOLOGY CURRICULUM

The field of microbiology is such that an intensive study of it presupposes a broad undergraduate curriculum and does not begin until the student begins his graduate career. Accordingly, the curriculum outlined below, which leads to a Bachelors degree, includes the basic courses in microbiology and allied fields.

A student planning a major in microbiology should consult his adviser during the first year. The supporting courses should be chosen only from the biological or physical sciences.

No course with a grade less than "C" may be used to satisfy major requirements.

The Department has an Honors Program and information concerning this program may be obtained from the Department.

Courses required in a major, and supporting courses: MICB 001—General Microbiology (4), MICB 081—Applied Microbiology (4), MICB 101—Pathogenic Microbiology (4), MICB 103—Immunology (4), MICB 111—General Virology (4), MICB 151—Microbial Physiology (4), MICB 160—Systematic Bacteriology (2), MICB 162—Microbiological Literature (1), CHEM 008, 009—General Chemistry (4, 4), CHEM 031, 033—Elements of Organic Chemistry (3, 3), CHEM 019—Elements of Quantitative Analysis (4) or MATH 014, 015—Elementary Calculus (3, 3), CHEM 161, 163—Biochemistry (2, 2), MATH 010, 011—Introduction to Mathematics (3, 3), PHYS 010, 011—Fundamentals of Physics (4, 4).

Certain closely related and relevant courses offered by other academic departments may be substituted for those specified in the major requirements, provided prior approval is obtained in each case.

MICB 001. GENERAL MICROBIOLOGY. (4)

First and second semesters. Summer session. Two lectures and two two-hour laboratory periods a week. Prerequisite, two semesters of chemistry. The biology of microorganisms, with special reference to the bacteria. Fundamental principles of microbiology as revealed through an examination of the structure, physiology, genetics and ecology of microorganisms.

MICB 081. APPLIED MICROBIOLOGY. (4)

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, MICB 001. The application of microorganisms and microbiological principles to milk, dairy products, and foods, industrial processes; soil; water and sanitation operations. (Kaplan)

FOR ADVANCED UNDERGRADUATES AND GRADUATES**MICB 101. PATHOGENIC MICROBIOLOGY. (4)**

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, MICB 001. The role of microorganisms in the diseases of man and animals with emphasis upon the differentiation and culture of microorganisms, types of disease, modes of disease transmission, prophylactic, therapeutic and epidemiological aspects. (Roberson)

MICB 103. IMMUNOLOGY. (4)

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, MICB 101. Infection and resistance; principles and types of immunity; hypersensitiveness. Fundamental techniques of major diagnostic immunological reactions and their application. (Roberson)

MICB 104. HISTORY OF MICROBIOLOGY. (1)

First semester. One lecture period a week. Prerequisite, a major or minor in microbiology. History and integration of the fundamental discoveries of the science. The modern aspects of cytology, taxonomy, fermentation, and immunity in relation to early theories. (Doetsch)

MICB 108. EPIDEMIOLOGY AND PUBLIC HEALTH. (2)

Second semester. Two lecture periods a week. Prerequisite, MICB 001. History, characteristic features, and epidemiology of the important communicable diseases, public health administration and responsibilities; vital statistics. (Faber)

MICB 111. GENERAL VIROLOGY. (4)

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, MICB 101 or equivalent. Basic concepts regarding the nature of viruses and their properties, together with techniques for their characterization and identification. (Hetrick)

MICB 121. MICROBIAL FERMENTATIONS. (4)

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisite, consent of instructor. The application of quantitative techniques for measurement of enzyme reactions, mutations, fermentation, analyses, and other physiological processes of microorganisms. (Cook)

MICB 135. APPLIED MICROBIOLOGY. (4)

Second semester. Two lectures and two two-hour laboratory periods a week. Prerequisites, MICB 001, CHEM 031, and CHEM 033. Introduction to the chemical activities of microorganisms and their industrial application. (MacQuillan)

MICB 151. MICROBIAL PHYSIOLOGY. (4)

First semester. Two lectures and two two-hour laboratory periods a week. Prerequisites, 8 credits in microbiology and CHEM 031, 033, or equivalent. Aspects of the growth, death, and energy transactions of microorganisms are considered, as well as the effects of the physical and chemical environment on them. (MacQuillan)

MICB 160. SYSTEMATIC BACTERIOLOGY. (2)

First semester. Two lecture periods a week. Prerequisite, 8 credits in microbiology. History of bacterial classification; genetic relationships; international codes of nomenclature; bacterial variation as it affects classification. (Hansen)

MICB 162. MICROBIOLOGICAL LITERATURE. (1)

Second semester. One lecture period a week. Prerequisite, a major in microbiology. Introduction to periodical literature, methods, interpretation and presentation of reports. (Doetsch)

MICB 181. MICROBIOLOGICAL PROBLEMS. (3)

First and second semesters. Summer session. Prerequisite, 16 credits in microbiology. Registration only upon the consent of the instructor. This course is arranged to provide qualified majors in microbiology and majors in allied fields an opportunity to pursue specific microbiological problems under the supervision of a member of the Department. (Faber)

FOR GRADUATES

See the Graduate School Catalog for descriptions.

MICB 201. MEDICAL MYCOLOGY. (4)**MICB 202. GENETICS OF MICROORGANISMS. (2)****MICB 203. MICROBIAL GENETICS LABORATORY. (2)****MICB 204. BACTERIAL METABOLISM. (2)****MICB 206, 208. SPECIAL TOPICS. (1-4, 1-4)****MICB 210. VIROLOGY AND TISSUE CULTURE. (2)****MICB 211. VIROLOGY AND TISSUE CULTURE LABORATORY. (2)****MICB 214. ADVANCED BACTERIAL METABOLISM. (1)****MICB 271. CYTOLOGY OF BACTERIA. (4)****MICB 280. SEMINAR-RESEARCH METHODS. (1)****MICB 282. SEMINAR-MICROBIOLOGICAL LITERATURE. (1)****MICB 399. THESIS RESEARCH. (Var.)****MICB 499. DISSERTATION RESEARCH (Arranged)****MOLECULAR PHYSICS**

ASSOCIATE PROFESSOR AND DIRECTOR: Munn.

PROFESSORS: Benesch and Benedict.

RESEARCH PROFESSOR: Zwanzig.

ASSOCIATE PROFESSORS: Krishner, DeRocco, Sengers, Ginter.

VISITING ASSOCIATE PROFESSOR: Tilford (P. T.).

ASSISTANT PROFESSORS: Verbeke and Spain.

RESEARCH ASSOCIATE: Gillespie.

The Institute for Molecular Physics, a department in the College of Arts and Sciences, comprises a faculty interested in theoretical and experimental studies in the general area of molecular interaction. The Institute thus serves as an ideal place to bring together physicists and chemists to work on problems of mutual interest to the advantage of both, and the faculty is made up of members of each of these disciplines. Since the faculty of the Institute feels strongly that students should fulfill the undergraduate requirements in one of the traditional departments to insure a broad background in a fundamental subject, no undergraduate degree is offered. Members of the Institute teach both undergraduate and graduate courses in the Department of Chemistry and the Department of Physics and Astronomy and supervise thesis research of graduate students in these departments. The Institute also participates in a graduate degree program in Chemical Physics which is jointly administered by the Institute, the Department of Chemistry, and the Department of Physics and Astronomy. This program is described in the Graduate School catalog.

MUSIC

PROFESSOR AND CHAIRMAN: Ulrich.

PROFESSORS: Grodon, Grentzner, Heim, Helm, Johnson, McCorkle, Moss, Traver.

ASSOCIATE PROFESSORS: Berman, Blum, de Vermont, Head, Nossaman, Pennington, Springmann, Taylor.

ASSISTANT PROFESSORS: Anderson, Diemer, Fligel, Gallagher, Garvey, Haley, McClelland, Mack, Montgomery, Olson, Payerle, Reger, Serwer, Shelley, Schumacher, Skidmore, Wakefield, Winden.

LECTURERS: True and Wilson.

INSTRUCTORS: Barnett, Beatty, Crisp (P. T.), Etheridge, Fanos, Harris, Heath, Koernor, Mueller, Shreiber, Steinke, Wachhaus.

The functions of the Department are (1) to help the general student develop sound critical judgment and discriminating taste in the art of music; (2) to provide professional training based on a foundation in the liberal arts; (3) to prepare the student for graduate work in the field; and (4) to prepare him to teach in the public schools. To this end, two degrees are offered: the Bachelor of Music, with a major in theory and composition, history and literature, or the Science degree, with a major in music education, is offered in the College of Education; this program, however, is administered within the Music Department.

Courses in music theory, literature, and applied music are open to all students who have completed

the specified prerequisites or their equivalents. The University Bands, Chamber Chorus, Choir, Madrigal Singers, Men's Glee Club, Orchestra, and Women's Chorus, as well as the smaller ensembles, are likewise open to qualified students.

THE BACHELOR OF MUSIC DEGREE

The curriculum leading to the degree of Bachelor of Music is designed for students who wish to prepare for music teaching on the college level. A list of specific courses is available in the Departmental office. A grade of C or above is required in each major course. The course requirements in the three major areas may be summarized as follows:

Major in Academic Courses:	Theory and Composition	History and Literature	Applied Music
Specified:	43 sem. hrs.	43 sem. hrs.	43 sem. hrs.
Unspecified:	8	8	9
Theory and Literature:			
Lower Division	27	23	23
Upper Division	16	22	13
Applied Music:	26	24	32

In addition, eight semester hours in ensemble courses.

THE BACHELOR OF ARTS DEGREE

The curriculum leading to the Bachelor of Arts degree with a major in music is designed for students whose interests are cultural rather than professional. The department requirements include nineteen semester hours in music theory, eighteen semester hours in music history and literature, ten semester hours in applied music, in addition to one semester hour of ensemble credit for each semester in residence. A list of specific courses is available in the Departmental office. A grade of C or above is required in each major course.

MUSC 001. INTRODUCTION TO MUSIC. (3)

Open only to music or music education majors; other students take MUSC 020. MUSC 001 and 020 may not both be counted for credit. A study of the forms and styles of music, leading to an intelligent appreciation of the art and providing a foundation for more advanced courses in the Department of Music. (Skidmore, Tatnall)

MUSC 004. MEN'S GLEE CLUB. (1)

Open to any student who can qualify. May be taken until a total of eight semester hours of credit has been earned; the music studied will cover a cycle of about eight semesters. (Traver)

MUSC 005. WOMEN'S CHORUS. (1)

Open to any student who can qualify. May be taken until a total of eight semester hours of credit has been earned; the music studied will cover a cycle of about eight semesters. (Traver)

MUSC 006. ORCHESTRA. (1)

Open to any student who can qualify. May be taken until a total of eight semester hours of credit has been earned; the music studied will cover a cycle of about eight semesters. (Roger)

MUSC 007, 008. THEORY OF MUSIC. (3, 3)

Two lectures and three laboratory hours per week. A fundamental course in the elements of music. Study of rhythms, scales, chord structures, and tonalities through ear training, sight singing, and keyboard drill. The student must achieve a grade of C in MUSC 008 in order to register for MUSC 070. (Payerle and Staff)

MUSC 009. CHAMBER MUSIC ENSEMBLE. (1)

This course does not fulfill the ensemble requirements of the various curricula. Three laboratory hours per week. Rehearsal and performance of selected works for small ensembles of strings, winds, and piano or small vocal ensembles. May be repeated for credit; the music studied will cover a cycle of about six semesters. (Staff)

MUSC 010. BAND. (1)

Open to any student who can qualify. May be taken until a total of eight semester hours of credit has been earned; the music studied will cover a cycle of about eight semesters. (Wakefield)

MUSC 015. CHAPEL CHOIR. (1)

Open to all students in the University, subject to the Director's approval. May be taken until a total of eight semester hours of credit has been earned. (Springmann)

MUSC 016. FUNDAMENTALS FOR THE CLASSROOM

TEACHER. (3)

Open to students majoring in elementary education or childhood education; other students take MUSC 007. MUSC 007 and 016 may not both be counted for credit. The fundamentals of music theory and practice, related to the needs of the classroom and kindergarten teacher, and organized in accord with the six-area concept of musical learning. (Fanos and Staff)

MUSC 020. SURVEY OF MUSIC LITERATURE. (3)

Three lectures and one laboratory hour per week. Open to all students except music and music education majors. MUSC 001 and 020 may not both be taken for credit. A study of the principles upon which music is based, and an introduction to the musical repertoires performed in America today. (Gordon and Staff)

MUSC 021, 022. CLASS VOICE. (2, 2)

Four hours per week. A laboratory course in which a variety of voices and vocal problems are represented. Principles of correct breathing as applied to singing; fundamentals of tone production and diction. Students are taught to develop their own voices. Repertoire of folk songs and songs of the Classical and Romantic periods. (Nossaman)

MUSC 023, 024. CLASS PIANO. (2, 2)

Four hours per week. Functional piano training for beginners. Development of techniques useful for school and community playing. Basic piano techniques; chord, arpeggio, and scale techniques; melody and song playing; simple accompaniments, improvisation for accompaniments and rhythms; sight reading and transposition, and playing by ear. MUSC 024, continuation of MUSC 023; elementary repertoire is begun. (de Vermond)

MUSC 031, 032. ADVANCED CLASS VOICE. (2, 2)

Four hours per week. Prerequisite, MUSC 022 or equivalent vocal training. Continuation of MUSC 022, with more advanced repertoire for solo voice and small ensembles. A special section for music-education majors will include the study of methods and materials for teaching class voice. (Pennington)

MUSC 033, 034. ADVANCED CLASS PIANO. (2, 2)

Four hours per week. Prerequisite, MUSC 024 or equivalent piano training. Advanced keyboard techniques. Continuation of skills introduced in MUSC 024; transposition, modulation, and sight reading; methods of teaching functional piano. MUSC 034, development of style in playing accompaniments and in playing for community singing. More advanced repertoire. (de Vermond)

MUSC 061, 062, 063, 064, 065, 066, 067, 068. CLASS STUDY OF ORCHESTRAL AND BAND INSTRUMENTS. (2 each course)

First and second semesters alternately. Open only to majors in music education (instrumental option). Four laboratory hours per week. A study of the instruments with emphasis on ensemble training. The student will acquire an adequate playing technique on two to four instruments, and an understanding of the acoustical and construction principles of the others: MUSC 061, Violin; MUSC 062, Cello and Bass; MUSC 063, Clarinet; MUSC 064, Flute, Oboe, Bassoon, and Saxophone; 065, Cornet; MUSC 066, Horn, Trombone, Euphonium, and Tuba; MUSC 067, Percussion; MUSC 068, Advanced Strings. (Staff)

MUSC 070, 071. ADVANCED THEORY OF MUSIC. (4, 4)

Prerequisite, MUSC 008 with a grade of at least C. Three lectures and two laboratory hours per week. An integrated course of written harmony, keyboard harmony, and ear training. Continuation of the principles studied in MUSC 008. Harmonic progressions; MUSC 070, eighteenth-century chorale style; MUSC 071, nineteenth-century styles including chromatic and modulatory techniques. Realization of figured basses, and composition in the smaller forms. Advanced study of solfège, with drill in melodic, rhythmic, and harmonic dictation. Application of harmonic principles to the keyboard. (Payerle and Staff)

MUSC 080. CLASS STUDY OF STRING INSTRUMENTS. (2)

First semester. Open only to majors in music education (vocal option). Four laboratory hours per week. Basic principles of string playing, and a survey of all string instruments. (Berman)

MUSC 081. CLASS STUDY OF WIND AND PERCUSSION INSTRUMENTS. (2)

Second semester. Open only to majors in music education (vocal option). Four laboratory hours per week. A survey of wind and percussion instruments with emphasis on ensemble training. The student will acquire an adequate playing

technique on one instrument and gain an understanding of the acoustical and construction principles of the others. (Staff)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

- MUSC 120, 121. HISTORY OF MUSIC. (3, 3)**
Prerequisites, MUSC 001 or 020 and junior standing. A study of musical styles from their origins in western Europe to their present-day manifestations. The interaction of music and other cultural activities. MUSC 120, the Greek period to Bach; MUSC 121, Bach to the present. (Bernstein)
- MUSC 125. HONORS READING COURSE. (2-3)**
Prerequisites, junior standing and consent of Honors Committee. Selected readings in the history, literature, and theory of music. The course may be repeated for credit at the discretion of the Committee. (Staff)
- MUSC 130, 131. MUSIC LITERATURE SURVEY FOR THE NON-MAJOR. (3, 3)**
Either semester may be taken separately. Prerequisite, MUSC 020 or the equivalent. Open to all students except music and music-education majors. Selected compositions are studied from the standpoint of the informed listener. MUSC 130, choral music, opera, and art song; MUSC 131 orchestral, chamber, and keyboard music. (Pennington, Gordon)
- MUSC 141. MUSICAL FORM. (3)**
Prerequisite, MUSC 070, 071. A study of the organizing principles of musical composition, their interaction in musical forms, and their functions in different styles. (Staff)
- MUSC 143, 144. COMPOSITION. (2, 2)**
Prerequisite, MUSC 070, 071. Principles of musical composition, and their application to the smaller forms. Original writing in nineteenth and twentieth century musical idioms for various media. (Staff)
- MUSC 145, 146. COUNTERPOINT. (2, 2)**
Prerequisite, MUSC 070, 071. A course in eighteenth-century contrapuntal techniques. Study of devices of imitation in the invention and the choral prelude. Original writing in the smaller contrapuntal forms. (Diemer)
- MUSC 147, 148. ORCHESTRATION. (2-3, 3)**
Prerequisites, MUSC 070, 071. A study of the ranges, musical functions, and technical characteristics of the instruments, and their color possibilities in various combinations. Practical experience in orchestrating for small and large ensembles. MUSC 147 will be offered in an intensified form during the summer session, and may be taken for three hours credit with the consent of the instructor. (Staff)
- MUSC 149. MODAL COUNTERPOINT. (2)**
Prerequisite, MUSC 071 or the equivalent. An introduction to the contrapuntal techniques of the sixteenth century: the structure of the modes, composition of modal melodies, and contrapuntal writing for two, three, and four voices. (Diemer)
- MUSC 150. HARMONIC AND CONTRAPUNTAL PRACTICES OF THE TWENTIETH CENTURY. (2)**
Prerequisites, MUSC 071 and 145 or the equivalents. A theoretical study of twentieth-century materials: scales, modes, intervals, chord structures, polyphony, and serial and twelve-tone organization. (Diemer)
- MUSC 160, 161. CONDUCTING. (2, 2)**
MUSC 160 or equivalent is prerequisite to MUSC 161. A laboratory course in conducting vocal and instrumental groups. Baton technique, score reading, rehearsal techniques, tone production, style, and interpretation. Music of all periods will be introduced. (Traver)
- MUSC 162. WORKSHOP IN CHORAL CONDUCTING. (2-3)**
Summer session only. Prerequisites, MUSC 070, 071 or equivalent, and senior standing. A study of conducting techniques, choral problems, score reading, rehearsal procedures, program building, and choral bibliography. In addition to performing in class, participants will have an opportunity to conduct the University Chorus in rehearsal and performance. Credit according to work done. (Traver)
- MUSC 163. CONTEMPORARY MUSIC. (3)**
Prerequisites, MUSC 120 and 121 or the equivalent. A study of music written in contemporary idioms since Debussy. Changes in form and performing media in the twentieth century. Electronic music and other experimental types. (Diemer)
- MUSC 164. SOLO VOCAL LITERATURE. (3)**
Prerequisite, MUSC 120, 121, or the equivalent. The study of solo vocal literature from the Baroque cantata to the art song of the present. The Lied, melody, vocal chamber music, and the orchestral song are examined. (Pennington)

- MUSC 165. KEYBOARD MUSIC. (3)**
Prerequisite, MUSC 120, 121, or the equivalent. The history and literature of harpsichord, organ, and piano music from the Baroque period to the present. Suites, sonatas, and smaller forms are studied with emphasis on changes of style and idiom. (Bernstein)
- MUSC 166. SURVEY OF THE OPERA. (3)**
Prerequisite, MUSC 120, 121, or the equivalent. A study of the music, librettos, and composers of the standard operas. (Bernstein)
- MUSC 167. SYMPHONIC MUSIC. (3)**
Prerequisite, MUSC 120, 121, or the equivalent. The study of orchestral music from the Baroque period to the present. The concerto, symphony, overture, and other forms are examined. (McCorkle)
- MUSC 168. CHAMBER MUSIC. (3)**
Prerequisite MUSC 120, 121, or the equivalent. The history and literature of chamber music from the early Baroque period to the present. Music for trio sonata, string quartet and quintet, and combinations of piano and string instruments is studied. (Ulrich)
- MUSC 169. CHORAL MUSIC. (3)**
Prerequisite, MUSC 120, 121, or the equivalent. The history and literature of choral music from the Renaissance to the present, with discussion of related topics such as Gregorian chant, vocal chamber music, etc. (McCorkle)
- MUSC 175. CANON AND FUGUE. (3)**
Prerequisite, MUSC 146 or the equivalent. Composition and analysis of the canon and fugue in the styles of the eighteenth, nineteenth, and twentieth centuries.
- MUSC 180. ACOUSTICS FOR MUSICIANS. (3)**
Prerequisites, MUSC 071 or the equivalent, and senior or graduate standing in music. The basic physics of music, acoustics of musical instruments and music theory, physiological acoustics, and musico-architectural acoustics. (Staff)
- MUSC 182. CHAMBER MUSIC REPERTOIRE. (3)**
Four hours per week. Prerequisite, graduate standing as a major in performance. A systematic study, through performance, of diversified chamber music for the standard media. Repertoire covered will be determined by the personnel available in the class. May be repeated for credit. (Staff)
- MUSC 185. MUSIC PEDAGOGY. (3)**
Conference course. Pre- or co-requisite, MUSC 152 or a more advanced course in applied music. A study of major pedagogical treatises in music, and an evaluation of pedagogical techniques, materials, and procedures. (Staff)

FOR GRADUATES

See the Graduate School Catalog for descriptions.

- MUSC 200. ADVANCED STUDIES IN THE HISTORY OF MUSIC. (3)**
- MUSC 201. SEMINAR IN MUSIC. (3)**
- MUSC 202. PRO-SEMINAR IN THE HISTORY AND LITERATURE OF MUSIC. (3)**
- MUSC 203. SEMINAR IN MUSICOLOGY. (3)**
- MUSC 204. AMERICAN MUSIC. (3)**
- MUSC 206. ADVANCED MODAL COUNTERPOINT. (3)**
- MUSC 207. THE CONTEMPORARY IDIOM. (3)**
- MUSC 208. ADVANCED ORCHESTRATION. (3)**
- MUSC 209. SEMINAR IN MUSICAL COMPOSITION. (3)**
- MUSC 210. FACTORS IN MUSICAL LEARNING. (3)**
- MUSC 211. SPECIAL STUDIES IN MUSIC. (3)**
- MUSC 212, 213. INTERPRETATION, PERFORMANCE, AND ANALYSIS OF THE STANDARD REPERTOIRE. (2-4, 2-4)**
- MUSC 215. AESTHETICS OF MUSIC. (3)**
- MUSC 218. TEACHING THE THEORY, HISTORY, AND LITERATURE OF MUSIC. (3)**
- MUSC 260. ADVANCED CONDUCTING. (3)**
- MUSC 270, 271. ADVANCED ANALYTICAL TECHNIQUES. (3, 3)**
- MUSC 300, 301. DOCTORAL SEMINAR IN MUSIC LITERATURE. (3, 3)**
- MUSC 305. DOCTORAL SEMINAR IN MUSIC. (3)**
- MUSC 306. ADVANCED COMPOSITION. (3)**
- MUSC 312, 313, 314. INTERPRETATION, PERFORMANCE, AND PEDAGOGY. (4, 4, 4)**
- MUSC 399. THESIS RESEARCH. (3-6)**
- MUSC 499. DISSERTATION RESEARCH (Arranged)**

APPLIED MUSIC

A new student or one taking applied music for the first time at this University should register for MUSC 999. He will receive the proper classification at the end of his first semester in the Department. Special fee of \$40.00 per semester for each applied-music course.

Section designation: Each student taking an applied-music course should, in addition to registering for the proper course number, indicate the instrument chosen by adding a section as follows:

Sec. A, Piano	Sec. J, Saxophone
Sec. B, Voice	Sec. K, Horn
Sec. C, Violin	Sec. L, Trumpet
Sec. D, Viola	Sec. M, Trombone
Sec. E, Cello	Sec. N, Tuba
Sec. F, Bass	Sec. O, Euphonium
Sec. G, Flute	Sec. P, Organ
Sec. H, Oboe	Sec. Q, Percussion
Sec. I, Clarinet	Sec. R, Saxophone

MUSC 012, 013. APPLIED MUSIC. (2-4 Hours Each Course)

Freshman course. One hour lesson and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for piano majors in the B.Mus. curriculum only. Special fee of \$40.00 per semester. (Staff)

MUSC 052, 053. APPLIED MUSIC. (2-4 Hours Each Course)

Sophomore course. Prerequisite, MUSC 013 on the same instrument. One hour lesson and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental majors in the B.Mus. curriculum only. Special fee of \$40.00 per semester. (Staff)

MUSC 054, 055. PIANO SIGHT READING, ACCOMPANYING AND IMPROVISATION. (2, 2)

Prerequisite, completion or current registration in MUSC 052A. Four laboratory hours per week. A course designed to improve sight-reading fluency for pianists. Emphasis on vocal and instrumental accompanying and chamber music. Development of ability to improvise and transpose.

MUSC 112, 113. APPLIED MUSIC. (2-4 Hours Each Course)

Junior course. Prerequisite, MUSC 053 on the same instrument. One hour lesson and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental majors in the B.Mus. curriculum only. Special fee of \$40.00 per semester. (Staff)

MUSC 152, 153. APPLIED MUSIC. (2-4 Hours Each Course)

Senior course. Prerequisite, MUSC 113 on the same instrument. One hour lesson and six practice hours per week if taken for two hours credit; or one hour lesson and fifteen practice hours per week if taken for four hours credit. The four-hour course is for instrumental or vocal majors in the B.Mus. curriculum only. Special fee of \$40.00 per semester. (Staff)

For applied music on the graduate level, see MUSC 212, 213, and MUSC 312, 313, and 314, above.

PHILOSOPHY

PROFESSOR AND CHAIRMAN: Schlaretzki.

PROFESSOR: Pasch.

VISITING PROFESSOR: Walsh.

ASSOCIATE PROFESSORS: Brown, Celorier, Perkins, Svenonius.

VISITING ASSOCIATE PROFESSOR: Swinburne.

ASSISTANT PROFESSOR: Goldstone, Kress, Leshner, Martin, Odell, Roelofs, Varnedoe.

The Department of Philosophy presents visiting speakers from this country and abroad in its Colloquium series, scheduled throughout the academic year. In addition, members of the Department and advanced graduate students lecture on topics of current significance in the Graduate Workshop and in the undergraduate Philosophy Club.

The undergraduate course offerings of the Department of Philosophy are, as a group, intended both to satisfy the needs of persons wishing to make philosophy their major field and to provide ample opportunity for other students to explore the subject. In general, the study of philosophy can contribute to the education of the university student by giving him experience in critical and imaginative reflection on fundamental concepts and principles, by acquainting him with some of the philosophical beliefs which have influenced and are influencing his own culture, and by familiarizing him with some classic philosophical writings through careful reading and discussion of them. Courses designed with these objectives primarily in mind are PHIL 001 (Introduction to Philosophy), PHIL 041 (Elementary Logic and Semantics), PHIL 045 (Ethics), PHIL 053 (Philosophy of Religion), and the historical courses 101 through 105.

For students interested particularly in philosophical problems arising within their own special disciplines, a number of appropriate courses are available: PHIL 052 (Philosophy in Literature), PHIL 056 (Philosophy of Science), PHIL 130 (The Conflict of Ideals in Western Civilization), PHIL 141 (Philosophy of Language), PHIL 147 (Philosophy of Art), PHIL 152 (Philosophy of History), PHIL 154 (Political and Social Philosophy), PHIL 156 (Topics in the Philosophy of Science), and PHIL 176 (Induction and Probability).

The Departmental requirements for a major in philosophy are as follows: (1) a total of at least 30 hours in philosophy, not including PHIL 001; (2) PHIL 045, 055, 101, 102, 104, and at least two courses numbered 150 or above; (3) a grade of "C" or better in each course counted toward the fulfillment of the major.

For students of exceptional ability and interest in philosophy, the Department offers an Honors Program. Information regarding this special curriculum may be obtained from the departmental advisors.

PHIL 001. INTRODUCTION TO PHILOSOPHY. (3)

An introduction to some of the main problems of philosophy, and to some of the main ways of dealing with these problems. (Staff)

PHIL 041. ELEMENTARY LOGIC AND SEMANTICS. (3)

An introductory study of logic and language, intended to help the student increase his ability to employ language with understanding and to reason correctly. Topics treated include the use and abuses of language, techniques for making sound inferences, and the logic of science. (Staff)

PHIL 045. ETHICS. (3)

An introduction to moral philosophy, including a critical examination of some important classic and contemporary systems of ethics, such as those of Aristotle, Kant, Mill, and Dewey. (Staff)

PHIL 052. PHILOSOPHY IN LITERATURE. (3)

Reading and philosophical criticism of novels and dramas containing ideas significant for ethics, social policy, and religion. (Staff)

PHIL 053. PHILOSOPHY OF RELIGION. (3)

This course seeks to provide the student with the means by which he may approach intelligently the main problems of religious thought: the nature of religious experience, the forms of religious expression, the conflicting claims of religion and science, and the place of religion in the community and in the life of the individual. (Brown, Roelofs)

PHIL 055. SYMBOLIC LOGIC I. (3)

An introduction to the formal analysis of deductive reasoning through formalization of arguments, truth table and natural deduction techniques for propositional logic and quantification theory, including identity and definite descriptions. (Staff)

PHIL 056. PHILOSOPHY OF SCIENCE. (3)

An introductory study of the aims, procedures, and results of scientific inquiry. Topics discussed include the

- formulation and testing of hypotheses, induction and probability, scientific laws, theories and explanation, concept formation, and relationships among the special sciences. (Staff)
- PHIL 101. ANCIENT PHILOSOPHY. (3)**
Prerequisites, six hours in philosophy. A history of Greek thought from its beginnings to the time of Justinian. The chief figures discussed: The Presocratic philosophers, Socrates, Plato, Aristotle, Epicurus, the Stoic philosophers, and Plotinus. (Celarier)
- PHIL 102. MODERN PHILOSOPHY. (3)**
Prerequisites, six hours in philosophy. A history of philosophical thought in the West during the 16th, 17th, and 18th centuries. The chief figures discussed: Bacon, Galileo, Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant.
- PHIL 103. NINETEENTH-CENTURY PHILOSOPHY. (3)**
Prerequisites, six hours in philosophy. A survey of philosophy in the nineteenth century through a consideration of such writers as Hegel, Schopenhauer, Nietzsche, Spencer, Marx, Comte, Mill, Mach, and Bradley. (Staff)
- PHIL 104. TWENTIETH-CENTURY PHILOSOPHY. (3)**
Prerequisites, six hours in philosophy. A survey of philosophy in the twentieth century through a consideration of representative figures in England, Europe, and America. Among the theories to be studied are logical atomism (Russell, Wittgenstein), positivism (Carnap, Ayer), existentialism and phenomenology (Sartre, Husserl), naturalism and realism (Dewey, Santayana). (Brown)
- PHIL 105. PHILOSOPHY IN AMERICA. (3)**
Prerequisite, six hours in philosophy. A survey of philosophical thought in America from the eighteenth century to the present. Special attention is given to Edwards, Jefferson, Emerson, Royce, Pierce, James, and Dewey. (Varnedoe)
- PHIL 120. ORIENTAL PHILOSOPHY. (3)**
Prerequisite, one course in philosophy. Not offered on College Park campus. An examination of the major philosophical systems of the East, attempting to discover the relations between these and important ideas of Western thought. (Staff)
- PHIL 130. THE CONFLICT OF IDEALS IN WESTERN CIVILIZATION. (3)**
A critical and constructive philosophical examination of the assumptions, goals, and methods of contemporary democracy, fascism, socialism, and communism, with special attention to the ideological conflict between the U.S.A. and the U.S.S.R. (Staff)
- PHIL 141. PHILOSOPHY OF LANGUAGE. (3)**
Prerequisite, PHIL 041 or 055. An inquiry into the nature and function of language and other forms of symbolism. (Kress)
- PHIL 147. PHILOSOPHY OF ART. (3)**
An examination of the fundamental concepts in art and in esthetic experience generally. Readings from the works of artists, estheticians, critics and philosophers. (Brown)
- PHIL 151. ETHICAL THEORY. (3)**
Prerequisite, PHIL 045. Contemporary problems having to do with the meaning of the principal concepts of ethics and with the nature of moral reasoning. (Roelofs, Schlaretzki)
- PHIL 152. PHILOSOPHY OF HISTORY. (3)**
An examination of the nature of historical knowledge and historical explanation, and of theories of the meaning of world history. (Staff)
- PHIL 154. POLITICAL AND SOCIAL PHILOSOPHY. (3)**
A systematic treatment of the main philosophical issues encountered in the analysis and evaluation of social (especially political) institutions. (Goldstone, Schlaretzki)
- PHIL 155. SYMBOLIC LOGIC II. (3)**
Prerequisite, PHIL 055 or consent of instructor. Axiomatic development of the propositional calculus and the first-order functional calculus, including the deduction theorem, independence of axioms, consistency and completeness. (Staff)
- PHIL 156. TOPICS IN THE PHILOSOPHY OF SCIENCE. (3)**
Prerequisite, PHIL 056 or consent of instructor. Detailed examination of some basic issues in the methodology and conceptual structure of scientific inquiry. To be investigated are such topics as confirmation theory, structure and function of scientific theories, scientific explanation, concept formation, and theoretical reduction. (Staff)
- PHIL 157. THEORY OF MEANING. (3)**
Prerequisites, PHIL 041 or 055, and 102. A study of theories about the meaning of linguistic expressions, including the verification theory and the theory of meaning as use. Among topics to be considered are naming, referring, synonymy, intension and extension, and ontological commitment. Such writers as Mill, Frege, Russell, Lewis, Carnap, Wittgenstein, Austin, and Quine will be discussed. (Kress, Odell)
- PHIL 158. PHILOSOPHY OF LAW. (3)**
Prerequisite, one course in philosophy. Examination of fundamental concepts related to law, e.g., legal system, law and morality, justice, legal reasoning, responsibility.
- PHIL 159. PHILOSOPHY OF THE SOCIAL SCIENCES. (3)**
Prerequisite, six hours in social science or consent of instructor. A discussion of several of the following topics: the nature of laws and explanation in the social sciences; the relation of the social sciences to mathematics, logic, and the natural sciences; the role of value judgements in the social sciences; the relation of social science to social policy; problems of methodology.
- PHIL 160. PHILOSOPHY OF MIND. (3)**
Prerequisite, PHIL 102. An inquiry into the nature of mind through the analysis of such concepts as consciousness, perception, understanding, imagination, emotion, intention, and action.
- PHIL 168. TOPICS IN THE HISTORY OF PHILOSOPHY. (3)**
Prerequisite, PHIL 101 and 102, or consent of instructor. May be repeated for credit when the topics dealt with are different. (Staff)
- PHIL 169. TOPIC IN CONTEMPORARY PHILOSOPHY. (3)**
Prerequisite, PHIL 102. An intensive examination of contemporary problems and issues. Source material will be selected from recent books and articles. May be repeated for credit when the topics dealt with are different. (Staff)
- PHIL 170. METAPHYSICS. (3)**
First semester. Prerequisites, PHIL 101 and 102. PHIL 055 recommended. A study of some central metaphysical concepts (such as substance, relation, causality, and time) and of the nature of metaphysical thinking. (Pasch)
- PHIL 171. THEORY OF KNOWLEDGE. (3)**
Second semester. Prerequisites, PHIL 101 and 102. PHIL 055 recommended. The origin, nature, and validity of knowledge will be considered in terms of some philosophic problems about perceiving and thinking, knowledge and belief, thought and language, truth and confirmation. (Brown, Odell, Pasch)
- PHIL 175. TOPICS IN SYMBOLIC LOGIC. (3)**
Prerequisite, PHIL 155. May be repeated for credit when the topics dealt with are different. (Staff)
- PHIL 176. INDUCTION AND PROBABILITY. (3)**
Prerequisite, consent of instructor. A study of inferential forms, with emphasis on the logical structure underlying such inductive procedures as estimating and hypothesis-testing. Decision-theoretic rules relating to induction will be considered, as well as classic theories of probability and induction. (Staff)
- PHIL 180. THE PHILOSOPHY OF PLATO. (3)**
Prerequisites, PHIL 101 and 102. A critical study of selected dialogues. (Celarier)
- PHIL 181. THE PHILOSOPHY OF ARISTOTLE. (3)**
Prerequisites, PHIL 101 and 102. A critical study of selected portions of Aristotle's writings. (Celarier)
- PHIL 182. MEDIEVAL PHILOSOPHY. (3)**
Prerequisite, PHIL 101 or 102. A history of philosophic thought in the West from the close of the Classical period to the Renaissance. Based on readings of the Stoics, early Christian writers, Neoplatonists, later Christian writers and Schoolmen. (Celarier)
- PHIL 184. THE CONTINENTAL RATIONALISTS. (3)**
Prerequisites, PHIL 101 and 102. A critical study of the systems of some of the major 17th and 18th century rationalists, with special reference to Descartes, Spinoza, and Leibniz. (Staff)
- PHIL 185. THE BRITISH EMPIRICISTS. (3)**
Prerequisites, PHIL 101 and 102. A critical study of selected writings of Locke, Berkeley, and Hume. (Varnedoe)
- PHIL 186. THE PHILOSOPHY OF KANT. (3)**
Prerequisites, PHIL 101 and 102. A critical study of selected portions of Kant's writings. (Roelofs)
- PHIL 190. HONORS SEMINAR. (3)**
Each semester. Open to honors students in philosophy and, by permission of the instructor, to honors students in other departments. Research in selected topics, with group discussion. May be repeated for credit when the topics dealt with are different. (Staff)

PHIL 191, 192, 193, 194. TOPICAL INVESTIGATIONS. (1-3)
 PHIL 255. SEMINAR IN THE HISTORY OF PHILOSOPHY. (3)
 PHIL 256. SEMINAR IN THE PROBLEMS OF PHILOSOPHY. (3)
 PHIL 260. SEMINAR IN ETHICS. (3)
 PHIL 261. SEMINAR IN ESTHETICS. (3)
 PHIL 270. SEMINAR IN METAPHYSICS. (3)
 PHIL 271. SEMINAR IN THEORY OF KNOWLEDGE. (3)
 PHIL 292. SELECTED PROBLEMS IN PHILOSOPHY. (1-3)
 PHIL 399. RESEARCH IN PHILOSOPHY. (1-12)
 PHIL 499. DISSERTATION RESEARCH (Arranged)

PHYSICS AND ASTRONOMY

PROFESSOR AND CHAIRMAN: Laster.
ASSISTANT PROFESSOR AND ASSOCIATE CHAIRMAN: DiLavore.

PROFESSORS: Banerjee, Day, Erickson, Ferrell, Friedman, Glasser, Glover, Greenberg, Griem, Hayward, Holmgren, Hornyak, Kerr, Kolb, Krall, Kundu, Levison, MacDonald, Marion, McDonald, Misner, Musen, Myers, Myers, Oneda, Opik, Prange, Rao, Slawsky, Snow, Sucher, Trivelpiece, Wall, Weber, Westerhout, Yodh.

VISITING PROFESSORS: Escobar, Fowler, Levy, Lindblad.
ASSOCIATE PROFESSORS: Alley, Bardash, Beall, Bell, Bennett, Bhagat, de Silva, Dixon, Dorfman, Draght, Earl, Falk, Fivel, Gluck, Griffin, Johnson, Kacser, Kehoe, H. Kim¹, Y. Kim, Koch, Matthews, Pati, Pugh, Reiser², Rodberg, Smith, Steinberg, Stephenson, Wentzel, Woo, Zipoy, B. Zorn, G. Zorn.

VISITING ASSOCIATE PROFESSOR: Figuera.
ASSISTANT PROFESSORS: A'Hearn, Anderson, Beaglehole, Berg, Bettinger, Brandt, Chang, Connors, Currie, Davidson, Feinroth, Gloeckler, Greene, Greig, Harrington, Korenman, Kunze, LaPointe, Lenchek, Nolen, O'Gallagher, Pechacek, Poultney, Richard, Risk, Roos, Roush, Simonson, Young, Zapolsky, Zuckerman.

VISITING ASSISTANT PROFESSOR: Kunz.
LECTURERS: Brandt, Clark, Maran, Miers.
RESEARCH ASSOCIATE: Scheerbaum.
VISITING LECTURERS: Elton (P. T.) and Gutsche.

The physics curriculum for the Bachelor of Science degree is designed for students who desire education in the fundamentals of physics in preparation for graduate work or teaching, or for positions in governmental and industrial laboratories. Students who enter the University intending to major in physics are urged to take, during the first two years, the introductory courses PHYS 015, 016, 017, 018, and 060, 061. For students who enter the physics major in their junior year, however, PHYS 030, 031, 032, 060, and, 107 may be substituted for the PHYS 015-061 sequence. All students should accompany these basic courses with MATH 019, 020, 012, and 022 (4, 4, 4, 4), (or the corresponding honors courses) and one advanced mathematics course. Physics majors are encouraged to try to enroll in the accelerated honors sections of all of these courses when they are qualified.

After completion of the courses mentioned above, the Physics majors will be required to take the following courses: PHYS 127, 128—Elements of Mathematical Physics (4, 4), PHYS 118—Introduction to Modern Physics (3), and PHYS 119—Modern Physics (3); and at least two semesters of advanced laboratory courses (e.g., PHYS 100, 109, 110, 140, 141, and 190). Supporting courses must include at least one additional mathematics course approved by the physics adviser (which is usually MATH 110 or MATH 162). At least 38 credits in physics normally are required.

¹Member of the Institute for Fluid Dynamics and Applied Mathematics

²Member of the Institute of Molecular Physics

³Joint appointment with Electrical Engineering

The departmental requirement is at least a "C" in each semester of the first year of the introductory course. Students who wish to be recommended for graduate work must maintain a "B" average and should also include as many as possible of the following courses: PHYS 120—Nuclear Physics (4), PHYS 122—Properties of Matter (4), PHYS 140, 141—Atomic and Nuclear Physics Laboratory (3, 3), PHYS 144, 145—Methods of Theoretical Physics (4, 4) and MATH 110—Advanced Calculus (3).

Because the Departmental program is under continual review, course changes not listed occasionally occur. The student is best advised to seek the latest information available from the Department.

HONORS IN PHYSICS

The Honors Program offers to students of exceptional ability and interest in physics an educational program with a number of special opportunities for learning. Honors sections are offered in several courses, and there are many opportunities for part-time research participation which may develop into full-time summer projects. An honors seminar is offered for advanced students; credit may be given for independent work or study; and certain graduate courses are open for credit toward the bachelor's degree.

Students for the Honors Program are accepted by the Department's Honors Committee on the basis of recommendations from their advisors and other faculty members. A final written and oral comprehensive examination in the senior year concludes the program which may lead to graduation "with Honors (or High Honors) in Physics."

CHEMICAL PHYSICS

See Molecular Physics.

PHYS 001. ELEMENTS OF PHYSICS: MECHANICS, HEAT, AND SOUND. (3)

Three lectures a week. Prerequisite, successful passing of the qualifying examination in elementary mathematics. The first half of a survey course in general physics. **This course is for the general student and does not satisfy the requirements of the professional schools.** (Alley)

PHYS 002. ELEMENTS OF PHYSICS: MAGNETISM, ELECTRICITY, AND OPTICS. (3)

Three lectures a week. Prerequisite, PHYS 001. The second half of a survey course in general physics. **This course is for the general student and does not satisfy the requirements of the professional schools.**

(Marion, Alley)

PHYS 003. INTRODUCTION TO PHYSICS. (4)

Three lectures and one two-hour laboratory per week. Prerequisite, qualification to enter MATH 010. Intended for students majoring in neither the physical nor biological sciences. A study of the development of some of the basic ideas of physical science. (Stephenson)

PHYS 010, 011. FUNDAMENTALS OF PHYSICS. (4, 4)

Three lectures, one recitation, and one two-hour laboratory period a week. Prerequisite, entrance credit in trigonometry or MATH 011 or concurrent enrollment in MATH 018. A course in general physics treating the fields of mechanics, heat, sound, electricity, magnetism, optics, and modern physics. **This course satisfies the minimum requirements of medical and dental schools.**

(Snow, DiLavore, Pechacek, Young)

PHYS 015, 016. INTRODUCTORY PHYSICS: MECHANICS, FLUIDS, HEAT, AND SOUND. (4, 4)

Three lectures and two demonstration periods a week. Prerequisites, a high school physics course and concurrent enrollment in MATH 018, 019, or consent of instructor. The first half of a broad, detailed introduction to physics, intended primarily for physics majors and other students with superior backgrounds in mathematics and the sciences. (Wall, Trivelpiece, Beaglehole)

- PHYS 017. INTRODUCTORY PHYSICS: ELECTRICITY AND MAGNETISM. (4)**
 Three lectures and two demonstration periods a week. Prerequisites, PHYS 015, 016; pre- or co-requisites, PHYS 060 and MATH 020. The third quarter of a broad, detailed introduction to physics, intended primarily for physics majors and other students with superior backgrounds in mathematics and the sciences. (Kehoe)
- PHYS 018. INTRODUCTORY PHYSICS: OPTICS AND MODERN PHYSICS. (4)**
 Second semester. Three lectures and two demonstration periods a week. Prerequisites, PHYS 017 and previous or concurrent enrollment in PHYS 060 and MATH 021, or consent of instructor. The last quarter of a broad, detailed introduction to physics, intended primarily for physics majors and other students with superior backgrounds in mathematics and the sciences. (Roush)
- PHYS 025, 026. GENERAL PHYSICS FOR SCIENCE TEACHERS. (5, 5)**
 Three lectures and two two-hour labs per week. Prerequisites: high school physics or a non-calculus college physics survey course, and co-requisite: MATH 019. A course in physics stressing physical insight, for prospective secondary school science teachers.
- PHYS 030 GENERAL PHYSICS: MECHANICS AND PARTICLE DYNAMICS. (3)**
 Three lectures and one recitation per week. MATH 020 to be taken concurrently. Laws of motion, force, and energy; principles of mechanics; collisions; rotation; and gravitation.
- PHYS 031. GENERAL PHYSICS: HEAT, WAVES AND RELATIVITY. (4)**
 Three lectures, one recitation and one three-hour laboratory period per week. Prerequisite, PHYS 030 or PHYS 020. Statistical physics; kinetic theory; wave motion; interference and refraction; special theory of relativity.
- PHYS 032. GENERAL PHYSICS: ELECTRICITY AND MAGNETISM. (4)**
 Three lectures, one recitation and one three-hour laboratory period per week. Prerequisite, PHYS 031. May be taken in lieu of repetition of PHYS 021. Electrostatics; electrodynamic; Maxwell's equation; quantum physics.
- PHYS 050, 051. INTERMEDIATE PHYSICS. (2, 2)**
 First and second semesters. Two lectures a week. Prerequisite, PHYS 011. (Staff)
- PHYS 052. HEAT. (3)**
 First semester. Three lectures a week. Prerequisite, PHYS 011. MATH 020 is to be taken concurrently. (Staff)
- PHYS 054. SOUND. (3)**
 (Will be given only with sufficient demand.) Three lectures a week. Prerequisite, PHYS 011. MATH 021 is to be taken concurrently. (Myers)
- PHYS 060, 061. INTERMEDIATE PHYSICS EXPERIMENTS. (2, 2)**
 Four hours of laboratory work per week. Prerequisite, PHYS 011 or concurrent enrollment in PHYS 017 or PHYS 018. Selected experiments. (Poultney, Gloeckler)
- PHYS 100. ADVANCED EXPERIMENTS. (2 credits per semester)**
 Four hours of laboratory work per week. Prerequisite, four credits of PHYS 060 or consent of instructor. Selected fundamental experiments in electricity and magnetism, elementary electronics, and optics. (Greig)
- PHYS 102. OPTICS. (3)**
 Second semester. Three lectures a week. Prerequisites, PHYS 011 and MATH 021. It is suggested, but not required that PHYS 060 or PHYS 100 be taken concurrently with this course. Geometrical optics, optical instruments, wave motion, interference and diffraction, and other phenomena in physical optics.
- PHYS 103. APPLIED OPTICS. (3)**
 (Will be given only with sufficient demand.) Three lectures a week. Prerequisite, PHYS 102. A detailed study of physical optics and its applications. (Alley)
- PHYS 104, 105. ELECTRICITY AND MAGNETISM. (3, 3)**
 Three lectures a week. Prerequisites, PHYS 011; MATH 021. Electrostatics, direct current and alternating current circuitry, electromagnetic effects of steady currents, electromagnetic induction, radiation, development of Maxwell's equations, Poynting vector, wave equations, and electronics. (Staff)
- PHYS 106, 107. THEORETICAL MECHANICS. (3, 3)**
 Three lectures a week. Prerequisite, PHYS 051 or consent of instructor. A detailed study of Newtonian mechanics. Dynamics, the motion of rigid bodies, oscillation
- problems, etc. are studied. Lagrange's equation of the first kind and the Hamilton-Jacobi equation are introduced. (LaPointe)
- PHYS 109. ELECTRONIC CIRCUITS. (4)**
 Second semester. Three hours of lecture and two of laboratory per week. Prerequisite, PHYS 100 and concurrent enrollment in PHYS 105 or PHYS 128. Theory of semi-conductor and vacuum tube circuits. Application in experimental physics. (Bettinger)
- PHYS 110. SPECIAL LABORATORY PROJECTS IN PHYSICS. (1, 2, or 3)**
 Two hours laboratory work a week for each credit hour. One to three credits may be taken concurrently each semester. (Will be given with sufficient demand.) Prerequisite, PHYS 100 and consent of advisor. Selected advanced experiments. (Glover, Pugh)
- PHYS 111. PHYSICS SHOP TECHNIQUES. (1)**
 First semester. One three-hour laboratory per week. Prerequisite, PHYS 100 or consent of instructor. Machine tools, design and construction of laboratory equipment. (Horn)
- PHYS 114, 115. INTRODUCTION TO BIOPHYSICS. (2, 2)**
 (Will be given only with sufficient demand.) Two lectures a week. Prerequisites, intermediate physics and MATH 021. A study of the physical principles involved in biological processes, with particular emphasis on current research in biophysics. (DeRocco)
- PHYS 116, 117. INTRODUCTION TO FLUID DYNAMICS. (3, 3)**
 Three lectures a week. Prerequisites, PHYS 106 and MATH 021. Kinematics of fluid flow, properties of incompressible fluids, complex variable methods of analysis, wave motions. (Koopman)
- PHYS 118. INTRODUCTION TO MODERN PHYSICS. (3)**
 Three lectures a week. Prerequisites, general physics and integral calculus, with some knowledge of differential equations and a degree of maturity as evidenced by having taken one or more of the courses PHYS 050 through PHYS 110. Introductory discussion of special relativity, origin of quantum theory, Bohr atom, wave mechanics, atomic structure, and optical spectra. (Beall)
- PHYS 119. MODERN PHYSICS. (3)**
 Three lectures a week. Prerequisite, PHYS 118. A survey of nuclear physics, x-rays, radioactivity, wave mechanics, and cosmic radiation. (Staff)
- PHYS 120. NUCLEAR PHYSICS. (4)**
 Four lectures a week. Prerequisite, PHYS 119. An introduction to nuclear physics at the pre-quantum-mechanics level. Properties of nuclei; radioactivity; nuclear systematics; nuclear moments; the shell model, interaction of charged particles and gamma rays with matter; nuclear detector; accelerators; nuclear reactions; beta decay; high energy phenomena. (Holmgren)
- PHYS 121. NEUTRON PHYSICS AND FISSION REACTORS. (4)**
 (Will be given only with sufficient demand.) Four lectures a week. Prerequisite, PHYS 120. Neutron diffusion and reactor physics. (Marion)
- PHYS 122. PROPERTIES OF MATTER. (3)**
 Each semester. Three lectures a week. Prerequisite, PHYS 119 or equivalent. Introduction to solid state physics. Electro-magnetic, thermal, and elastic properties of metals, semiconductors and insulators. (Glover, Anderson)
- PHYS 123. INTRODUCTION TO ATMOSPHERIC AND SPACE PHYSICS. (3)**
 Second semester. Three lectures a week. Prerequisite, PHYS 127 and PHYS 118 or consent of instructor. Motions of charged particles in magnetic fields, aspects of plasma physics related to cosmic rays and radiation belts, atomic phenomena in the atmosphere, thermodynamics and dynamics of the atmosphere. (Bettinger, Lenchek)
- PHYS 124. INTRODUCTION TO PLASMA PHYSICS. (3)**
 Three lecture hours per week. Prerequisite, PHYS 127 and PHYS 118, or consent of instructor. Orbit theory, magnetohydrodynamics, plasma heating and stability, waves and transport processes. (Griem)
- PHYS 126. KINETIC THEORY OF GASES. (3)**
 Three lectures a week. Prerequisites, PHYS 107 and MATH 021. Dynamics of gas particles, Maxwell-Boltzmann distribution, diffusion, Brownian motion, etc. (Vanderslice)
- PHYS 127. ELEMENTS OF THEORETICAL PHYSICS: MECHANICS. (4)**
 Prerequisites: Physics 018, or Physics 032, or Physics 106 and Physics 107; also Math 022; or consent of in-

structor. A study of the theoretical foundations of mechanics, with extensive application of the methods. Also various mathematical tools of theoretical physics. (Staff)

PHYS 128. ELEMENTS OF THEORETICAL PHYSICS: ELECTRICITY AND MAGNETISM. (4)

Prerequisite: Physics 127 or consent of instructor. A study of the foundations of electromagnetic theory, with extensive application of the methods. Thorough treatment of wave properties of solutions of Maxwell's Equations. (Staff)

PHYS 129. INTRODUCTION TO ELEMENTARY PARTICLES. (3)

Three lecture hours per week. Prerequisite, PHYS 119, or consent of instructor. Properties of elementary particles, production and detection of particles, relativistic kinematics, invariance principles and conservation laws. (Sucher, Risk)

PHYS 130, 131. BASIC CONCEPTS OF PHYSICS. (2, 2)

Two lectures a week. Prerequisite, junior standing. A primarily descriptive course intended mainly for those students in the liberal arts who have not had any other course in physics. This neither satisfies the requirements of the professional schools nor serves as a prerequisite or substitute for other physics courses. The main emphasis in the course will be on the concepts of physics and their evolution and their relations to other branches of human endeavor. (Staff)

PHYS 140, 141. ATOMIC AND NUCLEAR PHYSICS LABORATORY. (3, 3)

One lecture and four hours of laboratory a week. Prerequisites, two credits of PHYS 100 and consent of instructor. Classical experiments in atomic physics and more sophisticated experiments in current techniques in nuclear physics. Enrollment is limited to ten students. (Zorn)

PHYS 144. ADVANCED THEORETICAL PHYSICS. (3)

Prerequisite: Physics 127, 128. This course is an elective continuation of and supplement to Physics 127, 128. A survey of advanced mathematical methods used in theoretical physics, particularly in the fields of classical mechanics, electromagnetism, relativity and quantum mechanics. (Staff)

PHYS 145. ELEMENTARY QUANTUM PHYSICS. (3)

Prerequisites: Physics 118 or Physics 153; Math 066; and a level of mathematical sophistication equivalent to that of a student who has taken Physics 127 and Physics 128, or ENEE 130 and ENEE 132. The quantum theory is presented in a rigorous way including the concepts of operators, measurement, and angular momentum. These concepts together with the Schroedinger Equation are then applied to some basic problems in atomic and molecular physics. (Staff)

PHYS 150. SPECIAL PROBLEMS IN PHYSICS.

Prerequisite, major in physics and consent of advisor. Research or special study. Credit according to work done. (Staff)

PHYS 152. INTRODUCTION TO THERMODYNAMICS AND STATISTICAL MECHANICS. (3)

Three lectures a week. Prerequisites, MATH 021, PHYS 018 or 051, or consent of the instructor. Introduction of basic concepts in thermodynamics and statistical mechanics. (Bhagat)

PHYS 153. MODERN PHYSICS FOR ENGINEERS. (3)

Each semester. Three lectures per week. Prerequisite, PHYS 018. A survey of atomic and nuclear phenomena and the main trends in modern physics. This course is appropriate for students in engineering and other physical sciences. It should not be taken in addition to PHYS 118. (B. S. Zorn, Bettinger, Kunze)

PHYS 186. PARTICLE ACCELERATORS, PHYSICAL AND ENGINEERING PRINCIPLES. (3)

Three hours of lecture per week. Prerequisites, PHYS 127-128 or PHYS 104-105 and PHYS 118, or equivalents. Sources of charged particles, methods of acceleration and focusing of electron and ion beams in electromagnetic fields; electrostatic accelerators; constant-gradient cyclotrons and synchrotrons; betatrons and microtrons; the alternating-gradient and sector-focusing principles; isochronous cyclotrons and alternating-gradient synchrotrons; linear accelerators. (Staff)

PHYS 190. INDEPENDENT STUDIES SEMINAR.

Credit according to work done, each semester. Enrollment is limited to students admitted to the Independent Studies Program in Physics. (Staff)

FOR GRADUATES

See the Graduate School Catalog for descriptions.

Of the courses which follow, 200, 201, 204, 205, 209, 212, 213, 234, 235, 242, 243, 244, 252, 253, 254, 255 and 258 are given every year; all others will be given according to demand.

PHYS 200. THEORETICAL DYNAMICS. (3)

PHYS 201. STATISTICAL PHYSICS. (3)

PHYS 202, 203. ADVANCED DYNAMICS. (2, 2)

PHYS 204. METHODS OF MATHEMATICAL PHYSICS. (3)

PHYS 205. ELECTRODYNAMICS. (4)

PHYS 206, 207. PLASMA PHYSICS. (3, 3)

PHYS 208. THERMODYNAMICS. (3)

PHYS 209. GRADUATE LABORATORY. (3)

PHYS 210. STATISTICAL MECHANICS. (3)

PHYS 212, 213. INTRODUCTION TO QUANTUM MECHANICS. (4, 3)

PHYS 214. THEORY OF ATOMIC SPECTRA. (3)

PHYS 215. THEORY OF MOLECULAR SPECTRA. (3)

PHYS 216, 217. MOLECULAR PHYSICS. (2, 2)

PHYS 218, 219. X-RAYS AND CRYSTAL STRUCTURE. (3, 3)

PHYS 220. APPLICATION OF X-RAY AND ELECTRON DIFFRACTION METHODS. (2)

PHYS 221. COSMIC RAY PHYSICS. (3)

PHYS 222, 223. BOUNDARY-VALUE PROBLEMS OF THEORETICAL PHYSICS. (2, 2)

PHYS 224, 225. SUPERSONIC AERODYNAMICS AND COMPRESSIBLE FLOW. (2, 2)

PHYS 226, 227. THEORETICAL HYDRODYNAMICS. (3, 3)

PHYS 228. SYMMETRY PROBLEMS IN PHYSICS. (3)

PHYS 230. SEMINAR.

PHYS 231. APPLIED PHYSICS SEMINAR. (1)

PHYS 232, 233. HYDROMECHANICS SEMINAR. (1, 1)

PHYS 234, 235. THEORETICAL NUCLEAR PHYSICS. (3, 3)

PHYS 236. THEORY OF RELATIVITY. (3)

PHYS 238. QUANTUM THEORY—SELECTED TOPICS. (3)

PHYS 239. ELEMENTARY PARTICLES. (3)

PHYS 240, 241. THEORY OF SOUND AND VIBRATIONS. (3, 3)

PHYS 242, 243. THEORY OF SOLIDS. (3, 3)

PHYS 244. SOLID STATE PHYSICS. (3)

PHYS 245. SPECIAL TOPICS IN APPLIED PHYSICS. (2)

PHYS 246, 247. SPECIAL TOPICS IN FLUID DYNAMICS. (2, 2)

PHYS 248, 249. SPECIAL TOPICS IN MODERN PHYSICS. (1-4, 1-4)

PHYS 250. SPECIAL PROBLEMS IN ADVANCED PHYSICS. (1-6)

PHYS 252, 253. NUCLEAR STRUCTURE PHYSICS. (3, 3)

PHYS 254. ADVANCED QUANTUM MECHANICS. (3)

PHYS 255. ADVANCED QUANTUM MECHANICS. (3)

PHYS 257. THEORETICAL METHODS IN ELEMENTARY PARTICLES. (3)

PHYS 258. QUANTUM FIELD THEORY. (3)

PHYS 260. HIGH ENERGY PHYSICS. (3)

PHYS 262, 263. AEROPHYSICS. (3, 3)

PHYS 290. CHARGED PARTICLE DYNAMICS, ELECTRON AND ION BEAMS. (3)

PHYS 399. THESIS RESEARCH.

PHYS 499. DISSERTATION RESEARCH (Arranged)

(For Astronomy curriculum, see under ASTRONOMY.)

SPECIAL PHYSICS COURSES FOR HIGH SCHOOL SCIENCE TEACHERS

The courses in this section were especially designed for high school teachers and are not applicable to B.S., M.S. or Ph.D. degrees in physics without special permission of the Department of Physics and Astronomy. However, these courses can be included as part of physics minor or as electives. No prerequisites are required.

PHYS 118A. ATOMS, NUCLEI, AND STARS. (3)

Three lectures per week. An introduction to basic ideas of the constitution and properties of atomic and sub-

atomic systems and of the overall structure of the universe. (DeSilva)

PHYS 122A. PROPERTIES OF MATERIALS. (3)

Three lectures per week. An introduction to the study of solid state physics and the properties of fluids.

(Narigle)

PHYS 160A. PHYSICS PROBLEMS. (1, 2, or 3)

Lectures and discussion sessions arranged.

(DiLamore)

PHYS 170A. APPLIED PHYSICS. (3)

Three lectures per week.

(Hornyak)

PHYS 199. NATIONAL SCIENCE FOUNDATION SUMMER INSTITUTE FOR TEACHERS OF SCIENCE SEMINAR. (1)

Arranged during summer session. Enrollment limited to participants in the N.S.F. Summer Institute. (Staff)

the Dental Aptitude Test, normally taken in the spring of the sophomore year.

The minimum requirements for entry into dental school for either the three year program (90 academic hours) or the four-year program (120 academic hours) are:

General Education requirements.....		34 hours
College requirements		
Foreign Language	12	
Speech.....	2	14 hours
plus		
Major		variable
Minor (or supporting courses).....		variable
Dental Association requirements		
Chemistry—organic.....	8	
inorganic.....	8	
Zoology	8	
Mathematics.....	6	
Physics.....	8	38 hours

Electives—to complete the 90 or 120 hours required.
Required Health and Physical Education.

PRE-PROFESSIONAL CURRICULA

Within the College of Arts and Sciences there are a number of programs developed to prepare the pre-professional student. These curricula, some rather general and others quite specific, are designed to give the student the best background to succeed in his advanced training, to fill undergraduate requirements of many professional schools, and to fit in with the requirements established by the organizations associated with the respective professions.

Pre-professional programs require that the student maintain a grade point average somewhat higher than the minimum for graduation. The student may fulfill requirements by majoring in almost any discipline in the College, provided the specific requirements of the pre-professional program are met. The successful completion of the pre-professional program does not guarantee admission to professional school. Each school has its own admissions requirements and criteria, generally based upon the grade point average in the undergraduate courses, the scores in aptitude tests (Medical College Admission Test, Law Admission Test, or Dental Aptitude Test), a personal interview, and letters sent by the "Evaluation Committee" of the College. For the specific admissions requirements, the student is urged to study the catalog of the professional school of his choice.

Although completion of the Bachelor's degree is a normal prerequisite for admission, three professional schools of the University of Maryland in Baltimore—Dentistry, Law, and Medicine—have arrangements whereby a student who meets requirements detailed below may be accepted for professional school after three years (90 academic hours). For the students to be eligible for the "combined degree," the final thirty hours prior to entry into the Schools of Dentistry, Law, and Medicine must be taken in residence in the College of Arts and Sciences. (A combined degree program in Law is also available in the College of Business and Public Administration: for details see BPA program.) After the successful completion of thirty hours of work in professional school, the student may be eligible for a Bachelor's degree from the College of Arts and Sciences (Arts-Dentistry, Arts-Law, or Arts-Medicine).

PRE-DENTISTRY

The pre-dental program is based upon requirements established by the Council of Dental Education of the American Dental Association, and the requirements for a degree from the College of Arts and Sciences following either the regular four-year program or the combined "Arts-Dentistry" program. The program is designed to prepare the student for

Four-Year Program. A student applies to Dental School in his senior year, on the basis of completing the usual degree requirements for the B.A. or B.S. degree from the College of Arts and Sciences, by majoring in the field of his choice and including in his course work the science courses specifically prescribed by dental schools.

Three-Year Arts-Dentistry Program. Students whose performance during the first two years in residence at College Park is exceptional may be encouraged to seek admission to the University of Maryland Dental School at the end of their third year (90 academic hours). No undergraduate major is required for this program: the work of the first year of dental school is considered as the major; but students will select a minor (supporting courses) from one of the following combinations: zoology, six hours above the 100 level; microbiology, eight hours above the 100 level; CHEM 019 plus three hours above the 100 level in any science; CHEM 161, 162, 163, and 164; or nine hours above the 100 level in any one department of the arts, humanities, or social sciences.

Students accepted in the combined Arts-Dentistry program may receive the B.S. degree (Arts-Dentistry) after satisfactory completion of the first year of dental school, upon recommendation by the Dean of the Dental School and approval during the summer following the first year of dental school, and the degree is awarded with the August graduates.

Schedule. The pre-dental student, regardless of degree sought, includes in his first-year schedule CHEM 008, 009; ZOO 001, 002; ENGL 001, 003; MATH 010, 011 (or 018, 019); HLTH 005; and Physical Education. His second year includes CHEM 035, 036, 037, 038; foreign language; general education requirements; and major-minor requirements. A student hoping for three-year acceptance would substitute PHYS 010, 011 for foreign language in his sophomore year. The University of Maryland Dental School also requires that the student include in his schedule ZOO 005 and a course in statistics (either PSYC 090 or SOCY 095).

PRE-LAW

Although some law schools will consider only applicants with a B.A. or B.S. degree, others will accept applicants who have successfully completed a three-year program of academic work. Most law schools do not prescribe specific course which a student must present for admission, but do require that

the student follow one of the standard programs offered by the undergraduate college. Many law schools require that the applicant take the Law Admissions Test in the academic year preceding his entry into professional school.

Four-Year Program. The student who plans to complete the requirements for the B.A. or B.S. degree before entering law school should select a major field of concentration. The pre-law student ordinarily follows a Bachelor of Arts program with a major in American Studies, English, American and English history, economics, political science (government and politics), psychology, sociology or speech; a few pre-law students follow a Bachelor of Science program.

Three-Year Arts-Law Program. The student who plans to enter law school at the end of his third year should follow the general B.A. program during his first two years. During his junior year, he will complete the requirements for a minor (18 semester hours) in one of the fields of concentration. His program during the first three years should include all of the basic courses required for a degree from the College of Arts and Sciences (including the 18 hour minor) and all College and University requirements. The academic courses must total 90 hours, and must be passed with a minimum average of 2.0.

Students with exceptional records who are accepted to the School of Law of the University of Maryland under the Arts-Law program may receive a B.A. degree (Arts-Law) after satisfactory completion of the first year of law school, upon recommendation by the Dean of the Law School and approval by the College of Arts and Sciences. Applications for the diploma are made during the summer following the first year of law school (or after 30 credit hours are completed), and the degree is awarded with the August graduates.

PRE-MEDICINE

The pre-medical program is based upon the requirements established by the Association of American Medical Colleges, and the requirements for a degree from the College of Arts and Sciences, either with the four-year degree program or with the combined "Arts-Medicine" program. The curriculum is designed to prepare the student for the Medical College Admission Test, which is normally taken in the spring of the junior year.

The minimum requirements for entry into medical school for either the three-year program (90 academic hours) or the four-year program (120 academic hours) are:

General Education requirements.....		34 hours
College requirements.....		
Foreign Language.....	12	
Speech.....	2	14 hours
plus.....		
Major.....		variable
Minor (or supporting courses).....		variable
Medical School requirements.....		
Chemistry—general inorganic.....	0	
organic.....	8	
quantitative**.....	4	
Zoology.....	16	
(In addition to ZOOL 001 and 002, strongly recommended are two of genetics,		

embryology, comparative anatomy)		
Mathematics.....	6	
Physics.....	8	50 hours
Electives—to complete the 90 or 120 hours required.		
Required Health and Physical Education.		

**Recommended but not required by the University of Maryland Medical School, required by some other medical schools.

Four-Year Program. No specific major is required for favorable consideration by a medical school admissions committee. By intelligent planning starting in the sophomore year, the student can meet the above requirements as well as requirements of most majors in the College of Arts and Sciences. The student is urged to work closely with his pre-medical advisor for this planning. A student who enters the pre-medical program late in his college career may find an additional year of study necessary (either as a special student or as a regular undergraduate).

Three-Year Arts-Medicine Program. After completion of his first year of pre-medical study an exceptional student may be encouraged to seek admission to the University of Maryland School of Medicine at the end of his third year (90 hours). During his next two years he will need to complete all requirements listed above, with the exception of the major and the regular minor. Four additional hours at the 100 level in appropriate science courses will satisfy the minor requirement.

Students accepted in the combined Arts-Medicine program may receive the B.S. degree (Arts-Medicine) after satisfactory completion of their training in the basic sciences at the University of Maryland School of Medicine (30 hours), upon recommendation of the Dean of the School of Medicine and approval by the College of Arts and Sciences. The degree is normally awarded in August following the second year of medical school.

Schedule. The pre-medical student normally includes in his first-year schedule CHEM 008, 009; ZOOL 001, 002; ENGL 001, 003; MATH 010, 011 (or 018, 019); HLTH 005; and Physical Education. Academically strong students may take an additional course in their second semester. His second year includes CHEM 035, 036, 037, 038; foreign language; General Education requirements; ZOOL 005, 006; and/or major requirements. His third year includes PHYS 010, 011; foreign language, General Education requirements, major requirements and minor (supporting course) requirements. CHEM 019 would be taken during the third year of the three-year applicant and during the fourth year of the four-year student. The fourth year is devoted to completion of the General Education requirements and major and minor (supporting course) requirements.

RELATED PROFESSIONS

Academic preparation for several professions related to dentistry or medicine is available through the College of Arts and Sciences. For requirements of professional schools in dental hygiene, optometry, osteopathy, etc., see catalogs of the specialized schools; representative catalogs are available in the Office of the Dean.

Medical Technology. The program in medical technology is administered by the School of Nursing.

Veterinary Medicine. The pre-veterinary program is administered by the College of Agriculture.

Dental Hygiene: For information concerning this program, contact Miss Patricia C. Stearns, Director of Dental Hygiene Education, University of Maryland School of Dentistry, Baltimore, Maryland 21201.

PSYCHOLOGY

PROFESSOR AND CHAIRMAN: Bartlett.

PROFESSORS: Anderson, Horton, McGinnies, Tyler, Waldrop.
ASSOCIATE PROFESSORS: Fisher, Fretz, Goldstein, Gollub, Locke, Martin, McIntire, Scholnick, Steinman, Teitelbaum, Turnage, Ward.

VISITING ASSOCIATE PROFESSOR: Hodos.

ASSISTANT PROFESSORS: Carroll, Clairborn, Dachler, Dies, Hegge, Higgs, Holmgren, Johnson, Larkin, Osterhouse, Smith, Sternheim.

LECTURERS: Becker, Drash, Meenes, Taylor.

INSTRUCTORS: Horton, Jensen, McCullough.

JUNIOR INSTRUCTOR: Horowitz.

Psychology can be classified as a biological science (B.S. degree) and a social science (B.A. degree) and offers academic programs related to both of these fields. The undergraduate curriculum in psychology provides an organized study of the behavior of man and other organisms in terms of the biological conditions and social factors which 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 social factors of behavior tend to choose a program leading to the Bachelor of Arts degree. The choice of program is made in consultation with, and requires the approval of, an academic advisor.

Departmental requirements are the same for the Bachelor of Science and the Bachelor of Arts degrees. A minimum of 25 hours of psychology coursework is required; courses taken must include PSYC 001, 090, one of 145, 146, or 147, and an additional 12 hours of 100-level courses (not including 194 and 195). In addition to the above courses in Psychology, all majors are required to take: (1) Math 011 or 019; (2) one course, to be approved by an academic advisor in Psychology, above the introductory level in one of the following fields: chemistry, computer science, mathematics, microbiology, physics, zoology. These two courses may be used as part of the General Education or College requirements in mathematics and science or for the supporting course requirements described below, but not for both. Majors in psychology are urged to take their mathematics and science courses in their first two years.

The supporting courses to supplement the work in the major for the Bachelor of Science degree must include 18 hours in mathematics and sci-

ence, beyond those courses required by the College. A minimum of two courses must be laboratory courses, and at least three courses (or 9 hours) must be chosen at the advanced level (beyond the introductory sequence). The particular laboratory and advanced courses must be approved by an academic advisor in the Department of Psychology.

The supporting courses for the Bachelor of Arts degree must include 18 hours which are chosen in related fields to supplement work in the major. Of these 18 hours, six must be chosen at the 100 level. This set of courses must be approved by an academic advisor in Psychology.

A student must obtain a "C" or better in PSYC 011 in order to major in psychology. A psychology major must have a 2.0 in his major courses and a 2.0 in his supporting courses in order to be certified for graduation with a degree in psychology. In addition, no student who ever receives a second grade lower than a "C" in PSYC 001, 090, or any 100-level psychology course will be certified for graduation in psychology.

Students desiring to enter graduate study in certain areas of psychology are advised to take an additional laboratory course and/or participate in individual research projects. Such students should consult an advisor for information about pre-requisites for Graduate Study in Psychology.

HONORS

The Department of Psychology also offers a special program for the superior student which emphasizes independent study and research. Students may be eligible to enter the Honors Program who have a 3.3 grade average in all courses or the equivalent, who are in their junior year, and who demonstrate interest and maturity indicative of success in the program. Students in their sophomore year should consult their advisor or the Departmental Honors Committee for further information.

PSYC 001. INTRODUCTION TO PSYCHOLOGY. (3)

A basic introductory course, intended to bring the student into contact with the major problems confronting psychology and the more important attempts at their solution. (Staff)

PSYC 005. PERSONALITY AND ADJUSTMENT. (3)

Prerequisite, PSYC 001. Introduction to psychology of human personality and adjustment. This course is designed for the student who desires a general knowledge of this area of psychology. This course may not be taken concurrently with or following PSYC 105. (Staff)

PSYC 020H. INTERMEDIATE PSYCHOLOGY. (Honors) (3)

Second semester. Usually taken during sophomore year. Prerequisite, PSYC 001H or permission of instructor. The course content will stress the interrelations among data derived from the fields of Human Development, Cognition, Perception, Measurement and Social Processes.

PSYC 021. SOCIAL PSYCHOLOGY. (3) (Staff)

Prerequisite, PSYC 001. Personality and behavior as influenced by culture and interpersonal relations. Social influences on motivation, learning, memory, and perception. Attitudes, public opinion, propaganda, language and communication, leadership, ethnic differences, and group process. (Staff)

PSYC 025. CHILD PSYCHOLOGY. (3)

Prerequisite, PSYC 001. Behavioral analysis of normal development and normal socialization of the growing child. This course may not be taken concurrently with or following PSYC 125. (Staff)

PSYC 026. DEVELOPMENTAL PSYCHOLOGY. (3)

First semester. Prerequisite, PSYC 001. Biological basis of behavioral development in relation to genetic, constitutional, anatomical, physiological, and environmental

factors. Emphasis upon both phylogenetic and ontogenetic research findings in biological psychology.

(Brady, Hodos)

PSYC 035. SURVEY OF INDUSTRIAL PSYCHOLOGY. (3)

Prerequisite, PSYC 001. A course for nonmajors which provides a general survey of the field of industrial psychology, including such topics as selection, training, job satisfaction, social organization, and environmental factors. This course may not be taken concurrently with or following PSYC 135.

PSYC 090. STATISTICAL METHODS IN PSYCHOLOGY. (3)

Prerequisite, PSYC 001 and MATH 010, 018, or equivalent. A basic introduction to quantitative methods used in psychological research. (Staff)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

Graduate credits will be assigned for students certified by the Department of Psychology as qualified for graduate standing.

PSYC 101. BIOLOGICAL BASIS OF BEHAVIOR. (3)

Prerequisites, PSYC 090, or 8 hours of Zoology, or consent of instructor. This course is intended primarily for Science majors or Psychology majors not planning to take PSYC 146. May not be taken concurrently with or after PSYC 146. Surveys the experimental analysis of the behavior of humans and animals from the point of view of the biological mechanisms of behavior. Considers such topics as genetic determiners and physiological mechanisms, and basic principles of conditioning and learning. (Staff)

PSYC 105. PERSONALITY. (3)

Prerequisite, PSYC 090 or equivalent. Major personality theories, their postulates and evidence; assessment and research methodology in personality; major areas of personality research, their methodologies, findings, implications, and relationships to the field of psychology. (Staff)

PSYC 110. EDUCATIONAL PSYCHOLOGY. (3)

Prerequisite, PSYC 001 or equivalent. Researches on fundamental psychological problems encountered in education. Measurement and significance of individual differences; learning, motivation, transfer of training, and the educational implications of theories of intelligence. (Staff)

PSYC 123. LANGUAGE AND SOCIAL COMMUNICATION. (3)

Second semester. Prerequisite, PSYC 021 and PSYC 090 or equivalent, and consent of instructor. The nature and significance of verbal and non-verbal communication in social psychological processes including examination of relevant theoretical approaches to symbolic behavior. (Staff)

PSYC 125. ADVANCED TOPICS IN CHILD PSYCHOLOGY. (3)

Prerequisite, PSYC 090 or equivalent. The growth and transformation of basic psychological processes from birth to maturity. Emphasis is on research data and methodological issues, especially as they relate to other aspects of psychology. (Staff)

PSYC 131. ABNORMAL PSYCHOLOGY. (3)

Prerequisite, PSYC 001 and 090 or equivalent. The nature, diagnosis, etiology, and treatment of mental disorders. (Staff)

PSYC 135. PERSONNEL AND INDUSTRIAL PSYCHOLOGY. (3)

Prerequisite, PSYC 090 or equivalent. An intensive study of the main areas of industrial psychology with emphasis on primary source material. This course emphasizes research methodology and the relationship of research findings to general theoretical issues. (Staff)

PSYC 136. ENGINEERING PSYCHOLOGY. (3)

Prerequisite, PSYC 090 or equivalent. An examination of the characteristics of the man-machine system with primary emphasis on human performance. Some of the topics covered are: information processing, decision making, training, environmental constraints, and automation. (Staff)

PSYC 145. EXPERIMENTAL PSYCHOLOGY: SENSORY PROCESSES I (4)

Three lectures and one two-hour laboratory/demonstration period per week. Prerequisite, PSYC 090 or equivalent. Primarily for students who major in psychology. A systematic survey of the content, models, and methodologies of sensory and perceptual research. (Staff)

PSYC 146. EXPERIMENTAL PSYCHOLOGY: LEARNING AND MOTIVATION. (4)

Two lectures and four one-hour laboratory periods per week. Prerequisite, PSYC 090 or equivalent. Students who have taken PSYC 101 need consent of instructor. Primarily for students who major in psychology. The experimental analysis of behavior with emphasis on conditioning, learning, and motivational processes. Experiments are conducted on the behavior of animals. (Staff)

PSYC 147. EXPERIMENTAL PSYCHOLOGY: SOCIAL BEHAVIOR. (4)

Two lectures and two two-hour laboratory periods per week. Prerequisite, PSYC 021 and PSYC 090 or equivalent. A laboratory course dealing with methods of studying behavior in the social context. Topics will include social perception and motivation, small groups, communication and persuasion. Consideration will be given to the techniques involved in laboratory experimentation, field studies, attitude scale construction, and opinion surveys. (McGinnies, Higgs, Ward)

PSYC 148. PSYCHOLOGY OF HUMAN LEARNING. (3)

Prerequisite, PSYC 090 or equivalent. Review and analysis of the major phenomena and theories of human learning, including an introduction to the fields of problem solving, thinking, and reasoning. (Staff)

PSYC 150. PRINCIPLES OF PSYCHOLOGICAL TESTING. (4)

Three lectures and one two-hour laboratory period per week. Prerequisite, PSYC 090 or equivalent. A survey of the basic concepts and theories of psychological measurement illustrated through demonstration of principal approaches to psychological testing. (Staff)

PSYC 151. PSYCHOLOGY OF INDIVIDUAL DIFFERENCES. (3)

Prerequisite, PSYC 150. Problems theories, and researches related to psychological differences among individuals and groups. (WalDROP, Johnson)

PSYC 152. MATHEMATICAL PSYCHOLOGY. (3)

Prerequisite, PSYC 090 or equivalent, and consent of instructor. A survey of mathematical formulations in psychology, including measurement and scaling models, statistical and psychometric models, and elementary mathematical representations of psychological processes in learning, choice, psychophysics, and social behavior.

PSYC 180. PHYSIOLOGICAL PSYCHOLOGY. (3)

Prerequisite, PSYC 145 or consent of instructor. An introduction to research on the physiological basis of human behavior, including considerations of sensory phenomena, motor coordination, emotion, drives, and the neurological basis of learning. (Staff)

PSYC 181. ANIMAL BEHAVIOR. (3)

Prerequisite, PSYC 146 or consent of instructor. A study of animal behavior, including considerations of social interactions, learning, sensory processes, motivation, and experimental methods, with a major emphasis on mammals. (McIntire)

PSYC 182. EXPERIMENTAL PSYCHOLOGY: SENSORY PROCESSES II. (4)

Two lectures and four hours of laboratory exercise and research per week. Prerequisite, PSYC 145 or consent of instructor. Primarily for psychology majors and majors in biological sciences with a special interest in sensory processes. Lectures and laboratory exercises will emphasize contemporary problems in sensory process research. Sufficient latitude will be provided so the exceptional student may conduct original research based on findings reported in the current literature.

PSYC 183. ADVANCED SOCIAL PSYCHOLOGY. (3)

Prerequisite, PSYC 147. A systematic review of researches and points of view in regard to major problems in the field of social psychology.

PSYC 191. SENIOR SEMINAR. (3)

Prerequisite, written consent of the individual instructor (may be repeated). The historical and theoretical roots of the subject matter areas of psychology. Different topical areas and the current theory and related research will be discussed.

PSYC 194. INDEPENDENT STUDY IN PSYCHOLOGY. (1-3)

Prerequisite, written consent of instructor. A student who wishes to take independent work must have completed 12 hours of psychology with at least a 2.5 average. Integrated reading under direction leading to the preparation of an adequately documented report on a special topic. (In special cases a student who may need to repeat this course in order to complete his independent study will make a formal request, including a research proposal, through his advisor to the Departmental Honors Committee.)

PSYC 195. SPECIAL RESEARCH PROBLEMS IN PSYCHOLOGY. (1-3, 1-3)

Prerequisite, written consent of instructor. A student who wishes to take independent research study must have completed 12 hours of psychology with at least a 2.5 average. An individual course designed to allow the student to pursue a specialized research topic under supervision. (In special cases a student who may need to repeat this course in order to complete his research will make a formal request, including a research proposal, through his advisor to the Departmental Honors Committee.)

- PSYC 196H. ADVANCED PSYCHOLOGY I (Honors). (3)
Second semester. Usually taken during junior year. Prerequisites, PSYC 090 and permission of department Honors Committee. Seminar covering topics in Sensation, Perception, Learning and Motivation.
- PSYC 197H. ADVANCED PSYCHOLOGY II (Honors) (3)
First semester. Usually taken during senior year. Prerequisite, PSYC 196H. Seminar covering topics in Measurement, Social Processes and other subject matter of current interest.
- PSYC 199H. HONORS THESIS RESEARCH
First and second semester. Usually taken during last semester in residence. Prerequisite, permission of thesis advisor.

FOR GRADUATES

See Graduate School Catalog for descriptions.
(All the following courses require consent of the instructor. Not all of the graduate courses are offered every year. The times specified for each course are given as estimates.)

- PSYC 221. SEMINAR IN COUNSELING PSYCHOLOGY. (3)
PSYC 222. SEMINAR IN CLINICAL PSYCHOLOGY. (3)
PSYC 223. SEMINAR IN COMMUNITY MENTAL HEALTH. (3)
PSYC 224. SEMINAR IN STUDENT PERSONNEL. (2)
PSYC 225-226. BEHAVIORAL ASSESSMENT AND MEASUREMENT. (2, 2)
PSYC 227-228. LABORATORY IN BEHAVIORAL ASSESSMENT AND MEASUREMENT. (2, 2)
PSYC 229. SEMINAR IN INDUSTRIAL PSYCHOLOGY. (3)
PSYC 230. SEMINAR IN ENGINEERING PSYCHOLOGY. (3)
PSYC 231. TRAINING PROCEDURES IN INDUSTRY. (3)
PSYC 232. PERSONNEL SELECTION AND JOB ANALYSIS. (3)
PSYC 233. SOCIAL ORGANIZATION IN INDUSTRY. (3)
PSYC 240. INTERVIEW AND QUESTIONNAIRE TECHNIQUES. (3)
PSYC 241. PERSUASION AND ATTITUDE CHANGE. (3)
PSYC 242. SEMINAR IN SOCIAL PSYCHOLOGY. (3)
PSYC 243. SEMINAR IN SMALL GROUP BEHAVIOR. (3)
PSYC 252, 253. ADVANCED STATISTICS. (3, 3)
PSYC 254. FACTOR ANALYSIS. (3)
PSYC 255. SEMINAR IN PSYCHOMETRIC THEORY. (3)
PSYC 256. MENTAL TEST THEORY. (3)
PSYC 257. SEMINAR IN QUANTITATIVE PSYCHOLOGY. (3)
PSYC 258. DEVELOPMENT OF PREDICTORS. (3)
PSYC 260. OCCUPATIONAL DEVELOPMENT AND CHOICE. (3)
PSYC 261, 262. MODIFICATION OF HUMAN BEHAVIOR: RESEARCH METHODS AND PRACTICES. (3, 3)
PSYC 263, 264. MODIFICATION OF HUMAN BEHAVIOR: LABORATORY AND PRACTICUM. (3)
PSYC 265. ADVANCED DEVELOPMENTAL PSYCHOLOGY. (3)
PSYC 266. THEORIES OF MOTIVATION. (3)
PSYC 267. THEORIES OF PERSONALITY. (3)
PSYC 269. PRACTICUM IN COMMUNITY MENTAL HEALTH CONSULTATION. (3)
PSYC 270. ADVANCED ABNORMAL PSYCHOLOGY. (3)
PSYC 271. APPRAISAL OF DISABILITIES. (3)
PSYC 272. INDIVIDUAL CLINICAL DIAGNOSIS. (3)
PSYC 274. EVALUATION AND CHANGE IN EDUCATIONAL SKILLS. (3)
PSYC 285, 286. RESEARCH METHODS IN PSYCHOLOGY. (1-3, 1-3)
PSYC 288, 289. SPECIAL RESEARCH PROBLEMS. (1-4, 1-4)
PSYC 399. THESIS RESEARCH. (Credit Arranged)
PSYC 499. DISSERTATION RESEARCH (Credit Arranged)

RUSSIAN AREA PROGRAM

Director: Yaney.

This program is for the student who wants to concentrate his studies in the humanities and the social sciences on the Russian area. It includes work in language and literature, history, government and politics, economics, and geography. The student may emphasize any one of these disciplines in completing his courses. The program prepares the student for graduate work in the Russian area, but by proper selection of courses a student may concentrate his work sufficiently in one discipline to be able to take up graduate work in this particular field.

The student following this program must meet the general requirements for a degree in the College of Arts and Sciences. He should select Russian to meet the foreign language requirements.

Required introductory courses are: RUSS 001, 002, 006 and 007 (unless the student is exempted from this requirement): HIST 041 and 042, GEOG 010 or 015, ECON 037 or 031, 032. These courses must be passed with at least an average grade of C in order for the student to continue in the program.

Advanced courses in the Russian Area: The student must complete at least 30 hours of advanced work in the Russian area including 12 hours of advanced course in Russian language, 6 hours in Russian history, 6 hours in Russian government, 3 hours in Soviet economics.

The student must complete an additional 18 hours of advanced work in the above disciplines. Of these 18, at least 12 must all be in one of the departments and at the 100 level. If the student wishes to concentrate in Russian language and literature, he should take at least 15 of these hours in Russian.

SOCIOLOGY AND ANTHROPOLOGY

PROFESSOR AND CHAIRMAN: Ellis.
ASSOCIATE PROFESSOR AND VICE CHAIRMAN: Hirzel.
PROFESSOR AND DIRECTOR OF THE DIVISION OF CRIMINOLOGY: Lejins.
ASSOCIATE PROFESSOR AND DIRECTOR OF THE DIVISION OF ANTHROPOLOGY: Williams.
PROFESSOR: Janes.
ASSOCIATE PROFESSORS: Anderson, Cussler, Henkel, Hoffman, McIntyre.
ASSISTANT PROFESSORS: Bateman, Braungart, Coates, Federico, Fidelholtz, Franz, Harper, Hunt, Kruegel, Lengermann, Maida, Pease, Pollitt, Rosen Schwartz, Simons, Teevan, Thomas.
LECTURERS: Adams, Hulse, Schuyler.
INSTRUCTORS: Doerr, Hruschka, McDowell.

SOCIOLOGY

The major in Sociology offers: (1) A liberal education especially directed toward understanding the complexities of modern society and its social problems; (2) a broad preparation for various types of professions, occupations, and services dealing with people; (3) a more specific preparation in the areas in which the Department offers specialization such as criminology and corrections, community studies, etc.; (4) preparation of qualified students for graduate training in Sociology. A comprehensive set of courses in Anthropology is provided by that Division and a major is offered. Statements on course requirements and recommended courses in these areas are available in the departmental office.

A minimum of 30 hours in Sociology is required of majors. Required courses include SOCY 001, 002, 095, 186, and 196. No course with a grade of less than a "C" can be used towards the major. Students interested in the honors program should check their eligibility with the Department's Honors Committee.

SOCY 001 or its equivalent is prerequisite to all other courses in Sociology.

SOCY 001. INTRODUCTION TO SOCIOLOGY. (3)

This course is one of the set of courses within the Social Science requirement of the General Education Program. Sociological analysis of the American social structure; metropolitan, small town, and rural communities; population distribution, composition and change; social organization. (Staff)

SOCY 013. RURAL SOCIOLOGY. (3)

Rural life in America; its people, social organization, culture patterns, and problems. (Staff)

SOCY 014. URBAN SOCIOLOGY. (3)

Urban growth and expansion; characteristics of city populations; urban institutions and personality patterns; relations of city and county. (Staff)

SOCY 051. SOCIAL PROBLEMS. (3)

Prerequisite, sophomore standing. An examination of the nature of social problems; perspectives on social problems; the ways in which social problems are implicated in the organization of society; and a detailed study of selected social problems including social conflict and social inequality. (Staff)

SOCY 052. CRIMINOLOGY. (3)

Prerequisite, sophomore standing. Criminal behavior and the methods of its study; causation; typologies of criminal acts and offenders; punishment, correction, and incapacitation; prevention of crime. (Lejins, Maida, Staff)

SOCY 062. SOCIAL INSTITUTIONS. (3)

Prerequisite, sophomore standing. Nature and function of social institutions; the perpetuation of behavior through customs and social norms; typical contemporary American institutions. (Staff)

SOCY 071. DYNAMICS OF SOCIAL INTERACTION. (3)

Social psychology of groups such as committees, teams, clubs, sects, social movements, crowds and publics. Origin of the social self; role behavior, inter-group and intra-group relations. (Cussler, Staff)

SOCY 086. PRINCIPLES OF SOCIOLOGY. (3)

Prerequisite, sophomore standing. The basic forms of social interaction, processes, and structures. Intended primarily for, and required of, all majors. It is recommended that the course be taken in the sophomore year. Formerly SOCY 002. The basic forms of human associations and interactions, social processes; institutions, culture, human nature and personality. (Lengermann, Pease, Staff)

SOCY 095. INTRODUCTORY STATISTICS FOR SOCIOLOGY. (3)

(Two lectures and two hours drill per week.) Prerequisite, MATH 010 or equivalent. Elementary descriptive and inferential statistics. Measures of central tendency and variation, non-parametric and parametric measures of association and correlation, one-way analysis of variance, hypothesis testing, point and interval estimates. Required of all Sociology majors. (Bateman, Henkel, McIntyre, Simons, Teevan, Staff)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

SOCY 102. INTERCULTURAL SOCIOLOGY. (3)

Prerequisite, SOCY 002. On the basis of a comparative study of customs, individual and group behavior patterns and institutions, this course studies the ideologies of America and other modern societies. (Franz)

SOCY 111. SOCIOLOGY OF OCCUPATIONS AND CAREERS. (3)

The sociology of work and occupational life in modern society. Changing occupational ideologies, values and choices. Occupational status systems and occupational mobility. The social psychology of career success. (Lengermann, Coates)

SOCY 112. RURAL-URBAN RELATIONS. (3)

The ecology of population and the forces making for change in rural and urban life; migration, decentralization and regionalism as methods of studying individual and national issues. Applied field problems. (Henkel)

SOCY 113. THE RURAL COMMUNITY. (3)

A detailed study of rural life with emphasis on levels of living, the family, school, and church and organizational activities in the fields of health, recreation, welfare, and planning. (Staff)

SOCY 114. THE CITY. (3)

The rise of urban civilization and metropolitan regions; ecological process and structure; the city as a center of

dominance; social problems, control and planning.

(Hirzel, Pollitt)

SOCY 115. INDUSTRIAL SOCIOLOGY. (3)

The sociology and human relations in American industry and business. Complex industrial and business organization as social systems. Social relationships within and between industry, business, community, and society. (Coates, Lengermann)

SOCY 116. MILITARY SOCIOLOGY. (3)

Social change and the growth of military institutions. Complex formal military organizations. Military organizations as social systems. Military service as an occupation or profession. The sociology of military life. Relations between military institutions, civilian communities and society. (Coates)

SOCY 117. THE SOCIOLOGY OF WAR. (3)

The origin and development of armed forces as institutions, the social causes, operations and results of war as social conflict; the relations of peace and war and revolution in contemporary civilizations. (Coates)

SOCY 118. COMMUNITY ORGANIZATION. (3)

Community organization and its relation to social welfare; analysis of community needs and resources; health, housing, recreation; community centers; neighborhood projects. (Federico)

SOCY 121. POPULATION. (3)

Population distribution and growth in the United States and the world; population characteristics of the United States; resulting population problems and policies. (Hirzel, Kruegel)

SOCY 122. POPULATION. (3)

Trends in fertility and mortality, migrations, population estimates and the resulting problems and policies. (Hirzel, Kruegel)

SOCY 123. ETHNIC MINORITIES. (3)

Basic social processes in the relations of ethnic groups within the State; immigration groups and the Negro in the United States; ethnic minorities in Europe. (Lejins, Staff)

SOCY 124. SOCIOLOGY OF RACE RELATIONS. (3)

Race as a focus of social relations. Political and collective action centering on race relations. New myths of race. Trends in assimilation of racial groupings. (McIntyre, Schwartz)

SOCY 131. INTRODUCTION TO SOCIAL SERVICE. (3)

General survey of the field of social-welfare activities; historical development; growth, functions, and specialization of agencies and services, private and public. (Federico)

SOCY 136. SOCIOLOGY OF RELIGION. (3)

Varieties and sources of religious experience. Religious institutions and the role of religion in social life. (Thomas)

SOCY 141. SOCIOLOGY OF PERSONALITY. (3)

Development of human nature and personality in contemporary social life; processes of socialization; attitudes, individual differences, and social behavior. (Cussler, Hunt, Simons)

SOCY 143. FORMAL AND COMPLEX ORGANIZATIONS. (3)

The concept of formal organization. The study of functioning and control in the operation of bureaucracies such as corporations and in large-scale organizations such as military, religious and educational hierarchies. Forms of recruitment, internal mobility and organizational personality. Relations between large-scale organizations and with the larger society. (Lengermann, Schwartz)

SOCY 144. COLLECTIVE BEHAVIOR. (3)

Social interaction in mass behavior; communication processes; structure and functioning of crowds, strikes, audiences, mass movements, and the public. (Cussler, Simons)

SOCY 145. SOCIAL CONTROL. (3)

Forms, mechanism, and techniques of groups influence on human behavior; problems of social control in contemporary society. (Braungart)

SOCY 147. SOCIOLOGY OF LAW. (3)

Law as a form of social control; interrelation between legal and other conduct norms as to their content, sanctions, and methods of securing conformity; law as an integral part of the culture of the groups; factors and processes operative in the formation of legal norms as determinants of human behavior. (Lejins)

SOCY 148. SOCIOLOGY OF THE ARTS. (3)

- Functions of the arts as a social institution. Social role of the artist. Recruitment to and organizational structure of artistic professions. Art forms and social characteristics of audiences. Changing technology and social values as reflected in artistic expression. (Federico)
- SOCY 153. JUVENILE DELINQUENCY. (3)**
Juvenile delinquency in relation to the general problem of crime; analysis of factors underlying juvenile delinquency; treatment and prevention. (Lejins, Maida, Staff)
- SOCY 154. CRIME AND DELINQUENCY PREVENTION. (3)**
Prerequisite, SOCY 052 or SOCY 153 or consent of instructor. Methods and programs in prevention of crime and delinquency. (Lejins, Maida, Staff)
- SOCY 155. TREATMENT OF CRIMINALS AND DELINQUENTS IN THE COMMUNITY. (3)**
Prerequisite, SOCY 052, 153, or consent of instructor. Analysis of the processes and methods in the modification of criminal patterns of behavior in a community setting. (Lejins, Staff)
- SOCY 156. INSTITUTIONAL TREATMENT OF CRIMINALS AND DELINQUENTS. (3)**
Prerequisite, SOCY 052 or SOCY 153 or consent of instructor. History, organization and functions of penal and correctional institutions for adults and juveniles. (Lejins, Staff)
- SOCY 162. SOCIAL STRATIFICATION. (3)**
Prerequisite, 9 credits of sociology. An introduction to the sociology of social stratification. Consideration of the basic concepts and major findings in the field. The relationship of social stratification to the institutional orders of the society. (Pease)
- SOCY 164. THE FAMILY AND SOCIETY. (3)**
Study of the family as a social institution; its biological and cultural foundations, historic development, changing structure and function; the interactions of marriages and parenthood, disorganizing and reorganizing factors in present day trends. (Harper)
- SOCY 174. SENIOR SEMINAR IN SOCIAL WORK. (3)**
Prerequisite, permission of the instructor. Open only to graduating seniors enrolled in the Pre-Professional Social Work Program. This course seeks to give Pre-Professional Social Work students experience in applying social science theory to concrete social problems. Cases of psychological, social, and biological malfunction will be studied, and specific treatment plans constructed. The interrelated nature of several causes of deviant behavior will be stressed, as will the importance of understanding and using the principles of several social science disciplines. (Federico)
- SOCY 180. SMALL GROUP ANALYSIS. (3)**
Analysis of small group structure and dynamics. Review of research on small groups in factories, military service, schools and communities. Presentation of techniques used in the study of small groups. (Franz, Teevan)
- SOCY 186. SOCIOLOGICAL THEORY. (3)**
Development of the science of sociology; historic backgrounds; recent theories of society. Majors in sociology should take this course in their senior year. (Janes, Hunt, Thomas)
- SOCY 191. SOCIAL FIELD TRAINING. (1-3)**
Prerequisites, for social work field training, SOCY 131; for crime control field training, SOCY 052 and 153. Enrollment restricted to available placements. Supervised field training in public and private social agencies. The student will select his particular area of interest and be responsible to an agency for a definite program of in-service training. Group meetings, individual conferences, and written program reports will be a required part of the course. (Staff)
- SOCY 193. INDEPENDENT READING COURSE IN SOCIOLOGY. (3)**
For honors students only. This course is designed for the needs of the honors students in Sociology. (Staff)
- SOCY 194. INDEPENDENT RESEARCH IN SOCIOLOGY. (3)**
For honors students only. This course is designed for the needs of the honors students in Sociology. (Staff)
- SOCY 195. INTERMEDIATE STATISTICS FOR SOCIOLOGISTS. (3)**
Prerequisite, SOCY 095 or equivalent and six additional credits in Sociology. Intermediate correlation techniques, analysis of variance, sampling, additional non-parametric techniques, additional topics in inferential statistics. Required of all candidates for the M.A. degree. (Bateman, Henkel, Simons, Staff)
- SOCY 196. INTRODUCTION TO RESEARCH METHODS IN SOCIOLOGY. (3)**
Nature and scope of sociological research problem formulation, case study methods, observational methods, survey method, experimental methods, documentary methods, miscellaneous methods. (Bateman, McIntyre, Teevan, Staff)
- SOCY 199. INDEPENDENT STUDY OF SOCIOLOGY. (1-6)**
Prerequisites, written consent of faculty under whose direction the study is to be performed, and at least twelve hours of sociology credit to include one or more of the following: SOCY 095; SOCY 186; SOCY 196. Integrated reading or research under direction and supervision of faculty member. (Staff)
At least one seminar each in methods-statistics, theory, community, social psychology, and criminology will be offered each semester.
- FOR GRADUATES**
See the Graduate School Catalog for descriptions.
- SOCY 201. METHODS OF SOCIAL RESEARCH. (3)**
- SOCY 202. ADVANCED RESEARCH METHODS IN SOCIOLOGY. (3)**
- SOCY 204. PRACTICUM IN DATA ANALYSIS IN FIELD RESEARCH. (3)**
- SOCY 205. COMPUTER METHODS FOR SOCIOLOGISTS. (3)**
- SOCY 214. SURVEY OF URBAN THEORY. (3)**
- SOCY 215. COMMUNITY STUDIES. (3)**
- SOCY 216. SOCIOLOGY OF OCCUPATIONS AND PROFESSIONS. (3)**
- SOCY 217. SEMINAR IN FIELD WORK URBAN RESEARCH. (3)**
- SOCY 219. HUMAN ECOLOGY. (3)**
- SOCY 221. POPULATION AND SOCIETY. (3)**
- SOCY 230. COMPARATIVE SOCIOLOGY. (3)**
- SOCY 241. PERSONALITY AND SOCIAL STRUCTURE. (3)**
- SOCY 246. PUBLIC OPINION AND PROPAGANDA. (3)**
- SOCY 247. SOCIOLOGY OF LAW. (3)**
- SOCY 250. FORMAL ORGANIZATION. (3)**
- SOCY 253. ADVANCED CRIMINOLOGY. (3)**
- SOCY 254. SEMINAR: Criminology. (3)**
- SOCY 255. SEMINAR: Juvenile Delinquency. (3)**
- SOCY 256. CRIME AND DELINQUENCY AS A COMMUNITY PROBLEM. (3)**
- SOCY 257. SOCIAL CHANGE AND SOCIAL POLICY. (3)**
- SOCY 262. FAMILY STUDIES. (3)**
- SOCY 263. MARRIAGE AND FAMILY COUNSELING. (3)**
- SOCY 264. THE SOCIOLOGY OF MENTAL HEALTH. (3)**
- SOCY 266. RESEARCH LITERATURE IN SOCIAL STRATIFICATION. (3)**
- SOCY 271. THEORY OF SOCIAL INTERACTION. (3)**
- SOCY 282. SOCIOLOGY METHODOLOGY. (3)**
- SOCY 286. DEVELOPMENT OF EUROPEAN AND AMERICAN SOCIOLOGICAL THEORY. (3)**
- SOCY 287. SEMINAR: SOCIOLOGICAL THEORY. (3)**
- SOCY 288. THE SOCIOLOGY OF KNOWLEDGE. (3)**
- SOCY 291. SPECIAL SOCIAL PROBLEMS. (Credit to be determined)**
- SOCY 295. ADVANCED STATISTICS FOR SOCIOLOGISTS. (3)**
- SOCY 399. THESIS RESEARCH. (Credit to be determined)**
- SOCY 499. DISSERTATION RESEARCH (Credit to be determined)**
- SPEECH AND DRAMATIC ART**
PROFESSOR AND CHAIRMAN: Aylward.
PROFESSORS: Hofsommer (Emeritus), Newby, Pugliese, Strausbaugh.
ASSOCIATE PROFESSORS: Baker, Linkow, Meersman, Niemeyer.
ASSOCIATE RESEARCH PROFESSOR: Causey.
ASSISTANT PROFESSORS: Canetta, Craven, Doudna, Kennicott, Kirkley, O'Leary, Provensen, Rebach, Starcher, Vaughan, Wolvin.
LECTURERS: Liebergott, Spuehler, Weiss.
INSTRUCTORS: Akiyama, Anderson, Blom, Blum, Boss, Buenger, Caudill, Corea, DuMonceau, Hassan, Kogler, Lea, Man-

The courses in this Department have two main functions: (1) to provide training in basic oral communication skills to meet the general needs of undergraduates of the University; (2) to provide integrated specialized training for students who wish to major or minor in speech.

The undergraduate program provides for specific emphasis in one of the four areas of the Department: (1) General Speech (speech education, persuasion, public address, oral interpretation, organizational and interpersonal communication), (2) Dramatic Art (educational theatre, acting, directing, producing, theatre history, and technical theatre), (3) Radio/Television (educational radio and television, programming, directing, and producing); (4) Speech and Hearing Science (phonetics, semantics, speech and hearing therapy, speech pathology and audiology). Adequate preparation and training for graduate work is provided. Programs for various concentrations may be obtained from the departmental office or advisors.

Minors in speech are adapted to meet the needs of students majoring in English, the social sciences, journalism and public relations, elementary education, nursery school-kindergarten education, pre-law, and pre-ministry fields.

Prerequisites for all majors in speech are SPCH 001 and 002, as well as SPHR 003 or SPCH 004, and ZOOL 001. Major requirements: 30 hours of courses in speech with 15 hours of courses numbered 100 and above. No course with a grade less than "C" may be used to satisfy major requirements.

Specific requirements for professional training in speech and hearing science include completion of the general requirements for speech majors with the following additions: ZOOL 014, 015; PSYC 001, 005, 025, 110, 131; a minimum of 21 hours of speech sciences at the 100 level.

Qualified students, depending upon specialized interests, are invited to participate in the activities of the University Theater, Radio-Television Workshop, and the Calvert Debate Club.

The Department of Speech and Dramatic Art offers an Honors Program for the superior student. Interested students should consult their advisor for further information no later than the beginning of their junior year.

GENERAL SPEECH

*SPCH 001. PUBLIC SPEAKING. (3)

Prerequisite for advanced speech courses. The preparation and delivery of short original speeches; outside readings; reports, etc. It is recommended that this course be taken during the freshman year. SPCH 001 and 007 may not both be used for credit. (Linkow, Staff)

SPCH 002. ADVANCED PUBLIC SPEAKING. (3)

Prerequisite, SPCH 001 or 007. A study of rhetorical principles and models of speech composition in conjunction with the preparation and presentation of specific forms of public address. (Staff)

SPCH 004. VOICE AND DICTION. (3)

First and second semesters. Emphasis upon the improvement of voice, articulation, and phonation. May be taken concurrently with SPCH 001. (Starcher, Staff)

*SPCH 007. PUBLIC SPEAKING. (2)

The preparation and delivery of speeches on technical and general subjects. SPCH 007 and 001 may not both be used for credit. (Staff)

SPCH 010. GROUP DISCUSSION. (3)

A study of the principles, methods, and types of discussion, and their application in the discussion of contemporary problems. (Linkow, Staff)

SPCH 011, 012. DEBATE. (2, 2)

Pre-Law students may take SPCH 011, 012, instead of SPCH 001 or SPCH 007. A study of the principles of argument, analysis, evidence, reasoning, fallacies, briefing, and delivery, together with their application in public speaking. (Fitzgerald, Staff)

SPCH 013. ORAL INTERPRETATION. (3)

The oral interpretation of literature and the practical training of students in the art of reading.

(Provensen, Staff)

SPCH 021. FUNDAMENTALS OF SPEECH COMMUNICATION (3)

First and second semesters. A study of oral communication behavior, including problems and processes of symbolizations, aspects of oral language, the involvement of the talker and listener, kinds of signals, and self-revelation through speech. (Frank, Staff)

SPCH 023. PARLIAMENTARY LAW. (1)

A study of the principles and application of parliamentary law as applied to all types of meetings. Thorough training in the use of Robert's Rules of Order.

(Strausbaugh)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

SPCH 107. ADVANCED ORAL INTERPRETATION. (3)

Prerequisite, SPCH 013. Emphasis upon the longer reading. Program planning. (Provensen)

SPCH 110. ADVANCED GROUP DISCUSSION. (3)

Prerequisite, SPCH 010. Required in speech curriculum and elective in other curricula. An examination of current research and techniques in the discussion and conference, including extensive practice in this area. (Linkow)

SPCH 111. SEMINAR. (3)

Prerequisites, senior standing and consent of instructor. Present-day speech research. (Strausbaugh, Staff)

SPCH 124,125. AMERICAN PUBLIC ADDRESS. (3,3)

Prerequisite, SPCH 001, or 007. The first semester covers the period from colonial times to the Civil War period. The second semester covers from the Civil War period through the contemporary period.

SPCH 133. COMMUNICATION PROCESSES IN CONFERENCES. (3)

Prerequisite, one course in public speaking. Limited to students at the off-campus centers. Group participation in conferences, methods of problem solving, semantic aspects of language, and the function of conferences in industry and government. (Linkow)

SPCH 161. ANCIENT RHETORIC. (3)

Prerequisite, SPCH 002 or consent of instructor. The theories of speech-making and speech composition as propounded by the classical rhetoricians. Special attention is given to Plato, Aristotle, Socrates, Cicero, Quintillian, and St. Augustine. (Staff)

SPCH 162. MODERN RHETORIC. (3)

Prerequisite, SPCH 002 or consent of the instructor. A study of the development of modern rhetorical theories in Europe and America with consideration of the application of the theories to public address. Special attention is given to Thomas Sheridan, John Walker, George Campbell, Hugh Blair, Richard Whately, James A. Winans, Charles Woolbert, I. A. Richards, and Kenneth Burke. (Staff)

SPCH 163. MATERIALS AND PROGRAMS FOR THE DEVELOPMENT OF LISTENING. (3)

Second semester. The study of research finding, listening tests, materials, equipment, and programs which can be used to develop listening skills. (Frank)

SPCH 164. PERSUASION IN SPEECH. (3)

Second semester, Prerequisite, SPCH 002 or 011. A study of the bases of persuasion with emphasis on recent experimental developments in persuasion. (Staff)

SPCH 180. HONORS SEMINAR. (3)

For Honors students only. Readings, symposiums, visiting lecturers, discussions. (Staff)

FOR GRADUATES

See the Graduate School Catalog for descriptions.

SPCH 260. SPEECH AND DRAMA PROGRAMS IN HIGHER EDUCATION. (3)

SPCH 261. INTRODUCTION TO GRADUATE STUDY IN SPEECH. (3)

SPCH 262. SPECIAL PROBLEMS IN GENERAL SPEECH. (3)

SPCH 263. RHETORICAL THEORIES OF STYLE. (3)

SPCH 264. INTERPERSONAL COMMUNICATION. (3)

SPCH 290. INDEPENDENT STUDY. (1-3)

DRAMATIC ART

- DART 008. ACTING. (3)
Prerequisite, consent of instructor. Basic principles of histrionic practice. (Meersman)
- DART 014. STAGECRAFT. (3)
Fundamentals of technical production. Emphasis on construction of scenery. (Ulrich)
- DART 016. INTRODUCTION TO THE THEATRE. (3)
A general survey of the fields of the theatre. (Pugliese)

DART 017. MAKE-UP. (2)

One lecture and one laboratory period a week. A lecture-laboratory course in the theory and practice of stage make-up, covering basic requirements as to age, type, character, race, and period. (Schmitt)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

- DART 113. PLAY PRODUCTION. (3)
Second semester. Prerequisite, DART 016 or consent of instructor. Development of procedure followed by the director in preparing plays for public performance. (Meersman)

DART 114. THE FILM AS AN ART FORM. (3)

A study of the motion picture as a developing form of entertainment, communication, and artistic expression. A series of significant American and foreign films are viewed to illustrate the artistic, historical, and sociological trends of the twentieth century. (Niemyer)

DART 127. CHILDREN'S DRAMATICS. (3)

Principles and methods necessary for staging children's productions on the elementary school level. Major emphasis on creative dramatics; the application of creative dramatics in the school room, and the values gained by the child in this activity. Students will conduct classes in formal and creative dramatics which will culminate in children's programs. (Hughes)

DART 129, 130. Play Directing. (3, 3)

Prerequisite, DART 008 or consent of instructor. A lecture-laboratory course dealing with the fundamentals of script cutting, pacing, movement, blocking and rehearsal routine as applied to the directing of plays. (O'Leary)

DART 131. HISTORY OF THE THEATRE. (3)

First semester. A survey of the dramatic production from early origin to 1800. (Niemyer)

DART 132. HISTORY OF THE THEATRE. (3)

Second semester. A survey of dramatic production from 1800 to the present. (Niemyer)

DART 139. THEATRE WORKSHOP. (3)

Prerequisite, DART 008 or 014. A laboratory course designed to provide the student with practical experience in all phases of theater production. (Staff)

DART 171. STYLES AND THEORIES OF ACTING. (3)

Second semester. Prerequisite, DART 008 or consent of instructor. The study and application of historical styles and theories of acting. (Pugliese)

DART 175. STAGE DESIGN. (3)

Prerequisite, DART 014 or consent of instructor. The theory of stage design and lighting. Making of plans as coordinate elements of scenic design. (Schmitt)

DART 176. PRINCIPLES AND THEORIES OF STAGE LIGHTING. (3)

Prerequisite, DART 175. A study of composition, control, and instrumentation in theatrical lighting. (Schmitt)

DART 177. COSTUME DESIGN FOR THE STAGE. (3)

Prerequisite, DART 014 or consent of instructor. A historical and functional study of theatrical costume design. (Waters)

FOR GRADUATES

See the Graduate School Catalog for descriptions.

- DART 270. SEMINAR: Studies in Theatre. (3)
- DART 271. THE THEORY OF PRE-MODERN DRAMATIC PRODUCTION. (3)
- DART 272. SPECIAL PROBLEMS IN DRAMA. (3)
- DART 273. THEORIES OF THE DRAMA. (3)
- DART 275. THEORY OF VISUAL DESIGN FOR THE PERFORMING ARTS. (3)

RADIO AND TELEVISION

- RATV 022. INTRODUCTION TO RADIO AND TELEVISION. (3)
Prerequisite for all courses in radio except RATV 024.

The development, scope, and influence of American broadcasting and telecasting, including visits to local radio and television stations.

RATV 024. MASS COMMUNICATION IN 20TH CENTURY SOCIETY. (3)

A problem centered approach to the study of mass communication and the impact of media on contemporary society. Each semester the media treatment of a contemporary social, economic or environmental issue is used as a focus for study of the principles, techniques and effects of mass media. Students produce simple radio, television and film material on the selected issue.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

- RATV 102. RADIO PRODUCTION. (3)
Second semester. Prerequisites, RATV 022 and consent of instructor. A study of the multiple problems facing the producer. Special emphasis is given to acoustic setup, casting, "miking," timing, cutting, and the coordination of personnel factors involved in the production of radio programs. (Kirkley)

RATV 115. RADIO AND TELEVISION IN RETAILING. (3)

First semester. Limited to students in the College of Home Economics. Prerequisite, SPCH 001 or 007. Writing and production of promotional programs for the merchandising of wearing apparel and home-furnishings. Collaboration with the Washington and Baltimore radio stations and retail stores. (Kirkley)

RATV 117. RADIO AND TELEVISION CONTINUITY WRITING. (3)

Second semester. Prerequisite, RATV 022 or consent of instructor. A study of the principles, methods and limitations of writing for radio and television. Application will be made in the writing of general types of continuities and commercials. (Staff)

RATV 140. PRINCIPLES OF TELEVISION PRODUCTION. (3)

Prerequisite, 022. A study of the theory, methods, techniques, and problems of television production and direction. Units of study covering television cameras and lenses, lighting theory and practices, scenery and properties, costumes and makeup, graphic arts and special effects are included. Observation of production procedures at nearby television stations. Application will be made through crew assignments for University-produced television programs. (Staff)

RATV 146. TELEVISION NEWS AND PUBLIC AFFAIRS. (3)

First semester. Prerequisite, RATV 117 or JOUR 101. Training in presentation of television news, interviews, discussions, and forums. (McCleary)

RATV 147. ANALYSIS OF BROADCASTING PROCESSES AND RESULTS. (3)

First semester. Prerequisite, RATV 022 or consent of instructor. Survey of the more common analytic approaches, methods, and results in the field of radio and television. (Staff)

RATV 148. TELEVISION DIRECTION. (3)

Second semester. Two hour lecture, three hour laboratory. Prerequisites, RATV 022, 140. Principles of television direction including analysis of script, casting, rehearsing, production, and video control. (Aylward)

RATV 149. TELEVISION WORKSHOP. (3)

Second semester. Two hour lecture, four hour laboratory. Prerequisites, RATV 022, 140, and 148 or consent of instructor. (Aylward)

RATV 150. RADIO AND TELEVISION STATION MANAGEMENT. (3)

Second semester. Prerequisite, RATV 022 or consent of instructor. Broadcasting regulations, licenses, personnel functions, sales, advertising, and program and station promotion. (Kirkley)

RATV 151. BROADCAST PROGRAMMING AND CRITICISM. (3)

Second semester. An investigation of the professional, historical, social and psychological criticism of American radio and television, together with a critical analysis of contemporary programming trends and conventions. (Kirkley)

RATV 152. INTERNATIONAL AND COMPARATIVE BROADCASTING SYSTEMS. (3)

Prerequisite, RATV 022. A comparative study of international broadcasting program policies, economic systems, control and organization. The use of broadcasting in international affairs as an instrument of propaganda, cultural and informational dissemination. Monitoring of overseas broadcasts, television programs and discussions with representatives of domestic and foreign international broadcast agencies.

RATV 155. FILM PRODUCTION. (3)

Prerequisite, consent of instructor. A study of the theoretical and practical aspects of 16 mm film production. Through reading and practice, students are familiarized with basic cinematography, lighting, editing, pictorial composition and film continuity as a communication arts medium. (Staff)

FOR GRADUATES

See the Graduate School Catalog for descriptions.

RATV 240. SEMINAR IN BROADCASTING. (3)**RATV 241. SPECIAL PROBLEMS IN BROADCASTING. (3)****RATV 248. ADVANCED TELEVISION DIRECTION. (3)****SPEECH AND HEARING SCIENCE**

Speech Clinic. No Credit.

Remedial work in minor speech defects. The work of the clinic is conducted in individual conferences and in small group meetings. Hours arranged by consultation with the respective speech instructor. (Staff)

SPHR 003. FUNDAMENTALS OF GENERAL AMERICAN SPEECH. (3)

Training in auditory discrimination of speech sounds, rhythms and inflection of general American speech. Analysis of the physiological bases of speech production and the phonetic elements of speech reception. This course is required of majors in speech and hearing science and recommended for foreign students and majors in nursery and elementary education. (Staff)

FOR ADVANCED UNDERGRADUATES AND GRADUATES**SPHR 105. SPEECH-HANDICAPPED SCHOOL CHILDREN. (3)**

Prerequisite, SPHR 003 for undergraduates. The occurrence, identification, and treatment of speech handicaps in the classrooms. An introduction to speech pathology. (Staff)

SPHR 106. CLINICAL PRACTICE. (1 to 5 Credits, up to 9)

Prerequisites, SPHR 105 and consent of instructor. May be taken for 1-5 credit hours per semester. May be repeated for a total of 9 semester hours credit. Clinical practice in various methods of corrective procedures with various types of speech cases in the University clinic, Veterans hospitals, and public schools. (Craven)

SPHR 108. EDUCATION PHONETICS. (3)

This course is designed to relate phonetic science to the classroom. An extensive coverage of broad transcription of general American speech. Students having credit for SPHR 003 or any previous phonetics course are not eligible for this course.

SPHR 109. SPEECH AND LANGUAGE DEVELOPMENT OF CHILDREN. (3)

Second semester. Admission by consent of instructor. An analysis of normal and abnormal processes of speech and language development in children.

SPHR 112. PHONETICS. (3)

Prerequisite, SPHR 003 or consent of instructor. Training in the recognition and production of the sounds of spoken English, with an analysis of their formation. Practice transcription. Mastery of the international phonetic alphabet. (Baker)

SPHR 120. SPEECH PATHOLOGY. (3)

First semester. Prerequisite, SPHR 105. A continuation of SPHR 105, with emphasis on the causes and treatment of organic speech disorders. (Staff)

SPHR 126. SEMANTIC ASPECTS OF SPEECH IN HUMAN RELATIONS. (3)

Second semester. Prerequisite, one course in public speaking. An analysis of speech and language habits from the standpoint of general semantics.

SPHR 135. INSTRUMENTATION IN SPEECH AND HEARING SCIENCE. (3)

First semester. Prerequisite, 003. The use of electronic equipment in the measurement of speech and hearing. (Linkow)

SPHR 136. PRINCIPLES OF SPEECH THERAPY. (3)

Prerequisite, SPHR 120. Differential diagnosis of speech and language handicaps and the application of psychological principles of learning, motivation and adjustment in the treatment of speech disorders. (Craven)

SPHR 138. METHODS AND MATERIALS IN SPEECH CORRECTION. (3)

Prerequisite, SPHR 120 or the equivalent. The design and use of methods and materials for diagnosis, measurement, and retraining of the speech-handicapped. (Craven)

SPHR 141. INTRODUCTION TO AUDIOMETRY. (3)

First semester. Prerequisites SPHR 003, 135. Analysis of various methods and procedures in evaluating hearing losses. Required for students whose concentration is in speech and hearing therapy. (Doudna)

SPHR 142. SPEECH READING AND AUDITORY TRAINING. (3)

Second semester. Prerequisites, SPHR 135, 141. Methods of training individuals with hearing loss to recognize, interpret and understand spoken language. Required for students whose concentration is in speech and hearing therapy. (Doudna)

FOR GRADUATES

See the Graduate School Catalog for descriptions.

The department maintains a reciprocal agreement with the Veterans Administration whereby clinical practice may be obtained at the Audiology and Speech Pathology Clinic, Veterans Administration Hospital, 50 Irving St., N.W., Washington, D.C. SPHR 201. SPECIAL PROBLEMS SEMINAR. (A, through K.)

(1, 3)

SPHR 202. TECHNIQUES OF RESEARCH IN SPEECH AND HEARING. (3)**SPHR 203. EXPERIMENTAL PHONETICS. (3)****SPHR 204. APPLIED PHONETICS. (3)****SPHR 205. ADVANCED EXPERIMENTAL PHONETICS. (3)****SPHR 206. DIAGNOSTIC PROCEDURES IN SPEECH PATHOLOGY. (3)****SPHR 207. ADVANCED PRINCIPLES OF SPEECH AND HEARING THERAPY. (3)****SPHR 208. QUANTITATIVE METHODS IN SPEECH AND HEARING SCIENCE. (3)****SPHR 210. ANATOMY AND PHYSIOLOGY OF SPEECH AND HEARING. (3)****SPHR 211. A, B, C, D. ADVANCED CLINICAL PRACTICE. (1, 3 up to 12)****SPHR 212. ADVANCED SPEECH PATHOLOGY. (3)****SPHR 214. CLINICAL AUDIOMETRY. (3)****SPHR 216. COMMUNICATION SKILLS FOR THE HARD-OF-HEARING. (3)****SPHR 217. HEARING AID SELECTION FOR THE ACOUSTICALLY HANDICAPPED. (3)****SPHR 218. SPEECH AND HEARING IN MEDICAL REHABILITATION AND SPECIAL EDUCATION PROGRAMS. (3)****SPHR 219. SPEECH DISORDERS OF THE BRAIN-INJURED. (3)****SPHR 220. EXPERIMENTAL AUDIOLOGY. (3)****SPHR 221. COMMUNICATION THEORY AND SPEECH HEARING PROBLEMS. (3)****SPHR 222. ADVANCED BIO-ACOUSTICS. (3)****SPHR 223. ADVANCED PSYCHO-ACOUSTICS. (3)****SPHR 224. THE PREPARATION OF SPEECH AND HEARING SCIENTISTS IN INSTITUTIONS OF HIGHER LEARNING. (3)****SPHR 225. ADVANCED SEMANTICS. (3)****SPHR 226. LANGUAGE PROBLEMS OF THE EXCEPTIONAL CHILD. (3)****SPHR 227. EXPERIMENTAL DESIGN IN SPEECH AND HEARING SCIENCE. (3)****SPHR 229. CLINICAL AND SOCIO-ECONOMIC ASPECTS OF HEARING LOSS. (3)****SPHR 301. INDEPENDENT STUDY IN SPEECH AND HEARING SCIENCE. (1-6)****ZOOLOGY**

PROFESSOR AND CHAIRMAN: Corliss.

PROFESSORS: Anastos, Brown, Burhoe, Grollman, Haley,

Humphrey, Jacowski, Otto, Schleidt.

RESEARCH PROFESSORS: Cronin*, Glinos*, Koo*, Sadun.

ASSOCIATE PROFESSORS: Brinkley, Clark, Gainer, Highton,

Linder, Morse, Ramm.

RESEARCH ASSOCIATE PROFESSORS: Eisenberg, Flyger*,

Mihursky, Price, Sprague*.

ASSISTANT PROFESSORS: Contrera, Goode, Imberksi,

Potter.

RESEARCH ASSISTANT PROFESSORS: Flemmer and Hidu.

RESEARCH ASSOCIATES: Doss and Farr.

LECTURER: McIntosh.

INSTRUCTORS: Crowthaw, Ivie, Kaufman, Moore, Piper, Smythe, Stewart.

JUNIOR INSTRUCTORS: Guidmore, Smith, J. Vieweg.

The Department of Zoology offers a program leading to a B.S. with a major in Zoology. A core of required courses and restricted electives in zoology, as well as supporting courses in other fields, provides an introduction to, and an appreciation of, the broad field of zoology. Through selection of additional elective courses to complete the required 34 credit hours in zoology, the student may explore in greater depth some phase of zoology which is of particular interest to him. Copies of suggested curricula for students interested in preparation for graduate study in various phases of zoology or in pre-medical, pre-dental and biological technician training are available from the departmental office.

All majors are required to complete a minimum of 30 hours in zoology with an average grade of "C". Required courses include ZOO 001, 002, 006, and one course from each of the following groups: Group I, ZOO 102, 103, 104, 105, 109; GROUP II, ZOO 110, 118, 120, 127, 129; Group III, ZOO 106, 121, 128, 130, 182, 190. Additional courses to complete the required 30 hours in zoology may be selected from any of the undergraduate courses in zoology except ZOO 014, 015, Human Anatomy and Physiology (4, 4) and ZOO 055-S, Development of the Human Body (2), which are not accepted for credit toward the major.

Supporting courses must include: mathematics through one year of calculus as represented by completion of MATH 014, 015, Elementary Calculus (3, 3) or MATH 019, 020, Analysis I, II (4, 4); CHEM 001, 003, General Chemistry (4, 4) and 008, 009 CHEM, 31, 33, Elements of Organic Chemistry (3, 3) or CHEM 35, 36, 37, 38, Elementary Organic Chemistry and Laboratory (2, 2, 2, 2); PHYS 010, 011, Fundamentals of Physics (4, 4); and one of the following restricted electives: CHEM 019, Quantitative Analysis (4); MATH 021, Analysis III (4); STAT 050, Introduction to random variables (3); or STAT 164, Introduction to Biostatistics (3). It is strongly recommended that the supporting courses in chemistry and mathematics be completed as early in the curriculum as possible. Students desiring to enter graduate study in certain areas of zoology are advised to take biochemistry, physical chemistry, statistics or advanced mathematics as a part of their undergraduate training.

HONORS

The Department of Zoology also offers a special program for the exceptionally talented and promising student. The Honors Program emphasizes the scholarly approach to independent study rather than adherence to a rigidly prescribed curriculum. Information regarding this program may be obtained from the departmental office or from the Chairman of the Zoology Honors Program.

FOR UNDERGRADUATES

BIOL 001. ORGANIZATION AND INTERRELATIONSHIPS IN THE BIOLOGICAL WORLD. (3)

First semester. An introductory lecture course for the non-science major emphasizing the fundamental organization, processes and interdependence of living organisms and the biological effects associated with human influences on the ecosystem.

ZOO 001. GENERAL ZOOLOGY. (4)

Three lectures and one two-hour laboratory period a week. ZOO 001 and 002 satisfy the freshman pre-medical

requirement in general biology. An introduction to the modern concepts of biological principles and animal life. Emphasis will be placed upon the functional aspects of living systems with a survey of the physical and chemical bases of all life processes. (Linder, Brown)

ZOO 002. THE ANIMAL PHYLUM. (4)

Two lectures and two two-hour laboratory periods a week. Prerequisite, ZOO 001 or BOTN 001. A study of the anatomy, classification and life histories of representative animals, invertebrates and vertebrates. (Nelson)

ZOO 005. COMPARATIVE VERTEBRATE MORPHOLOGY. (4)

Two lectures and two three-hour laboratory periods a week. Prerequisites, ZOO 001 and 002 or equivalent. A comparative study of the evolution of vertebrate organ systems supplemented by laboratory dissection and demonstrations. (Morse)

ZOO 006. GENETICS. (4)

Three lectures, one two-hour laboratory-discussion period per week. Prerequisites, ZOO 001 or BOTN 001, or equivalent, and one semester of college chemistry. A consideration of the basic principles of heredity. (Potter)

ZOO 014. HUMAN ANATOMY AND PHYSIOLOGY. (4)

Two lectures and two two-hour laboratory periods a week. Prerequisite, ZOO 001. For students who desire a general knowledge of human anatomy and physiology. (Grollman)

ZOO 015. HUMAN ANATOMY AND PHYSIOLOGY. (4)

Two lectures and two two-hour laboratory periods a week. Prerequisite, ZOO 001. A continuation of ZOO 014.

ZOO 055S. DEVELOPMENT OF THE HUMAN BODY. (2)

Summer session. Five lectures a week. A study of the main factors affecting the growth and development of the child with special emphasis on normal development. (Staff)

ZOO 075. HISTORY OF ZOOLOGY. (1)

One lecture a week. Prerequisites, a general Grade Point Average (GPA) of 3.2 and a GPA in biological subjects of 3.5, or permission of the instructor. A course in the history of the development of zoology involving the historical figures, experiments and ideas which contributed to modern concepts.

ZOO 076. ZOOLOGICAL LITERATURE. (1)

One lecture a week. Prerequisites, a general Grade Point Average (GPA) of 3.2 and a GPA in biological subjects of 3.5, or permission of the instructor. Discussion of zoological literature, its use and significance. (Staff)

ZOO 077. BASIC STUDY IN ZOOLOGY. (1-4)

Prerequisites, a general Grade Point Average (GPA) of 3.2 and a GPA in biological subjects of 3.5, or permission of the instructor. Independent study, with supporting laboratory experiments, of the basic disciplines in zoology. Repeatable up to 8 hours credit. (Staff)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

ZOO 102. VERTEBRATE PHYSIOLOGY. (4)

Three lectures and one three-hour laboratory period a week. Prerequisites, one year of zoology and one semester of organic chemistry. An intensive study of nerve, muscle, sensory receptors and the central nervous system. (Gainer)

ZOO 103. BIOPHYSICS. (3)

Three lectures a week. Prerequisites, one year of biology, a year of physics, and at least one semester of calculus; or permission of the instructor. An introduction to the ideas and methods used in biophysics to analyze the functional components of cells and tissues as physical-chemical systems.

ZOO 104. VERTEBRATE PHYSIOLOGY. (4)

Three lectures and one three-hour laboratory period a week. Prerequisites, one year of zoology and one semester of organic chemistry. An intensive study of the cardiovascular, gastrointestinal, renal and respiratory systems, and an introduction to endocrinology, basal metabolism and reproductive physiology. (Contrera)

ZOO 105. GENERAL ENDOCRINOLOGY. (3)

Three lectures each week. Prerequisites, one year of zoology and one semester of organic chemistry. The study of the functions and the functioning of the endocrine organs of animals, with special reference to the vertebrates.

ZOO 106. MOLECULAR GENETICS. (3)

Three lectures per week. Prerequisites, a course in genetics and one year of organic chemistry. The molecular basis of gene structure and function. Regulation of differential gene expression.

- ZOOL 108. ANIMAL HISTOLOGY. (4)**
Two lectures and two three-hour laboratory periods per week. Prerequisites, a course in general zoology and a course in vertebrate anatomy, or permission of the instructor. A study of the microscopic anatomy, ultrastructure and histophysiology of tissues and organs of vertebrates.
- ZOOL 109. CELL BIOLOGY. (4)**
Two lectures, one one-hour demonstration-discussion period and one three-hour laboratory period a week. Prerequisites, two years of zoology and a year of organic chemistry, or permission of the instructor. A study of cell structure and function with an emphasis on the activity of subcellular organelles and the mechanisms of coordination and control of cell function. (Brown)
- ZOOL 110. GENERAL PARASITOLOGY. (4)**
Two lectures and two three-hour laboratory periods a week. Prerequisites, two years of zoology and one year of chemistry, or permission of the instructor. A consideration of the phenomenon of parasitism through a study of the structure, function and host relationships of parasitic organisms. (Jachowski)
- ZOOL 118. INVERTEBRATE ZOOLOGY. (4)**
Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of zoology. An advanced course dealing with the phylogeny, morphology and embryology of the invertebrates, exclusive of insects. (Staff)
- ZOOL 120. VERTEBRATE EMBRYOLOGY. (4)**
Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of zoology. Principles of developmental dynamics including organization, differentiation, morphogenesis, and developmental physiology. (Ramm)
- ZOOL 121. ANIMAL ECOLOGY. (3)**
Two lectures and one three-hour laboratory period a week. Prerequisite, one year of zoology. The environment and its control of animal abundance, organization of populations, and the biology of communities will be studied. (Morse)
- ZOOL 125S. FISHERY BIOLOGY AND MANAGEMENT I (5)**
Five lectures and four three-hour laboratories each week for 6 weeks. Prerequisite, one year of zoology and permission of instructor. Study of fish identification, development, life history stages, food habits, age and growth, spawning, migration, and population dynamics. (Koo and Staff)
- ZOOL 127. ICHTHIOLOGY. (4)**
Two lectures and one two-hour and one three-hour laboratory period a week. Prerequisites, ZOOL 001, 002 and 005 or equivalent. A course in anatomy, embryology, distribution, habits and taxonomy of marine and fresh water fish. (Staff)
- ZOOL 128. ZOOGEOGRAPHY. (3)**
Three lectures a week. Prerequisites, ZOOL 001, 002, and 005 or equivalent. Principles governing the geographical distribution of animals, with particular emphasis on vertebrates. (Potter)
- ZOOL 129. VERTEBRATE ZOOLOGY. (4)**
Two lectures and two-hour laboratory periods a week. Prerequisite, two years of zoology or permission of instructor. The identification, classification, habits and behavior of vertebrates. (Staff)
- ZOOL 130. HYDROBIOLOGY. (4)**
Two lectures and two three-hour laboratory periods a week. Prerequisite, one year of biology or permission of instructor. Study of aquatic animals and conditions of existence in water. Selected examples are used to illustrate the influence of environment on productivity of aquatic communities. (Staff)
- ZOOL 150. SPECIAL PROBLEMS IN ZOOLOGY. (1 or 2)**
Prerequisites, major in zoology or biological sciences, a minimum of 3.0 cumulative average in the biological sciences, and consent of instructor. Research or integrated reading in zoology. A student may register several times and receive up to 8 semester hours of credit. (Staff)
- ZOOL 151H HONORS SEMINAR. (1)**
One discussion period a week. Prerequisite, participation in honors program. Guided discussion of topics of current interest. Repeatable to total of 4 hours credit. (Staff)
- ZOOL 152H HONORS INDEPENDENT STUDY. (1-4)**
Prerequisite, participation in honors program. Study of classical material by way of guided independent study and laboratory experiments. Repeatable to a total of 12 hours credit. (Staff)
- ZOOL 153H HONORS RESEARCH. (1-2)**
Prerequisite, participation in honors program. A laboratory research problem which is required each semester during honors participation and culminates in a honors thesis. Repeatable to a total of 8 hours credit. (Staff)
- ZOOL 180. CELL DIFFERENTIATION. (3)**
Three lectures per week. Prerequisites, a course in embryology, cell biology, or genetic systems, or permission of the instructor. A discussion of cellular and subcellular differentiation, emphasizing the biochemical and ultrastructural bases of these developmental changes.
- ZOOL 182. ETHOLOGY. (4)**
Two lectures and two two-hour laboratory periods a week. Prerequisite, two years of zoology, including a course in comparative anatomy, or permission of instructor. The function, causation, and evolution of behavior, laboratory analysis of the behavior of several species.
- ZOOL 190. EVOLUTION. (3)**
Three lectures per week. Prerequisite, a course in genetics or permission of instructor. A consideration of current thought in regard to the origin and evolution of living organisms. (Highton)
- FOR GRADUATES**
See the Graduate School Catalog for descriptions.
- ZOOL 201. COMPARATIVE PHYSIOLOGY. (4)**
ZOOL 203. ADVANCED EMBRYOLOGY. (4)
ZOOL 204. CELLULAR PHYSIOLOGY. (4)
ZOOL 205. COMPARATIVE INVERTEBRATE ENDOCRINOLOGY. (3)
ZOOL 206. ELECTROPHYSIOLOGY. (4)
ZOOL 207. ZOOLOGY SEMINAR. (Arranged)
ZOOL 208. SPECIAL PROBLEMS IN ZOOLOGY. (Arranged)
ZOOL 210. SYSTEMATIC ZOOLOGY. (4)
ZOOL 211, 212. LECTURES IN ZOOLOGY. (1-3, 1-3)
ZOOL 215. SOCIOBIOLOGY. (4)
ZOOL 216. ADVANCED TOPICS IN CELL BIOLOGY. (3)
ZOOL 220. POPULATION GENETICS. (4)
ZOOL 221. ECOLOGICAL GENETICS. (4)
ZOOL 223. ANALYSIS OF ANIMAL STRUCTURE. (4)
ZOOL 234. EXPERIMENTAL MAMMALIAN PHYSIOLOGY. (4)
ZOOL 235. COMPARATIVE BEHAVIOR. (4)
ZOOL 236. MAMMALIAN PHYSIOLOGY. (3)
ZOOL 237. COMPARATIVE VERTEBRATE ENDOCRINOLOGY. (3)
ZOOL 240. ANALYSIS OF ANIMAL POPULATIONS. (4)
ZOOL 245. BIOLOGY OF BIRDS. (4)
ZOOL 250. EXPERIMENTAL PARASITOLOGY. (4)
ZOOL 251. HELMINTHOLOGY. (4)
ZOOL 252. PROTOZOOLOGY. (4)
ZOOL 253. PHYSIOLOGY OF SYMBIOSIS. (4)
ZOOL 260. QUANTITATIVE ZOOLOGY. (4)
ZOOL 300. ADVANCED TOPICS IN PARASITOLOGY. (Arranged)
ZOOL 399. THESIS RESEARCH. (Arranged)
ZOOL 499. DISSERTATION RESEARCH. (Arranged)



Business and Public Administration

The University of Maryland is favorably located for the accommodation of students interested in business and public administration. Students interested in economics, geography, information systems management, journalism, and political science, find a similarly distinct advantage in being at College Park. Downtown Washington is only 25 minutes away in one direction, while the Baltimore business district is less than an hour in the other. There is frequent transportation service from College Park to each city. Qualified students may obtain a first-hand view of the far-flung economic and political activities of the national government and may utilize the libraries and other facilities available in Washington.

The College's six instructional departments offer a broad range of curricula in professional fields and in social science disciplines. The separate programs of study frequently draw upon courses in complementary fields within the College. The six departments and the major departmental offerings are:

- I. Department of Business Administration
 1. The General Curriculum in Business Administration
 2. Accounting
 3. Finance
 4. Insurance and Real Estate
 5. Marketing
 6. Personnel and Industrial Relations
 7. Production Management
 8. Management Science—Statistics
 9. Transportation
 10. Combined Business Administration and Law

II. Department of Economics

III. Department of Geography

IV. Department of Government and Politics

1. General Curriculum in Government and Politics
2. International Affairs
3. Public Administration

V. Department of Journalism

VI. Department of Information Systems Management

VII. Bureau of Business and Economic Research

VIII. Bureau of Governmental Research

ENTRANCE REQUIREMENTS

Requirements for admission to the College are those of the University.

To assure a likelihood of success in the College, it is recommended that the student have four units of English, three or more units of college preparatory mathematics—including a **minimum** of two units of algebra and one unit of geometry, one or more units of history and social science, two or more units of natural science, and two or more units of foreign language. Students expecting to enroll in the college of Business and Public Administration should pursue the pre-college program in high school.

STATEMENT OF POLICY ON THE TRANSFER OF CREDIT FROM OTHER INSTITUTIONS

The College of Business and Public Administration of the University of Maryland subscribes to the policy that advanced work in professional courses should not be included within the first two years of the student's undergraduate experience. This policy is based on the conviction that the value derived from the advanced courses in business, journalism, public administration and other areas of a professional nature is materially enhanced when based upon a sound foundation in the liberal arts.

In adhering to the above policy it is the practice of the College of Business and Public Administration to accept in transfer from another institution no more than nine semester hours of work in business administration where such work has been taken as a part of the curriculum for the first two years of study. Similar limitations are placed upon the transfer of credit in other professional areas. The nine semester hours of business administration acceptable in transfer are specifically identified as three semester hours in an introductory business course and six semester hours of elementary accounting. In addition a single course in data processing may be considered for transfer as an elective. Thus it is anticipated that the student transferring from another institution will have devoted the major share of his effort during the first two years to the completion of basic requirements in the liberal arts.

DEGREES

The University confers the following degrees on students completing programs of study in departments of the College: Bachelor of Science, Master of Arts, Master of Business Administration, Doctor of Business Administration, and Doctor of Philosophy. Each candidate for a degree must file in the Office of the Registrar on a date announced for each semester a formal application for a degree. Candi-

dates for degrees must attend a convocation at which degrees are conferred and diplomas are awarded. Degrees are conferred in **absentia** only in exceptional cases.

JUNIOR STANDING

A student is expected to have completed 56 semester hours of academic credit with an average grade of "C" (2.0) or better before registering for upper division courses. An exception to the foregoing may be made when the student has a limited number of hours of lower division requirement remaining at the start of a new semester. In such cases the student may register for upper division courses to the extent necessary to complete his schedule.

GRADUATION REQUIREMENTS

A minimum of 120 semester hours of credit with an average of "C" in addition to the specified courses in physical activities and health are required for graduation. A minimum of 57 hours of the required 120 hours must be in upper division courses, with the exception that the student may, with the consent of the dean, offer certain lower division courses in mathematics, natural science, and foreign language in partial fulfillment of the requirement. Usually the departments within the College will require that the student have, in addition to an overall "C" average, an average of "C" or better in those courses comprising the student's departmental area of study. The time normally required to complete the requirements for the bachelor's degree is eight semesters.

SENIOR RESIDENCE REQUIREMENT

After a student has earned acceptable credit to the extent of 90 semester hours exclusive of the required work in physical activities, and hygiene, either at the University of Maryland or elsewhere, he must earn a subsequent total of at least 30 semester hours with an average grade of "C" or better at the University of Maryland. No part of these credits may be transferred from another institution. Specific requirements for graduation in the selected curriculum must be met. A student transferring from another college within the University to the College of Business and Public Administration is expected to complete a minimum of 15 semester hours in day-school attendance and while registered in the College before qualifying for the undergraduate degree.

GRADUATE SCHOOL

Various departments of the College offer work leading to the master's degree and the doctorate. Application for admission to the Graduate School must be made by July 15 for the fall term and by December 15 for the spring term on blanks obtained from the Office of the Graduate School (for a detailed discussion of graduate programs and a description of graduate courses see the Graduate School Catalog).

Financial Aid and Assistance

The College has a number of graduate assistantships in the Departments of Business Administration, Economics, Geography, Journalism, and Government and Politics, and in the Bureau of Business and Economic Research and the Bureau of Governmental Research. Applications for assistantships



should be made directly to the Dean of the College of Business and Public Administration. (See the Graduate Catalog for rules and regulations).

HONORS THE DEAN'S LIST OF DISTINGUISHED STUDENTS

Any student who has passed at least 12 hours of academic work in the preceding semester, without failure of any course, and with an average grade on all courses of at least 3.5 will be placed on the Dean's List of Distinguished Students.

BETA GAMMA SIGMA

The Alpha of Maryland Chapter of Beta Gamma Sigma was chartered in 1940. The purpose of this honorary society is to encourage and reward scholarship and accomplishment among students of commerce and business administration; to promote the advancement of education in the art and science of business; and to foster integrity in the conduct of business operations. Chapters of Beta Gamma Sigma are chartered only in schools holding membership in the American Association of Collegiate Schools of Business. Third and fourth year students in business administration are eligible; if in his third year, a student must rank in the highest four percent of his class, and if his fourth year, he must rank in the highest ten percent in order to be considered for selection.

THE DELTA SIGMA PI SCHOLARSHIP KEY

This is awarded annually to the student who has maintained the highest scholastic standing during the entire course of study in business administration or economics. Delta Sigma Pi was founded at New York University on November 7, 1907. The Gamma Sigma of Maryland chapter was chartered at the University in 1950. Delta Sigma Pi is a professional fraternity organized to foster the study of business in universities; to encourage scholarship, social activity, and the association of students for their mutual advancement by research and practice; to promote closer affiliation between the commercial world and students of commerce; and to further a higher standard of commercial ethics and culture, as well as the civic and commercial welfare of the community. Members are selected from the College of Business and Public Administration on the basis of leadership, scholastic standing and promise of future business success.

KAPPA TAU ALPHA

The Maryland chapter of Kappa Tau Alpha was chartered in 1961. Founded in 1910, this national honorary society has 39 chapters at universities offering graduate or undergraduate preparation for careers in professional journalism. It is dedicated to recognition and promotion of scholarship in journalism. Among its activities is an annual award for an outstanding piece of published research in journalism and mass communications.

DEPARTMENTAL OFFERINGS

BUSINESS ADMINISTRATION

Business organizations are set up primarily for the purpose of producing and distributing goods and services. Modern business administration requires a knowledge and understanding of organizational structures, operations and environments. The curricula of the Department of Business Administration emphasize the principles and problems involved in the development of organizations and in the formulation and implementation of their policies.

STUDY PROGRAMS IN THE DEPARTMENT

The programs of study in the Department of Business Administration are so arranged as to facilitate concentrations according to the major functions of business management. This plan is not, however, based on the view that these major divisions are independent units, but rather that each is closely related to and dependent on the others. Every student in Business Administration is required to complete satisfactorily a minimum number of required basic subjects in the arts, sciences, and humanities as prerequisites to work in the major management fields.

A business administration honors program is open to business administration majors entering their junior year. Students must have an academic average of at least 3.0 to be eligible for admittance to this program.

FRESHMAN AND SOPHOMORE REQUIREMENTS

ENGL 1, 3, and 4 (or 21, 3 and 4).....	9 hours
MATH 10 and 11 (or 19 and 20).....	6(B)
SPCH 1.....	6
History.....	6
BSAD 10.....	3
ECON 004 (students electing to take a foreign language may exempt this course).....	3
BSAD 20 and 21.....	6
ECON 31 and 32.....	6

Two science courses (one biological and one physical, and at least one of which must be a lab science) selected from the following:

Physical Astronomy.....	3
Geology.....	3
Physics.....	3
Chemistry.....	4
Biological Botany.....	4
Zoology.....	4
Microbiology.....	4 7-8

A social science course (ECON 031 may be used for 3 hours of the 6 hour social science requirement) selected from the following:

GVPT 1.....	3
PSYC 1.....	3
SOCY 1.....	3
ANTH 1.....	3 3

A fine arts requirement of 3 hours of which the following are representative:

PHIL 1, 41, 45, 53.....	3
ART 10, 60, 61, 80.....	3
MUSC 20.....	3
SPCH 16.....	3
Electives (chosen with approval of adviser).....	6-9
HLTH 5 (men and women).....	1 sem. (2 cr.)
P.E. (men and women).....	2 semesters

*Students who wish to elect a foreign language must take nine semester hours of the language or six hours of the intermediate level or higher, in order to obtain credit. Such students may substitute the first semester of foreign language for the ECON 004 requirement, and the other semesters for two free electives.

A TYPICAL PROGRAM FOR FIRST TWO YEARS

Freshman Year			
ENGL 1 (or 21).....	3	ENGL 3.....	3
BSAD 10 or Sp. 1.....	3	SPCH 1 or BSAD 10.....	3
MATH 10 (or 19).....	3	MATH 11 (or 20).....	3
ECON 004.....	3	HLTH 5.....	2

Fine Arts, Social Science, or Science	3-4	Fine Arts, Social Science, or Science	3-4
P.E.	1	P.E.	1
	16-17		15-16
Sophomore Year			
ENGL 4	3	Elective	3
BSAD 20	3	BSAD 21	3
ECON 31	3	ECON 32	3
History	3	History	3
Fine Arts, Social Science, or Science	3-4	Fine Arts, Social Science, or Science	3-4
	15-16		15-16

A TYPICAL PROGRAM FOR FIRST TWO YEARS

BSAD 130—Business Statistics I	3
BSAD 140—Business Finance	3
BSAD 149—Marketing Principles and Organization	3
BSAD 168—Management and Organization Theory	3
BSAD 180—Business Law	3
BSAD 199—Business Policies	3
Total	18

In addition to the above, two 100 level courses must be taken in Economics, at least one of which must be: ECON 102, National Income Analysis; ECON 132, Intermediate Price Theory; ECON 140, Money and Banking; or ECON 148, International Economics.

At least 45 hours of the 120 semester hours of academic work required for graduation must be in Business Administration subjects. In addition to the requirement of an overall average of "C" in academic subjects, an average of "C" in Business Administration subjects is required for graduation. Electives in the curricula of the Department may, with the consent of the advisor, be taken in any department of the university if the student has the necessary prerequisites.

GENERAL CURRICULUM IN BUSINESS ADMINISTRATION

The General Curriculum in Business Administration is designed for those who desire a broad program in management. The curriculum contains a relatively large number of elective courses. Selection is subject to approval by an advisor and must contribute to a program of courses closely balanced between (1) a functional field, (2) the various basic areas of management and (3) non-business fields.

Students selecting this curriculum will take the basic courses required for all students in the Department of Business Administration. In addition, students will take:

(1) The following required courses:

BSAD 150—Marketing Management or BSAD 156 Marketing Research Methods	3 s.h.
BSAD 160—Personnel Management I or BSAD 163 Labor Relations	3 s.h.
BSAD 170—Principles of Transportation or BSAD 171—Traffic and Physical Distribution Management	3 s.h.
BSAD 101—Electronic Data Processing or BSAD 136 Operations Research I or BSAD 169 Production Management	3 s.h.
BSAD 189—Business and Government or BSAD 198 Structure and Operation of Industries	3 s.h.
	15 s.h.
(2) three semester hours from the following:	
BSAD 111—Intermediate Accounting (3)	
BSAD 131—Business Statistics II	
BSAD 148—Advanced Financial Management (3)	3 s.h.
BSAD 184—Public Utilities (3)	
Total	18 s.h.

Thus, the upper division requirements are:

Junior-senior requirements for all departmental students	18 s.h.
Junior-senior curriculum concentration	18 s.h.
Electives in 100 level economics courses of least one of which must be ECON 102, 132, 140, or 148	6 s.h.
Electives to complete 120 s.h. required for graduation	18 s.h.
Total junior-senior year requirements	60 s.h.

ACCOUNTING

Accounting, in a limited sense, is the analysis, classification, and recording of financial events and the reporting of the results of such events for an organization. In a broader sense, accounting consists of all financial devices for planning, controlling and appraising performance of an organization. In this broader sense, accounting includes among its many facets financial planning, budgeting, accounting systems, financial management controls, financial analysis of performance, financial reporting, internal and external auditing and taxation of business.

The accounting curriculum provides an educational foundation for careers in accounting and a foundation for future advancement in other management areas whether in private business organizations, government agencies, or public accounting firms. Students who select this curriculum will complete the freshman and sophomore requirements for all students in the Department of Business Administration.

Course requirements for the junior and senior years are:

(1) The junior-senior requirements for all students in the Departments of Business Administration,
(2) the following courses:

BSAD 101—Electronic Data Processing	3
BSAD 110, 111—Intermediate Accounting	6
BSAD 121—Cost Accounting	3
BSAD 123—Income Tax Accounting	3
and 9 semester hours from the following:	
BSAD 122—Auditing Theory and Practice	3
BSAD 124—Advanced Accounting	3
BSAD 125—CPA Problems	3
BSAD 127—Advanced Auditing Theory and Practice	3
BSAD 128—Advanced Cost Accounting	2

Thus, the upper division requirements for accounting majors are:

Junior-senior requirements for all departmental students	18 s.h.
Junior-senior accounting requirements (minimum)	21 s.h.
BSAD 101—Electronic Data Processing	3 s.h.
Electives in 100 level economics courses of least one of which must be ECON 102, 132, 140, or 148	6 s.h.
Electives to complete 120 semester hours required for graduation	12 s.h.
Total Junior-senior year requirements	60 s.h.

For graduates of the University of Maryland, the educational requirement of the Maryland State Board of Public Accountancy for taking the C.P.A. examination without practical experience totals thirty semester hours of accounting courses plus six semester hours of business law. Students wishing to satisfy the Board's requirements must include BSAD 122 in their undergraduate program. Students not wishing to satisfy the Board's requirements to sit for the C.P.A. examination without experience are eligible to take the examination after obtaining two years of practical experience satisfactory to the Board.

A student planning to take the C.P.A. examination in a State other than Maryland should determine the course requirements, if any, for such State and arrange his program accordingly.

FINANCE

The finance curriculum is designed to familiarize the student with the institutions, theory, and practice involved in the allocation of financial resources within the private sector, especially the firm. It is also designed to provide work in such related disciplines as economics and the quantitative areas.

The finance curriculum provides an educational foundation for careers involving financial analysis and management, investment analysis and portfolio management, investment banking, banking, and international finance; it also provides a foundation for graduate work in business administration, quantitative areas, economics, and law.

Course requirements for the junior-senior curriculum concentration in finance are:

- (1) The following required courses

BSAD 101 Electronic Data Processing	3 s.h.
ECON 140 Money and Banking	3 s.h.
BSAD 136 Operations Research I	3 s.h.
BSAD 143 Investments	3 s.h.

 plus
- (2) one of the following courses

BSAD 111 Intermediate Accounting	3 s.h.
BSAD 141 Financial Management	3 s.h.
BSAD 144 Security Analysis and Valuation	3 s.h.
BSAD 145 Commercial Bank Management	3 s.h.
BSAD 184 Public Utilities	3 s.h.

 and
- (3) one of the following courses

ISM 102—Electronic Data Processing Applications or a more advanced ISM course	3 s.h.
MATH—Three semester hours of mathematics beyond the departmental requirements	3 s.h.
BSAD 131—Business Statistics II or a more advanced BSAD statistics course	3 s.h.
BSAD 137—Operations Research II or a more advanced BSAD Management Science Course	3 s.h.
Total	18 s.h.

The upper division requirements are summarized as follows:
 Junior-senior requirements for all departmental students 18 s.h.
 Junior-senior curriculum concentration 18 s.h.
 One course in economics selected from:
 ECON 102, 132, 141, 142, 147 and 148 3 s.h.
 Electives to complete the 120 semester hours required for graduation 21 s.h.
 Total junior-senior year requirements 60 s.h.

*Note that the economics requirements for the finance major is more restrictive than stated under JUNIOR AND SENIOR REQUIREMENTS

INSURANCE AND REAL ESTATE

Students interested in insurance or real estate may concentrate either in General Business or Finance and plan with their advisers a group of electives to meet their specialized needs. Courses offered in insurance and real estate include risk management, principles of risk and insurance, real estate principles, and urban land management.

MARKETING

Marketing involves the functions performed in getting goods and services from producers to users. Career opportunities exist in manufacturing, wholesaling and retailing and include sales administration, marketing research, advertising and merchandising.

Students preparing for work in marketing research are advised to elect additional courses in Statistics.

In addition to the courses taken by all students in the Department of Business Administration, the marketing program consists of:

- (1) The following required courses:

BSAD 136—Operations Research I	3 s.h.
BSAD 150—Marketing Management	3 s.h.
BSAD 151—Advertising	3 s.h.
BSAD 156—Marketing Research Methods	3 s.h.
Total required	12 s.h.
- and
- (2) six semester hours from the following:

BSAD 101—Electronic Data Processing (3)	6 s.h.
BSAD 131—Business Statistics II (3)	6 s.h.
JOUR 152—Advertising Copy and Layout (3)	6 s.h.
BSAD 153—Industrial Marketing (3)	6 s.h.
BSAD 154—Retail Management (3)	6 s.h.
BSAD 155—Consumer Analysis (3)	6 s.h.
BSAD 157—International Marketing (3)	6 s.h.
BSAD 158—Promotion Management (3)	6 s.h.
BSAD 171—Traffic and Physical Distribution Management (3)	6 s.h.
Total	18 s.h.

Thus, the upper division requirements are:
 Junior-senior requirements for all departmental students 18 s.h.
 Junior-senior curriculum concentration 18 s.h.
 Electives in 100 level economics courses of at least one of which must be ECON 102, 132, 140, or 158 6 s.h.
 Electives to complete 120 semester hours required for graduation 18 s.h.
 Total, Junior-senior year requirements 60 s.h.

PERSONNEL AND LABOR RELATIONS

Personnel administration has to do with the direction of human effort. It is concerned with securing, maintaining, and utilizing an effective working force. People professionally trained in personnel administration find career opportunities in business, in government, in educational institutions, and in charitable and other organizations.

- (1) The required courses are:

BSAD 160—Personnel Management I	3 s.h.
BSAD 161—Personnel Management II	3 s.h.
BSAD 162—Organizational Behavior	3 s.h.
BSAD 163—Labor Relations	3 s.h.
BSAD 164—Labor Legislation	3 s.h.
Total required	15 s.h.
- And
- (2) three hours from the following:

BSAD 197—Undergraduate Seminar in Personnel Management (3)	6 s.h.
BSAD 169—Production Management (3)	6 s.h.
PSYC 135—Personnel and Industrial Psychology (3)	6 s.h.
PSYC 150—Tests and Measurements (4)	6 s.h.
PSYC 151—Psychology of Individual Differences (3)	6 s.h.
SOCY 115—Industrial Sociology (3)	6 s.h.
SOCY 180—Small Group Analysis (3)	6 s.h.
GVPT 111—Public Personnel Administration (3)	6 s.h.
JOUR 166—Public Relations (3)	6 s.h.
Total	18 s.h.

Thus, the upper division requirements are:
 Junior-senior requirements for all departmental students 18 s.h.
 Junior-senior curriculum concentration 18 s.h.
 Electives in 100 level economics courses of at least one of which must be ECON 102, 132, 140, or 148 6 s.h.
 Electives to complete 120 semester hours required for graduation 18 s.h.
 Total, Junior-senior year requirements 60 s.h.

PRODUCTION MANAGEMENT

This curriculum is designed to acquaint the student with the problems of organization and control in the field of production management. Theory and practice with reference to organization, policies, methods, processes and techniques are surveyed, analyzed, and evaluated.

The courses in addition to those required of all students in the Department of Business Administration are:

- (1) The following required courses:

BSAD 121—Cost Accounting	3 s.h.
BSAD 160—Personnel Management I	3 s.h.
BSAD 169—Production Management	3 s.h.
BSAD 165—Advanced Production Management	3 s.h.
Total required	12 s.h.
- and
- (2) six hours from the following:

BSAD 134—Statistical Quality Control (3)	6 s.h.
BSAD 136—Industrial Marketing (3)	6 s.h.
BSAD 163—Labor Relations (3)	6 s.h.
BSAD 136—Operations Research I (3)	6 s.h.
BSAD 171—Traffic and Physical Distribution Management (3)	6 s.h.
Total	18 s.h.

Business Administration

Thus, the upper division requirements are:
 Junior-senior requirements for all departmental students 18 s.h.
 Junior-senior curriculum concentration 18 s.h.
 Electives in 100 level economics courses of at least one of which must be ECON 102, 132, 140, or 148 6 s.h.

Electives to complete 120 semester hours required for graduation.....	18 s.h.
Total Junior-senior year requirements.....	60 s.h.

(1) The following required courses:	
BSAD 131—Business Statistics II.....	3 s.h.
BSAD 136—Operations Research I.....	3 s.h.
BSAD 137—Operations Research II.....	3 s.h.
BSAD 138—Linear Programming in Business.....	3 s.h.
	12 s.h.

MANAGEMENT SCIENCE—STATISTICS

In the management—statistics curriculum, the student will have the option of concentrating primarily in statistics or primarily in management science. The two options are described below.

THE STATISTICS OPTION

Statistics consists of a body of methods for utilizing probability theory in decision-making processes. Important statistical activities ancillary to the decision-making process are the systematization of quantitative data and the measurement of variability. Some specialized areas within the field of statistics are: sample surveys, forecasting, quality control, design of experiments, Bayesian decision processes, actuarial statistics, and data processing. Statistical methods—for example, sample survey techniques—are widely used in accounting, marketing, industrial management and government applications.

An aptitude for applied mathematics and a desire to understand and apply scientific methods to significant problems are important prerequisites for the would-be statistician.

Students planning to major in statistics should take two semesters of calculus.

Students selecting this curriculum will take, in addition to the courses required for all students in the Department of Business Administration:

(1) The following required courses:

BSAD 101—Electronic Data Processing.....	3 s.h.
BSAD 131—Business Statistics II.....	3 s.h.
BSAD 132—Sample Surveys in Business and Economics.....	3 s.h.
BSAD 135—Statistical Analysis and Forecasting.....	3 s.h.
(2) and six semester hours from the following:	
BSAD 102—Electronic Data Processing Applications (3)	
BSAD 134—Marketing Research Methods (3)	
BSAD 134—Statistical Quality Control (3)	
BSAD 136—Operations Research I (3)	
BSAD 137—Operations Research II (3)	
BSAD 138—Linear Programming in Business (3)	6 s.h.
STAT 50—Introduction to Random Variables (3)*	
STAT 100—Probability and Statistics I (3)*	
Totals.....	18 s.h.

*Students majoring in statistics may not take Stat. 50 and Stat. 100 in fulfillment of their special requirements. Only one of these courses can be counted toward the necessary 18 credit hours.

THE MANAGEMENT SCIENCE OPTION

Management Science—Operations Research can be defined as the application of scientific methodology by interdisciplinary teams to problems involving the control of organized man-machine systems so as to provide solutions which best serve the purposes of the organization as a whole.

Practitioners in this field are employed by large organizations (military, governmental, private industrial, private consulting) to analyze operations in the light of organizational goals and recommend changes requisite to goal fulfillment.

Students planning to major in this field should complete at least two semesters of calculus prior to junior standing. The current Math. 14-15 is the minimum preparation, although Math. 19-20 is preferred. Students considering graduate work in this field should complete Mathematics 19-20-21-22 as early in their careers as possible. Note Math. 21-22 may be counted as upper division elective credit. Mathematics 100 is also highly recommended.

Students electing this curriculum will take, in addition to the courses required for all students in the Department of Business Administration:

(2) Six semester hours from the following:	
BSAD 132—Sample Surveys in Business and Economics (3)	
BSAD 135—Statistical Analysis and Forecasting (3)	
BSAD 134—Statistical Quality Control (3)	
STAT 100—Probability & Statistics I (3)	
BSAD 101—Electronic Data Processing (3)	
BSAD 102—Electronic Data Processing Applications (3)	
BSAD 103—Introduction to Systems Analysis (3)	
ISM 110—Information Processing Problems of Administrative, Economic, and Political Systems (3)	
BSAD 169—Production Management (3)	
BSAD 165—Advanced Production Management (3).....	6 s.h.
	18 s.h.

Thus, the upper division requirements are for both options:	
Junior-senior requirements for all departmental students.....	18 s.h.
Junior-senior curriculum concentration.....	18 s.h.
Electives in 100 level economics courses of at least one of which must be ECON 102, 132, 140, or 148.....	6 s.h.
Electives to complete 120 s.h. required for graduation.....	18 s.h.
Total junior-senior requirement.....	60 s.h.

TRANSPORTATION

Transportation involves the movement of persons and goods in the satisfaction of human needs. The curriculum in transportation includes an analysis of the services and management problems, such as pricing, financing, and organization, of the five modes of transport—air, motor, pipelines, railroads, and water—and covers the scope and regulation of transportation in our economy. The effective management of transportation involves a study of the components of physical distribution and the interaction of procurement, the level and control of inventories, warehousing, material handling, transportation, and data processing.

The curriculum in transportation is designed to prepare students to assume responsible positions with carriers, governmental agencies, and traffic and physical distribution management in industry.

Course requirements are, in addition to the junior-senior requirements for all students in the Department of Business Administration:

(1) The following required courses:	
BSAD 136—Operations Research I.....	3 s.h.
BSAD 170—Principles of Transportation.....	3 s.h.
BSAD 171—Traffic and Physical Distribution Management.....	3 s.h.
BSAD 172—Motor Transportation.....	3 s.h.
BSAD 175—Advanced Transportation Problems.....	3 s.h.
Total.....	15 s.h.
and	
(2) Three semester hours to be selected from the following:	
BSAD 173—Water Transportation.....	3 s.h.
BSAD 174—Commercial Air Transportation (3)	
BSAD 176—Urban Transport and Urban Development (3).....	3 s.h.
BSAD 184—Public Utilities (3)	
BSAD 192—Introduction to International Business Management (3).....	3 s.h.
Total required.....	18 s.h.

Thus, the upper division requirements are:	
Junior-senior requirements for all departmental students.....	18 s.h.
Junior-senior curriculum concentration.....	18 s.h.
Electives in 100 level economics courses of at least one of which must be ECON 102, 132, 140, or 148.....	6 s.h.
Electives to complete 120 s.h. required for graduation.....	18 s.h.
Total junior-senior year requirements.....	60 s.h.

COMBINED BUSINESS ADMINISTRATION AND LAW PROGRAM

The Department of Business Administration offers a combined Business Administration-Law Cur-

riculum in which the student completes three years in the General Curriculum in Business Administration in the department and a fourth year of work in the Law School of the University of Maryland. Admission to the Law School is contingent upon meeting the applicable standards of that school. Individual students are responsible to secure from the Law School its current admission requirements. The student must complete all the courses required of students in the Department plus the courses normally required for the General Curriculum in Business Administration through the junior year, plus enough credits to equal a minimum of 90 semester hours. No business law course can be included in the 90 hours. The last year of college work before entering the Law School must be completed in residence at College Park. At least 30 hours of work must be in courses numbered 100 or above.

The Bachelor of Science degree from the College of Business and Public Administration is conferred upon students who complete the first year in the Law School with an average grade of "C" or better.

MASTER OF BUSINESS ADMINISTRATION

Candidates for the degree of Master of Business Administration and Doctor of Business Administration are accepted in accordance with the procedures and requirements for the Graduate School. (See the Graduate School Announcements.)

PROFESSOR AND DEPARTMENT HEAD: Taff.

PROFESSORS: Anderson, Dawson, Fisher, Hermanson, Miner and Wright.

ASSOCIATE PROFESSORS: Ashmen, Bender, Carroll, Daiker, Edelson, Greer, Haslem, Hille, Hynes, Lamone, Levine, Nach, Paine and Spivey.

ASSISTANT PROFESSORS: Falthzik, Gannon, Himes, Jolson, McNitt, Nickels, Olson, Speros, Thieblot, Widhelm, and Zabriskie.

LECTURERS: Hargrove, Hoshi, Keaton, Leete, Lynagh, and Moore.

INSTRUCTORS: Bedingfield, Broden, Brown, Budnick, Bulmash, Dalton, Dempsey, Dyer, English, Frey, Gritta, Harris, Horlick, Keiser, Kmetz, Longbrake, Mattheiss, Meyer, Muczyk, Neffinger, O'Neill, Rosen, Roy, Seganish, Shimp, Thomas, Van Daniker, Webb, and Wolff.

BSAD 10. BUSINESS ENTERPRISE. (3)

A survey course covering the internal and functional organization of a business enterprise, its organization and control.

BSAD 20, 21. PRINCIPLES OF ACCOUNTING. (3, 3)

Prerequisite, sophomore standing. The principles of accounting for business enterprise and the use of accounting data in making business decisions.

FOR GRADUATES AND ADVANCED UNDERGRADUATES

BSAD 100. OFFICE OPERATIONS AND MANAGEMENT. (3)

Deals with the principles of scientific management as they apply to the examination, improvement, installation, and operation of the most effective paperwork methods and systems that a given organization can use to achieve its objectives. Procedure flow analysis and form design for control of paperwork; process, work distribution, and layout charts, distribution of authority and responsibility for office activities are among the areas considered.

BSAD 101. ELECTRONIC DATA PROCESSING. (3)

Students enrolled in the Department of Business Administration curricula will register for ISM 101. For detailed information on prerequisites and description of the course, refer to ISM 101. The credits earned in ISM 101 may be included in the total credits earned in the area of concentration in business administration.

BSAD 102. ELECTRONIC DATA PROCESSING APPLICATIONS. (3)

Students enrolled in the Department of Business Administration curricula will register for ISM 102. For detailed information on prerequisites and description of the course, refer to ISM 102. The credits earned in ISM

102 may be included in the total credits earned in the area of concentration in business administration.

BSAD 103. INTRODUCTION TO SYSTEMS ANALYSIS. (3)

Students enrolled in the Department of Business Administration curricula will register for ISM 103. For detailed information on prerequisites and description of the course, refer to ISM 103. The credits earned in ISM 103 may be included in the total credits earned in the area of concentration in business administration.

BSAD 110, 111. INTERMEDIATE ACCOUNTING. (3, 3)

Prerequisite, BSAD 21. A comprehensive study of the theory and problems of valuation of assets, application of funds, corporation accounts and statements, and the interpretation of accounting statements.

BSAD 118, 119. UNDERGRADUATE ACCOUNTING SEMINAR. (3, 3)

Prerequisite, senior standing as an accounting major or consent of instructor. Enrollment limited to upper one-third of senior class. Seminar coverage of outstanding current non-text literature, current problems and case studies in accounting.

BSAD 120. ACCOUNTING SYSTEMS. (3)

Prerequisite, BSAD 20. A study of the factors involved in the design and installation of accounting systems: the organization, volume and types of transactions, charts of accounts, accounting manuals, the reporting system.

BSAD 121. COST ACCOUNTING. (3)

Prerequisite, BSAD 21. A study of the basic concepts of product costing and cost analysis for management planning and control. Emphasis is placed on the role of the accountant in organizational management, analysis of cost behavior, standard cost, budgeting, responsibility accounting and relevant costs for decision making.

BSAD 122. AUDITING THEORY AND PRACTICE. (3)

Prerequisite, BSAD 111. A study of the principles and problems of auditing and application of accounting principles to the preparation of audit working papers and reports.

BSAD 123. INCOME TAX ACCOUNTING. (3)

Prerequisite, BSAD 21. A study of the important provisions of the Federal Tax Laws, using illustrative examples, selected questions and problems, and the preparation of returns.

BSAD 124. ADVANCED ACCOUNTING. (3)

Prerequisite, BSAD 111. Advanced accounting theory to specialized problems in partnerships, ventures, consignments, installment sales, insurance, statement of affairs, receiver's accounts, realization and liquidation reports, and consolidation of parent and subsidiary accounts.

BSAD 125. C.P.A. PROBLEMS. (3)

Prerequisite, BSAD 111, or consent of instructor. A study of the nature, form and content of C.P.A. examinations by means of the preparation of solutions to, and an analysis of, a large sample of C.P.A. problems covering the various accounting fields.

BSAD 127. ADVANCED AUDITING THEORY AND PRACTICE. (3)

Prerequisite, BSAD 122. Advanced auditing theory and practice and report writing.

BSAD 128. ADVANCED COST ACCOUNTING. (2)

Prerequisite BSAD 121. A continuation of basic cost accounting with special emphasis on process costs, standard costs, joint costs, and by product cost.

BSAD 129. APPRENTICESHIP IN ACCOUNTING. (0)

Prerequisites, minimum of 20 semester hours in accounting and the consent of the accounting staff. A period of apprenticeship is provided with nationally known firms of certified public accountants from about January 15 to February 15, and for a semester after graduation.

BSAD 130. BUSINESS STATISTICS I. (3)

An introductory course discussing basic statistical concepts and various widely used statistical techniques, namely: ratios and percentages; the tabular and graphic presentation of statistical data; frequency distributions; measures of central tendency, variability, skewness and kurtosis; the binomial and normal probability distributions; tests of hypotheses concerning means and proportions; the estimation of means and proportions; two-variable linear correlation analysis.

BSAD 131. BUSINESS STATISTICS II. (3)

- Prerequisite, BSAD 130 or equivalent. A course complementing BSAD 130. The topics covered include: trend analysis in its simpler aspects; seasonal and cycle analysis; nonlinear two-variable correlation analysis; correlation analysis of grouped data; some reference to multiple correlation analysis; the chi-square test; analysis of variance; index numbers.
- BSAD 132. SAMPLE SURVEYS IN BUSINESS AND ECONOMICS. (3)**
Prerequisite, BSAD 130 or equivalent. A course surveying the uses of statistics in economic and business research. The emphasis of the discussion is directed toward "cross-section" analysis as distinct from "time-series" analysis (which is given detailed attention in BSAD 135). Topics covered include: research methodology, sampling techniques and design, data-collection methods, questionnaire preparation, interviewing procedures, the evaluation of survey results, and a review of selected case studies.
- BSAD 134. STATISTICAL QUALITY CONTROL. (3)**
Prerequisite, BSAD 130, or equivalent. A course surveying the uses of statistical principles in industry. Topics considered include: A brief review of basic statistical measures; a study of the hypergeometric, binomial, normal, and Poisson probability distributions; the sampling distributions of the mean, the standard deviation, and the range; the construction and operation of the various control charts in current use; the diagnostic significance of different findings; acceptance sampling on the basis of measurement data and on the basis of attribute data.
- BSAD 135. STATISTICAL ANALYSIS AND FORECASTING. (3)**
Prerequisite, BSAD 130 or equivalent. A course exploring the usefulness of statistical methods in economic prediction. Various forecasting techniques in current use are examined. Major topics receiving attention are the analysis of trends, the identification of seasonal patterns and cycles, and the measurement of economic relationships. The discussion goes beyond the points made in BSAD 131. Particularly the uses of multiple correlation analysis are examined in great detail. Some reference is also made to the predictive potentialities of so-called anticipations statistics. Throughout the course, due attention is given to the logical aspects of the forecasting problem as distinct from its statistical side.
- BSAD 136. OPERATIONS RESEARCH I. (3)**
Prerequisite, BSAD 130 or consent of instructor. The philosophy, methods and objectives of operations research. Basic methods are examined and their application to functional areas of business are covered. (This course is also listed as ISM 136 and may be taken for Information Systems Management credit.)
- BSAD 137. OPERATIONS RESEARCH II. (3)**
Prerequisite, BSAD 136 or permission of instructor. Advanced topics in Operations Research including decision theory, probability models and inventory models. Emphasis is on the mathematical formulation of business problems and implementation of model solutions.
- BSAD 138. LINEAR PROGRAMMING IN BUSINESS. (3)**
Prerequisite BSAD 136 or permission of instructor. Theory, formulation, interpretation, and application of the general linear, transportation, assignment, and integer programming models. Emphasis is on the application of these models to large-scale business problems.
- BSAD 140. BUSINESS FINANCE. (3)**
Prerequisite, BSAD 21. This course deals with principles and practices involved in the organization, financing, and rehabilitation of business enterprises; the various types of securities and their use in raising funds, apportioning income, risk, and control; intercorporate relations; and new developments. Emphasis on solution of problems of financial policy faced by management.
- BSAD 141. FINANCIAL MANAGEMENT. (3)**
Prerequisite, BSAD 140. Analysis and discussion of cases and readings relating to financial decisions of the firm. The application of finance concepts to the solution of financial problems is emphasized.
- BSAD 143. INVESTMENTS. (3)**
Prerequisite, BSAD 140. An introduction to financial investments. Topics include securities and securities markets; investment risks, returns, and constraints; portfolio policies; and institutional investment policies.
- BSAD 144. SECURITY ANALYSIS AND VALUATION. (3)**
Prerequisite, BSAD 143. Study and application of the concepts, methods, models, and empirical findings to the analysis, valuation, and selection of securities, especially common stock.
- BSAD 145. COMMERCIAL BANK MANAGEMENT. (3)**
Prerequisites, BSAD 140 and ECON 140. Analysis and discussion of cases and readings in commercial bank management. The loan function is emphasized; also the management of liquidity reserves, investments for income, and sources of funds. Bank objectives, functions, policies, organization, structure, services, and regulation are considered.
- BSAD 149. MARKETING PRINCIPLES AND ORGANIZATION. (3)**
Prerequisites, BSAD 130 and BSAD 149. A study of the work of the marketing division in a going organization. The work of developing organizations and procedures for the control of marketing activities is surveyed. The emphasis throughout the course is placed on the determination of policies, methods, and practices for the effective marketing of various forms of manufactured products.
- BSAD 151. ADVERTISING. (3)**
Prerequisite, BSAD 149. A study of the role of advertising in the American economy; the impact of advertising on our economic and social life, the methods and techniques currently applied by advertising practitioners, the role of the newspaper, magazine, and other media in the development of an advertising campaign, modern research methods to improve the effectiveness of advertising and the organization of the advertising business.
- BSAD 153. INDUSTRIAL MARKETING. (3)**
Prerequisite, BSAD 149. The industrial and business sector of the marketing system is considered rather than the household or ultimate consumer sector. Industrial products range from raw materials and supplies to the major equipment in a plant, business office, or institution. Topics include product planning and introduction, market analysis and forecasting, channels, pricing, field sales force management, advertising, marketing cost analysis, and government relations. Particular attention is given to industrial, business and institutional buying policies and practice and to the analysis of buyer behavior.
- BSAD 154. RETAIL MANAGEMENT. (3)**
Prerequisites, BSAD 20 and 149. Retail store organization, location, layout and store policy; pricing policies, price lines, brands, credit policies, records as a guide to buying; purchasing methods; supervision of selling; training and supervision of retail sales force; and administrative problems.
- BSAD 155. CONSUMER ANALYSIS. (3)**
Prerequisites, BSAD 149 and 150. Recommended that Psychology 001 and 021 be taken prior to this course. Considers the growing importance of the American consumer in the marketing system and the need to understand him. Topics include the foundation considerations underlying consumer behavior such as economic, social-psychological and cultural factors. Analysis of the consumer in marketing situations—as a buyer and user of products and services—and in relation to the various individual, social and marketing factors affecting his behavior. The influence of marketing communications is also considered.
- BSAD 156. MARKETING RESEARCH METHODS. (3)**
Prerequisites, BSAD 130 and BSAD 149. Recommended that BSAD 132 be taken prior to this course. This course is intended to develop skill in the use of scientific methods in the acquisition, analysis and interpretation of marketing data. It covers the specialized fields of marketing research, the planning of survey projects, sample design, tabulation procedure and report preparation.
- BSAD 157. INTERNATIONAL MARKETING. (3)**
Prerequisites BSAD 149 plus any other marketing course. A study of the marketing functions from the viewpoint of the international executive. In addition to the coverage of international marketing policies relating to product adaptation, data collection and analysis, channels of distribution, pricing, communications, and cost analysis, consideration is given to the cultural, legal, financial, and organizational aspects of international marketing.
- BSAD 158. PROMOTION MANAGEMENT. (3)**
Prerequisites, BSAD 149 and BSAD 151. This course is concerned with the way in which business firms use advertising, personal selling, sales promotion and other methods as part of their marketing program. The case study method is used to present problems taken from actual business practice. Cases studied illustrate problems in the use and coordination of demand stimulation methods as well as analysis and planning. Research, testing and statistical control of promotional activities are also considered.
- BSAD 160. PERSONNEL MANAGEMENT. (3)**
The basic course in personnel management includes manpower planning, recruitment, selection, development, com-

- pensation, and appraisal of employees. Explores the impact of scientific management and unionism on these functions.
- BSAD 161. PERSONNEL MANAGEMENT: ANALYSIS AND PROBLEMS. (3)**
Prerequisite, BSAD 160. Recommended, BSAD 130. Research findings, special readings, case analysis, simulation, and field investigations are used to develop a better understanding of personnel problems, alternative solutions and their practical ramifications.
- BSAD 162. ORGANIZATIONAL BEHAVIOR. (3)**
An examination of research and theory concerning the forces which contribute to the behavior of organizational members. Topics covered include: work group behavior, supervisory behavior, intergroup relations, employee goals and attitudes, communication problems, organizational change, and organizational goals and design. Prerequisite: BSAD 168.
- BSAD 163. LABOR RELATIONS. (3)**
A study of the development and methods of organized groups in industry with reference to the settlement of labor disputes. An economic and legal analysis of labor union and employer association activities, arbitration, mediation, and conciliation; collective bargaining, trade agreements, strikes, boycotts, lockouts, company unions, employee representation and injunctions.
- BSAD 164. LABOR LEGISLATION. (3)**
Case method analysis of the modern law of industrial relations. Cases include the decisions of administrative agencies, courts and arbitration tribunals.
- BSAD 165. ADVANCED PRODUCTION MANAGEMENT. (3)**
Prerequisite, BSAD 169. A study of typical problems encountered by the factory manager. The objective is to develop the ability to analyze and solve problems in management control of production and in the formulation of production policies. Among the topics covered are plant location, production planning and control, methods analysis and time study.
- BSAD 168. MANAGEMENT AND ORGANIZATION THEORY. (3)**
The development of management and organization theory, nature of the management process and function and its future development. The role of the manager as an organizer and director, the communication process, goals and responsibilities.
- BSAD 169. PRODUCTION MANAGEMENT. (3)**
Studies the operation of a manufacturing enterprise, concentrating on the economics of production. Introduces a grounding in analytical method early so that the broad problem areas of system design, operation, and control can be based upon the analytical method.
- BSAD 170. PRINCIPLES OF TRANSPORTATION. (3)**
Prerequisite, ECON 32 or 37. A general course covering the five fields of transportation, their development, service and regulation.
- BSAD 171. TRAFFIC AND PHYSICAL DISTRIBUTION MANAGEMENT. (3)**
Prerequisite, junior standing. Examines the management aspects of the business firm in moving their raw materials and finished goods, through traffic, warehousing, industrial packaging, materials handling, and inventory. A systematic examination of the trade-off possibilities and management alternatives to minimize cost of product flow and maximizing customer service is provided.
- BSAD 172. MOTOR TRANSPORTATION. (3)**
Prerequisite, BSAD 170. The development and scope of the motor carrier industry, different types of carriers, economics of motor transportation, services available, federal regulation, highway financing, allocation of cost to highway users, highway barriers.
- BSAD 173. WATER TRANSPORTATION. (3)**
Prerequisite, BSAD 170. Water carriers of all types, development and types of services, trade routes, inland waterways, company organization, the American Merchant Marine as a factor in national activity.
- BSAD 174. COMMERCIAL AIR TRANSPORTATION. (3)**
Prerequisite, BSAD 170. The air transportation system of the United States; airways, airports, airlines. Federal regulation of air transportation. Problems and services of commercial air transportation; economics, equipment, operations, financing, selling of passenger and cargo services. Air mail development and services.
- BSAD 175. ADVANCED TRANSPORTATION PROBLEMS. (3)**
Prerequisite, BSAD 170. A critical examination of current government transportation policy and proposed solutions. Urban and intercity managerial transport problems are also considered.
- BSAD 176. URBAN TRANSPORT AND URBAN DEVELOPMENT. (3)**
Prerequisite, ECON 32 or 37. An analysis of the role of urban transportation in present and future urban development. The interaction of transport pricing and service, urban planning, institutional restraints, and public land uses, is studied.
- BSAD 180. BUSINESS LAW. (3)**
Legal aspects of business relationships, contracts, negotiable instruments, agency partnerships, corporations, real personal property, and sales.
- BSAD 181. BUSINESS LAW. (3)**
Legal aspects of business relationships, contracts, negotiable instruments, agency, partnerships, corporations, real and personal property, and sales.
- BSAD 182. LEGAL ENVIRONMENT OF BUSINESS. (3)**
The course examines the principal ideas and men in law stressing those which are relevant for the modern business executive. Legal reasoning as it has evolved in this country will be one of the central topics of study. Several leading antitrust cases will be studied to illustrate vividly the reasoning process as well as the interplay of business, philosophy, and the various conceptions of the nature of law which give direction to the process. Examination of contemporary legal problems and proposed solutions, especially those most likely to affect the business community, are also covered.
- BSAD 184. PUBLIC UTILITIES. (3)**
Prerequisites, ECON 32 or 37. Using the regulated industries as specific examples, attention is focused on broad and general problems in such diverse fields as constitutional law, administrative law, public administration, government control of business, advanced economic theory, accounting, valuation and depreciation, taxation, finance, engineering and management.
- BSAD 187. HONORS STUDY. (3)**
First Semester of the senior year
Prerequisite: Candidacy for Honors in Business Administration. The course is designed for honors students who have elected to conduct intensive study (independent or group). The student will work under the direct guidance of a faculty advisor and the Chairman of the Honors Committee. They shall determine that the area of study is of a scope and intensity deserving of a candidate's attention. Formal written and/or oral reports on the study may be required by the faculty advisor and/or Chairman of the Honors Program. Group meetings of the candidates may be called at the discretion of the faculty advisors and/or Chairman of the Honors Committee.
- BSAD 188. HONORS STUDY. (3)**
Second Semester of the senior year
Prerequisite: BSAD 187, and continued candidacy for Honors in Business Administration. The student shall continue and complete the research initiated in BSAD 187. Additional reports may be required at the discretion of the faculty advisor and Honors Program Chairman. Group meetings may be held.
- BSAD 189. BUSINESS AND GOVERNMENT. (3)**
Prerequisites, ECON 32 or 37. A study of the role of government in modern economic life. Social control of business as a remedy for the abuses of business enterprise arising from the decline of competition. Criteria of limitations on government regulation of private enterprise.
- BSAD 190. RISK MANAGEMENT. (3)**
Prerequisite, MATH II. Designed to acquaint the student with the nature and significance of risk in business enterprise. The problems relating to both pure and speculative risk in business are considered; and methods of solution involving risk assumption, transfer, reduction, and the use of insurance are analyzed as aids in management decision making.
- BSAD 191. PRINCIPLES OF RISK AND INSURANCE. (3)**
Prerequisite, MATH II. Emphasizes the use of insurance in resolving problems involving personal and business risks. Life, accident and health, fire and casualty, automobile, and marine insurance are examined as means of dealing with these risks. The theory and legal aspects of insurance are considered, as well as the quantitative measurement of risks.
- BSAD 192. INTRODUCTION TO INTERNATIONAL BUSINESS MANAGEMENT. (3)**
Prerequisite, ECON 32 or 37. A study of the domestic and foreign environmental factors affecting the international operations of U.S. business firms. The course also covers the administrative aspects of international marketing, finance, and management.

BSAD 195. REAL ESTATE PRINCIPLES. (3)
Prerequisite, ECON 32 or 37. This course covers the nature and uses of real estate, real estate as a business, basic principles, construction problems and home ownership, city planning, and public control and ownership of real estate.

BSAD 196. URBAN LAND MANAGEMENT. (3)
Covers the managerial and decision making aspects of urban land and property. Included are such subjects as land use and valuation matters.

BSAD 197. UNDERGRADUATE SEMINAR IN PERSONNEL MANAGEMENT. (3)
Prerequisite—consent of instructor. This course is open only to the top 1/3 of undergraduate majors in personnel and labor relations and is offered during the Fall semester of each year. Highlights major developments theory. Guest lecturers make periodic presentations.

BSAD 199. BUSINESS POLICIES. (3)
Prerequisite, BSAD 140, 149, 168 and senior standing. A case study course in which the aim is to have the student apply both what he has learned of general management principles and their specialized functional applications of the overall management function in the enterprise.

FOR GRADUATES

See the Graduate School Catalog for course descriptions.

BSAD 210. ADVANCED ACCOUNTING THEORY I. (3)
BSAD 211. ADVANCED ACCOUNTING THEORY II. (3)
BSAD 212. ACCOUNTING IN REGULATED INDUSTRIES. (3)
BSAD 213. THE IMPACT OF TAXATION ON BUSINESS DECISIONS. (3)

BSAD 214. CURRENT PROBLEMS OF PROFESSIONAL PRACTICE. (3)

BSAD 220. MANAGERIAL ACCOUNTING I. (3)
BSAD 221. MANAGERIAL ACCOUNTING II. (3)
BSAD 230. STATISTICAL ANALYSIS AND BUSINESS DECISIONS. (3)

BSAD 231. THEORY OF SURVEY DESIGN. (3)
BSAD 234. MANAGERIAL ANALYSIS I. (3)

BSAD 235. MANAGEMENT SCIENCE-DETERMINISTIC MODELS. (3)

BSAD 236. MANAGEMENT SCIENCE-PROBABILISTIC MODELS. (3)

BSAD 237. MANAGEMENT SIMULATION. (3)
BSAD 238. OPTIMIZATION METHODS FOR MANAGERIAL ANALYSIS. (3)

BSAD 240. FINANCIAL ADMINISTRATION. (3)
BSAD 241. WORKING CAPITAL MANAGEMENT. (3)

BSAD 242. LONG-TERM CAPITAL MANAGEMENT. (3)
BSAD 243. INVESTMENT ANALYSIS. (3)

BSAD 244. PORTFOLIO MANAGEMENT. (3)
BSAD 245. FINANCIAL INSTITUTIONS. (3)

BSAD 247. INTERNATIONAL FINANCIAL ADMINISTRATION. (3)

BSAD 250. MARKETING ADMINISTRATION. (3)

BSAD 251. MARKETING COMMUNICATIONS MANAGEMENT. (3)

BSAD 252. MARKETING RESEARCH METHODS. (3)
BSAD 254. MARKETING CHANNELS ANALYSIS. (3)

BSAD 256. QUANTITATIVE METHODS IN MARKETING: DEMAND AND COST ANALYSIS. (3)

BSAD 257. THEORY IN MARKETING. (3)
BSAD 258. INTERNATIONAL MARKETING. (3)

BSAD 260. MANAGEMENT PLANNING AND CONTROL SYSTEMS. (3)

BSAD 261. COLLECTIVE BARGAINING-CURRENT PROBLEMS AND ISSUES. (3)

BSAD 262. ADMINISTRATION OF LABOR RELATIONS. (3)
BSAD 263. COMPARATIVE THEORIES OF ORGANIZATION. (3)

BSAD 264. BEHAVIORAL FACTORS IN MANAGEMENT. (3)
BSAD 266. PERSONNEL MANAGEMENT: MANPOWER PROCUREMENT AND DEVELOPMENT. (3)

BSAD 267. PERSONNEL MANAGEMENT: MANPOWER COMPENSATION AND EVALUATION. (3)

BSAD 269. APPLICATION OF BEHAVIORAL SCIENCE TO BUSINESS. (3)

BSAD 270. TRANSPORTATION THEORY AND ANALYSIS. (3)

BSAD 271. TRANSPORT AND PUBLIC POLICY. (3)
BSAD 272. MANAGEMENT OF PHYSICAL DISTRIBUTION. (3)

BSAD 273. TRANSPORTATION STRATEGIES. (3)
BSAD 274. BUSINESS LOGISTICS. (3)

BSAD 275. TRANSPORTATION SCIENCE. (3)
BSAD 281. PRIVATE ENTERPRISE AND PUBLIC POLICY. (3)

BSAD 282. PRODUCT, PRODUCTION AND PRICING POLICY. (3)

BSAD 283. MANAGEMENT POLICY FORMULATION. (3)
BSAD 284. POLICY ISSUES IN PUBLIC UTILITIES. (3)

BSAD 285. BUSINESS RESEARCH METHODOLOGY. (3)
BSAD 287. INTERNATIONAL BUSINESS ADMINISTRATION. (3)

BSAD 288. MANAGEMENT OF THE MULTINATIONAL FIRM. (3)

BSAD 289. DEVELOPMENT AND TRENDS IN PRODUCTION MANAGEMENT. (3)

BSAD 298. INDEPENDENT STUDY IN BUSINESS ADMINISTRATION. (1-9)

BSAD 399. THESIS. (1-12)

ECONOMICS

The program of studies in economics is designed to meet the needs of students who wish to concentrate either on a major or minor scale in this division of the social sciences. Students who expect to enroll in the professional schools and those who are planning to enter the fields of business, public administration, foreign service, or social service administration will find courses in economics of considerable value to them in their later work. A student of economics should choose courses to meet the requirements for his major objective. If he expects to pursue graduate study, he should consult Graduate School Announcements for the general requirements for advanced degrees.

REQUIREMENTS FOR THE ECONOMICS MAJOR

In addition to the University requirements in General Education the student majoring in economics is required to complete a minimum of 36 semester hours in economics with an average grade of not less than "C." Required courses are ECON 4, 31, 32, 102, and 132, and BSAD 130 (Statistics). Economics 111 may be taken in lieu of BSAD 130 by those with a strong background and interest in mathematics. A student will normally have earned nine semester-hour credit in the lower division courses in economics prior to beginning advanced work in the junior year. These lower division courses must be completed with an average grade of not less than "C."

Economics majors are expected to take ECON 102 prior to taking ECON 140 or 148 and Econ. 132 prior to taking ECON 142, 144, 160 or 170. ECON 102 and 132 will provide the theoretical foundation for "sections recommended for the economics major." Special sections for economics majors may be offered in ECON 140, 142, 148 and 160.

Other courses in economics to meet the requirements of the major are to be selected with the aid of a faculty adviser. Business Administration courses which may count as economics credit are BSAD 130, 131, 132, 134, 135, and 184.

Economics majors enrolled in the College of Arts and Sciences must, of course, fulfill all of the specific requirements of that College; these include, for example, work in a foreign language. All economics majors must take six semester hours of mathematics.

Economics majors enrolled in the College of Business and Public Administration may elect to

take a foreign language, or in lieu of foreign language, may take BSAD 10 and GEOG 15.

An economics honors program is open to economics majors entering their junior year. Students must have an academic average of at least 3.0 to be eligible for admittance to this program.

SUGGESTED STUDY PROGRAM FOR ECONOMICS MAJOR

Freshman Year	Hours
ENGL 1—Composition and American Literature ...	3
MATH 10, 11 or 19, 20	6-8
ECON 4—Economic Developments	3
Social Science Electives	6
Fine Arts or Philosophy Elective	6
Foreign Language or BSAD 10 and Elective	6
HLTH 5—Science and Theory of Health (men and women)	2
Physical Activities (men and women)	2
Free Elective	3
Total	34-36
Sophomore Year	Hours
ENGL 3, 4—Composition & World Literature	6
ECON 31, 32—Principles of Economics	6
Foreign Language or GEOG 15 and elective	6
Natural Science (one biological and one physical)	7-8
History	6
Total	31-32
Junior and Senior Years	Hours
ECON 102—National Income Analysis	3
ECON 132—Intermediate Price Theory	3
BSAD 130—Business Statistics I	3
Electives in Economics and other subjects	51
Total	60

PROFESSOR AND DEPARTMENT CHAIRMAN: Dillard.
PROFESSORS: Almon, Cumberland, Gruchy, O'Connell, Schultze, Ulmer, and Wonnacott.
ASSOCIATE PROFESSORS: Aaron, Bennett, Bergmann, Dodge, Dorsey, Harris, Knight, McGuire, Meyer, Olson, and Weinstein.
ASSISTANT PROFESSORS: Adams, Atkinson, Betancourt, Boorman, Clague, Cox, Day, Greer, Hexter, MacRae, Meer, Qualls, Singer, and Strober.
INSTRUCTORS: Fitzmaurice, Foster, Pearson, Rathbun, and Kawahito.
LECTURERS: Amezegar, Clinton, Denny, Green, Harrison, Hopkins, Karlik, Lady, Layher, McLoone, Measday, Mills, Moore, Murphy, Pierce, Schiller, Schink, Shipley, Snow, Taylor, Tobin, and Whitman.

- ECON 4. ECONOMIC DEVELOPMENTS. (3)**
 First and second semesters. Freshman requirement in business administration curriculums. An introduction to modern economic institutions—their origins, development, and present status. Commercial revolution, industrial revolution, and age of mass production. Emphasis on developments in England, Western Europe and the United States. (Snow, Staff)
- ECON 31, 32. PRINCIPLES OF ECONOMICS. (3, 3)**
 First and second semesters. Prerequisite, sophomore standing. Required in the business administration curriculums. In ECON 31 basic concepts, the monetary system, the national accounts, national income analysis, and business cycles are introduced. In ECON 32 emphasis is placed on price theory, distribution, international trade, and economic development. (Dorsey, Moer, Schultze, Staff)
- ECON 37 . FUNDAMENTALS OF ECONOMICS. (3)**
 First and second semesters. Not open to students who have credit in ECON 31 and 31. Not open to freshmen or to B.P.A. students. A survey of the general principles underlying economic activity; analysis of leading economic problems in the modern world. This is the basic course in economics for students who are unable to take the more complete course provided in ECON 31 and 32. (Ulmer, Staff)

FOR GRADUATES AND ADVANCED UNDERGRADUATES

ECON 102. NATIONAL INCOME ANALYSIS. (3)
 First and second semesters. Prerequisite, Econ. 32. An analysis of national income accounts and the level of national income and employment. (Aaron, Layher, Moore, Shipley)

- ECON 103. AMERICAN ECONOMIC DEVELOPMENT. (3)**
 First and second semesters. Prerequisite, Econ. 32 or 37. Long-term trends in the American economy and analysis of the sources of output growth. Technological changes and the diffusion of new technologies. These subjects are discussed in the context of theoretical models. (Shipley)
- ECON 105. INTRODUCTION TO ECONOMIC DEVELOPMENT OF UNDERDEVELOPED AREAS. (3)**
 First and second semesters. Prerequisite, Econ. 32 or 37. An analysis of the economic and social characteristics of underdeveloped areas. Recent theories of economic development, obstacles to development; policies and planning for development. (Adams, Betancourt, Harrison)
- ECON 106. ECONOMIC DEVELOPMENT OF SELECTED AREAS. (3)**
 Prerequisite, Econ. 105. Institutional characteristics of a specific area are discussed and alternative strategies and policies for development are analyzed.
 ECON 106A—Latin America. (Bennett, Betancourt)
 ECON 106B—Asia (Adams)
 ECON 106C—Africa
- ECON 111. QUANTITATIVE METHODS IN ECONOMICS. (3)**
 First and second semesters. Prerequisites, Econ. 102, 132. Economic theory as it relates to quantitative methods. Theory of statistical inference. (Boorman, MacRae)
- ECON 112. QUANTITATIVE METHODS IN ECONOMICS II. (3)**
 Second semester. Prerequisites, ECON 102, 132, 111, and ECON 130, or permission of instructor. Formulation, estimation and testing of economic models; theory of identification in linear models, multiple regression and analysis of variance; single-equation problems in econometric work and econometric methods in estimation of multi-equation structures. Examples of current research employing econometric methods. (Boorman)
- ECON 120. INTRODUCTION TO REGIONAL AND URBAN ECONOMICS. (3)**
 First semester. Prerequisite, Econ. 102, or consent of instructor. Study of the theories, problems, and policies of urban and regional economic development. (Harris)
- ECON 130. MATHEMATICAL ECONOMICS. (3)**
 First semester. Prerequisites, Econ. 102 and 132 and one year of college mathematics. A course designed to enable economics majors to understand the simpler aspects of mathematical economics. Those parts of the calculus and algebra required for economic analysis will be presented. (MacRae, Hexter)
- ECON 131. COMPARATIVE ECONOMIC SYSTEMS. (3)**
 First and second semesters. Prerequisites, ECON 32 or 37. An investigation of the theory and practice of various types of economic systems. An examination and evaluation of the capitalistic system followed by an analysis of alternative types of economic systems such as fascism, socialism, and communism. (Amezegar, Denny, Dodge, Gruchy)
- ECON 132. INTERMEDIATE PRICE THEORY. (3)**
 First and second semesters. Prerequisite, ECON 32. Required for economics majors. An analysis of price and distribution theory with special attention to recent developments in the theory of imperfect competition. (Day, Harrison, O'Connell, Lady)
- ECON 134. CONTEMPORARY ECONOMIC THOUGHT. (3)**
 Prerequisites, ECON 32 and senior standing. Graduate students should take ECON 232. A survey of recent trends in American, English, and Continental economic thought with special attention to the work of such economists as W. C. Mitchell, J. R. Commons, T. Veblen, W. Sombart, J. A. Hobson and other contributors to the development of economic thought since 1900. (Gruchy)
- ECON 137. THE ECONOMICS OF NATIONAL PLANNING. (3)**
 Prerequisite, Econ. 32 or 37. An analysis of the principles and practice of economic planning with special reference to the planning problems of western European countries and the United States. (Gruchy)
- ECON 138. ECONOMICS OF THE SOVIET UNION. (3)**
 First and second semesters. Prerequisite, ECON 32 or 37. An analysis of the organization, operating principles and performance of the Soviet economy with attention to the historical and ideological background, planning, resources, industry, agriculture, domestic and foreign trade, finance, labor, and the structure and growth of national income. (Dodge)
- ECON 140. MONEY AND BANKING. (3)**
 First and second semesters. Prerequisite, ECON 32.

- Relation of money and credit to economic activity and prices; impact of public policy in financial markets and in markets for goods and services; policies, structure, and functions of the Federal Reserve System; organization, operation, and functions of the commercial banking system, as related particularly to questions of economic stability and public policy.
(Meyer, Boorman, Bennett)
- ECON 141. THEORY OF MONEY, PRICES AND ECONOMIC ACTIVITY. (3)**
Second semester. Prerequisite, ECON 140. A theoretical treatment of the influence of money and financial markets on economic activity and prices, and of the effects of monetary policy on the markets for goods and services; the role of money in the classical and Keynesian macro-systems; topics of theoretical interest in monetary policy formation and implementation.
(Meyer, Boorman)
- ECON 142. INTRODUCTION TO PUBLIC FINANCE. (3)**
First and second semesters. Prerequisite, Econ. 31 and 32 or 32 and 37. A study of the role of federal, state, and local governments in mobilizing resources to meet public wants; principles and policies of taxation, debt management, and government expenditures and their effects on resource allocation, stabilization of income and prices, income distribution and economic growth.
(Meer, McLoone, Shipley, Hinrichs)
- ECON 143. THEORY OF PUBLIC FINANCE. (3)**
Second semester. Prerequisite, Econ. 142 and 102 or consent of instructor. An economic analysis of the theory and practice of public finance including taxation, debt management, expenditures, and fiscal policy.
(Aron, Singer)
- ECON 144. STATE AND LOCAL PUBLIC FINANCE. (3)**
Prerequisite, ECON 32 or 37. Principles and problems of governmental finance with special reference to state and local jurisdictions. Topics to be covered include taxation, expenditures, and intergovernmental fiscal relations.
(Whitman)
- ECON 147. BUSINESS CYCLES. (3)**
First semester. Prerequisite, ECON 140. A study of the causes of depressions and unemployment, cyclical and secular instability, theories of business cycles, and the problem of controlling economic instability.
(Almon)
- ECON 148. INTERNATIONAL ECONOMICS. (3)**
First and second semesters. Prerequisite, ECON 32. A descriptive and theoretical analysis of international trade; balance of payments accounts; the mechanism of international economic adjustment; comparative costs; economics of customs unions.
(Wonnacott, Clague, Moore, Atkinson, Layher)
- ECON 149. INTERNATIONAL ECONOMIC POLICIES. (3)**
First and second semesters. Prerequisite, Econ. 148, 102, and 132. Contemporary balance of payments problems; the international liquidity controversy; investment, trade and economic development; evaluation of arguments for protection.
(Atkinson, Moore)
- ECON 160. LABOR ECONOMICS. (3)**
First and second semesters. Prerequisite, ECON 31 and 32 or 37 and 32. A descriptive and theoretical analysis of international trade; balance of payment accounts; the mechanism of international economic adjustment; comparative costs; economics of custom unions.
(Knight, Weinstein)
- ECON 161. PROBLEMS IN LABOR ECONOMICS. (3)**
Second semester. Prerequisite, Econ. 160. A detailed examination of current problems in labor economics including: labor market and manpower problems, unemployment compensation and social security, wage theories, and productivity analysis.
(Knight, Weinstein)
- ECON 165. ECONOMICS OF POVERTY AND DISCRIMINATION. (3)**
Prerequisites: ECON 32 or 37. Topics include the causes of the persistence of low income groups; the relation of poverty to technological change, to economic growth, and to education and training; economic motivations for discrimination; the economic results of discrimination; proposed remedies for poverty and discrimination.
(Bergmann)
- ECON 170. INDUSTRIAL ORGANIZATION. (3)**
Prerequisite, ECON 32 or 37. Changing structure of the American economy; price policies in different industrial classifications of monopoly and competition in relation to problems of public policy.
(Qualls, Greer, Hexter)
- ECON 171. ECONOMICS OF AMERICAN INDUSTRIES. (3)**
First and second semesters. Prerequisite, ECON 32 or
37. A study of the technology, economics and geography of representative American industries.
(Measday, Greer)
- ECON 196, 197. HONORS SEMINAR. (3,3)**
First and second semesters. Normally taken in the junior year. Prerequisite, candidacy for honors in Economics. Selected topics are investigated, and written reports are submitted.
(Knight)
- ECON 198. INDEPENDENT HONORS STUDY. (3)**
First semester. Normally taken in the senior year. Prerequisites, Economics 196, 197 and candidacy for honors in Economics. Integrated reading under staff direction, leading to the preparation of a thesis in Economics 199.
(Staff)
- ECON 199. HONORS THESIS. (3)**
Second semester. Prerequisites, Economics 198 and candidacy for honors in Economics. General supervision will be provided through assembled meetings with the professor in charge of the course.
(Staff)
- FOR GRADUATES**
See the Graduate School Catalog for course descriptions.
- ECON 200. MICRO-ECONOMIC ANALYSIS. (3)**
(Almon, Ulmer, Pierce)
- ECON 201. ADVANCED MICRO-ECONOMIC ANALYSIS. (3)**
(Almon, Ulmer)
- ECON 202. MACRO-ECONOMIC ANALYSIS. (3)**
(Aron, Bergmann, Pierce)
- ECON 203. SEMINAR IN AMERICAN ECONOMIC DEVELOPMENT. (3)**
- ECON 204. ORIGINS AND DEVELOPMENTS OF CAPITALISM. (3)**
(Olson)
- ECON 205. ECONOMIC DEVELOPMENT OF UNDERDEVELOPED AREAS. (3)**
(Bennett)
- ECON 206. SEMINAR IN ECONOMIC DEVELOPMENT. (3)**
(Bennett, Adams)
- ECON 207. MONEY AND FINANCE IN ECONOMIC DEVELOPMENT. (3)**
(Bennett, Hinrichs)
- ECON 209. WELFARE ECONOMICS. (3)**
(McGuire, Olson)
- ECON 211. QUANTITATIVE ECONOMICS I. (3)**
(Bergmann, Green)
- ECON 212. QUANTITATIVE ECONOMICS II. (3)**
(Bergmann, Green)
- ECON 214. ADVANCED MATHEMATICAL ECONOMICS. (3)**
(Almon)
- ECON 215. SEMINAR IN MATHEMATICAL ECONOMICS. (3)**
(Almon)
- ECON 217. ECONOMETRICS I. (3)**
(Hexter)
- ECON 218. SEMINAR IN QUANTITATIVE ECONOMICS. (3)**
(Hexter)
- ECON 220. ADVANCED REGIONAL AND URBAN ECONOMICS. (3)**
(Cumberland)
- ECON 221. SEMINAR IN REGIONAL AND URBAN ECONOMICS. (3)**
(Harris)
- ECON 230. HISTORY OF ECONOMIC THOUGHT. (3)**
(Dillard)
- ECON 231. ECONOMIC THEORY IN THE NINETEENTH CENTURY. (3)**
(Dillard)
- ECON 232, 233. SEMINAR IN INSTITUTIONAL ECONOMIC THEORY. (3, 3)**
(Gruchy)
- ECON 234. ECONOMIC GROWTH IN MATURE ECONOMIES. (3)**
(Gruchy)
- ECON 235. ADVANCED INTERNATIONAL ECONOMIC RELATIONS. (3)**
(Wonnacott, Clague)
- ECON 236. SEMINAR IN INTERNATIONAL ECONOMIC RELATIONS. (3)**
(Wonnacott, Clague)
- ECON 237. SELECTED TOPICS IN ECONOMICS. (3)**
- ECON 238. SEMINAR IN ECONOMIC DEVELOPMENT OF THE SOVIET UNION. (3)**
(Dodge)
- ECON 240. MONETARY THEORY AND POLICY. (3)**
(Meyer)
- ECON 241. SEMINAR IN MONETARY THEORY AND POLICY. (3)**
(Meyer)
- ECON 242. ADVANCED THEORY OF PUBLIC FINANCE. (3)**
(Schultze)
- ECON 243. SEMINAR IN PUBLIC FINANCE. (3)**
(Aron)
- ECON 245. CASE STUDIES IN GOVERNMENT RESOURCE ALLOCATION. (3)**
(McGuire, Singer)
- ECON 246. PUBLIC SECTOR WORKSHOP. (3)**
(McGuire, Singer)

- ECON 247. ECONOMIC GROWTH AND INSTABILITY. (3)
 ECON 248. THE ECONOMICS OF TECHNICAL CHANGE. (3)
 ECON 260. SEMINAR IN LABOR ECONOMICS. (3)
 (Knight, Weinstein)
 ECON 261. SELECTED TOPICS IN LABOR ECONOMICS. (3)
 (Knight, Weinstein)
 ECON 265. SEMINAR IN THE ECONOMICS OF POVERTY AND
 DISCRIMINATION. (3) (Bergmann)
 ECON 266. SEMINAR IN THE ECONOMICS OF HUMAN RE-
 SOURCES. (3) (McLoone)
 ECON 270. ADVANCED INDUSTRIAL ORGANIZATION. (3)
 (Qualls, Greer)
 ECON 271. INDUSTRIAL ORGANIZATION AND PUBLIC POLI-
 CY. (3) (Qualls, Greer)
 ECON 399. MASTER'S THESIS RESEARCH.
 ECON 499. DOCTORAL RESEARCH.

Within any of the general major programs it is possible for the student to adjust his program to fit his particular individual interests, for the major requirement in both BPA and A & S consists of a basic core of prescribed courses and a number of electives selected by the student in consultation with a departmental advisor. The major totals 33 semester hours.

The required courses of the geography core are:

1	Geography Core (Geog. 10, 11, 15, 109)	12 hrs
2	Field Study (Selected from Geog. 171a, b, c, d, or Geog. 170)	3 hrs
3	A regional course	3 hrs
4	Elective systematic and technique courses	15 hrs
	Total	33 hrs

The Geography Core—The following four courses form the minimum essential base upon which advanced work in geography can be built:

Geog. 10—Introduction to Physical Geography	3 hrs
Geog. 11—Introduction to Cultural Geography	3 hrs
Geog. 15—Introduction to Economic Geography	3 hrs
Geog. 109—Introduction to Research and Writing in Geography	4 hrs

The three lower division courses are to be completed prior to Geog. 109 and all other upper division courses. Geog. 10, 11 and 15 may be taken in any order and a student may register for more than one in any semester. Geog. 109 is specifically designed as a prologue to upper division work and should be taken the first semester of the junior year. A reasonable load of other upper division work in geography may be taken concurrently with Geog. 109.

The Field Study Requirement—The field study requirement may be completed in either of two ways, depending on which is available in the schedule: (1) by taking Geography 170—Local Field Course, 3 hrs. or (2) by taking three out of four of the following one-hour field study courses each stressing a different aspect of geographic field work: Geog. 171a—Field Study: Physical Geography; Geog. 171b—Field Study: Rural Areas; Geog. 171c—Field Study: Urban Geography; Field Study: Field Techniques. Normally two of the different one-hour courses will be offered each semester, and the student should arrange to take them as is convenient during the junior and senior years.

Introduction to Geography—Geography 1: Introduction to Geography is a general education course 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. It provides a general overview of the field rather than of a single specialized subdivision.

AREAS OF SPECIALIZATION

Although the major program is flexible and can be designed to fit any individual student's own interest, several specializations attract numbers of students. They are:

Urban Geography and Regional Development—Provides preparation for careers in planning and teaching. Majors electing this specialty take departmental courses in urban geography, industrial location, transportation, and economic geography among others and supporting courses in urban sociology, urban economics, and urban transportation outside the department.

Physical Geography—This area of interest calls for courses in geomorphology, climatology, and resources and supporting courses in geology, agronomy, fluid mechanics, and botany.

GEOGRAPHY

Geography studies the spatial patterns and interrelations of natural, cultural, and socio-economic phenomena on the earth's surface. The field thus embraces aspects of both the physical and the social sciences, which are applied in the analysis of patterns of distribution of individual phenomena, to the study of complex interrelations of phenomena found in a given region, and to the synthesis of geographic regions. A geographer should, therefore, acquire background knowledge in certain aspects of the physical as well as the social sciences.

Field work and map analysis have been the basic tools of research for the geographer. In recent years these have been augmented by the use of techniques of air photo interpretation and presently by the development of methods of interpreting data obtained from the remote sensing devices of space satellites. Modern geography also is making increasing application of quantitative methods, including the use of statistics and systems analysis, so that mathematical training is becoming increasingly important for a successful career in geography.

Today geographers are employed in a wide range of positions. Geographers in the federal government work in the Departments of State, Interior, Defense, Agriculture, Housing and Urban Affairs, Health, Education, and Welfare, and are on the staffs of the legislative research branch, the Library of Congress and the National Archives. At the state and local government level there is an increasing demand for geographers in planning positions. And in recent years more and more geographers have found employment in private industry working on problems of industrial and commercial location and market analysis. Teaching at all levels from elementary school through graduate work continues to employ more geographers each year. Some have found geography to be an excellent background for careers in the military, in journalism, and general business; others have simply found the broad perspective of geography an excellent base for a general education. Most professional positions in geography require graduate training.

REQUIREMENT FOR AN UNDERGRADUATE MAJOR

Because geography draws students with such a variety of career and education aims the Department has established major programs in both the College of Business and Public Administration and in Arts and Sciences. Moreover, students in the College of Education and the Department of Secondary Education can specialize in geography as their content field.

Cartography—Prepares students for careers in map design and interpretation and in photo analysis. The department offers various courses in map drafting, cartographic theory, map evaluation, and map and photo interpretation and students can take supporting courses in art, civil engineering.

Cultural Geography—Of interest to students particularly concerned with the geographic aspects of population, politics, and other social and cultural phenomena, and in historical geography. In addition to departmental course offerings this specialization depends on work in sociology, anthropology, government and politics, history and economics.

For further information on any of these areas of interest the student should contact a departmental advisor.

Geography majors in the College of Arts and Sciences must take 12 hours of foreign language, unless qualifying for fewer hours, but majors in BPA have the option of substituting at least 12 hours in courses developing competence in quantitative methods, to the extent that these courses have not been taken in the General Education Program.

Alternative quantitative method sequences:

- For a student who has taken MATH 010, the sequence can be MATH 011, 014 and 015 and BSAD 130 or any other suitable statistics course approved by the advisor. The 12 hours can also be satisfied by taking only MATH 011 and 014 and then BSAD 130 and 131 but no other combination with other statistics courses is allowed in this case.
- A student who has taken MATH 018 follows the sequence of MATH 019, 020 and 021 to complete the 12 hours. As these are four credit courses the student could not substitute MATH 021 with a three credit statistics course unless he secures special permission for his specific situation.

MATH (Systematic and Techniques courses)	6	
Supporting courses and electives	21-18	
Alternative to foreign language (BSAD 130 or MATH 21)		3-4
Senior Year		Hours
GEQG (Systematic Techniques courses, including 3 hours of field techniques)	12 (minimum)	
Supporting courses and electives	18	
		30
Freshman Year		Hours
GEQG 1—Introduction to Geography (if needed, see description of course)		3
GEQG 10—Introduction to Physical Geography		3
BOTN 1—General Botany		4
GEOL 1—Geology		3
HISTORY—Towards general education requirements		3
ENGLISH 1—Composition		3
MATH 3 or 10—Fundamentals of Mathematics or Introduction to Mathematics		4-3
HLTH 5—Health Education		2
Physical Activities (Men and Women)		2
Foreign Language		6
		33-32

Sophomore Year		Hours
GEQG 11—Introduction to Cultural Geography		3
GEQG 15—Introduction to Economic Geography		3
HISTORY—Towards general education requirement		3
ENGLISH 3, 4—World Literature		6
PHILOSOPHY OR FINE ARTS—Towards general education requirements		3
Two Social Sciences—(Towards general education requirements)		6
Foreign Language		3
SPCH 1—Public Speaking		3
		33

Junior Year		Hours
GEQG 109—Introduction to Research and Writing in Geography		3
GEQG (A Regional Course)		3
GEQG (Systematic and Techniques Courses)		6
Supporting courses and electives		21
(In this group care must be taken to complete the Arts and Sciences requirement of 12 hours in Natural Science and Mathematics)		

Senior Year		Hours
GEQG (Systematic and Techniques courses, including hours of field techniques)	12 (minimum)	
Supporting courses and electives	18	
		30

SUGGESTED STUDY PROGRAM FOR GEOGRAPHY MAJORS IN THE COLLEGE OF BUSINESS AND PUBLIC ADMINISTRATION

Freshman Year		Hours
GEQG 1—Introduction to Geography (if needed see description of course)		3
GEQG 10—Introduction to Physical Geography		3
BOTN 1—General Botany		4
GEOL 1—Geography		3
HISTORY—Towards general education requirement		3
ENGLISH—Composition		3
PHILOSOPHY OR FINE ARTS—Towards general education requirement		3
MATH 10 or 18—Towards general education requirement		3
HLTH 5—Health Education		2
Physical Activities—(Men and Women)		2
Foreign Language		6
Alternative to foreign language (MATH 11 or 19)		3-4
	35	32/33

Sophomore Year		Hours
GEQG 11—Introduction to Cultural Geography		3
GEQG 15—Introduction to Economic Geography		3
HISTORY—Towards general education requirement		3
ENGLISH 3, 4—World Literature		6
Two Social Sciences—Towards general education requirements		6
One elective—(depending on area of specialization)		3
Foreign Language		6
Alternative to foreign language (MATH 14, 15 or 20)		6-4
	33	33/31

SUGGESTED STUDY PROGRAM FOR GEOGRAPHY MAJORS IN THE COLLEGE OF ARTS AND SCIENCES

Junior Year		Hours
GEQG 109—Introduction to Research and Writing in Geography		3
GEQG (A Regional Course)		3

GEOGRAPHY MINOR AND SECONDARY EDUCATION GEOGRAPHY SPECIALIZATION

COLLEGE OF EDUCATION MAJORS

Secondary Education Majors with a concentration in geography are required to take 27 hours in the content field. Geography 10, 11, 15 and 199 are required courses. The remaining 15 hours of the program consists of 6 hours of regional geography and 9 hours of upper-division systematic courses. For majors in Elementary Education and others needing a geography course for teaching certification Geography 1 is the required course.

Geography minors should take at least Geog. 10, 11, and 15 in the Geography core and 109 is recommended. As with the major, these courses should be taken before any others.

PROFESSORS: Ahnert, Deshler, Fonaroff, Harper, Hu.
ASSOCIATE PROFESSORS: Chaves, Wiedel, Hudson (Visiting).
ASSISTANT PROFESSORS: Bradsky, Dando, Groves, Mitchell, Thompson
LECTURERS: Kinerney, Lewis, Rosenthal, Wray.

- GEQG 1. INTRODUCTION TO GEOGRAPHY. (3)**
 An introduction to the broad field of geography as it is applicable to the general education student. The course presents the basic rationale of variations in human occupancy of the earth and stresses geographic concepts relevant to understanding world, regional and local issues.
- GEQG 10. INTRODUCTION TO PHYSICAL GEOGRAPHY. (3)**
 Examination of the basic concepts of physical geography

including those involving landforms, climate, vegetation, soils, and mineral resources and the interrelations between them.

GEOG 11. INTRODUCTION TO HUMAN GEOGRAPHY. (3)

Examination of the basic concepts of human geography such as those relating to geography of political, population, settlement, and cultural phenomena.

GEOG 15. INTRODUCTORY ECONOMIC GEOGRAPHY. (3)

A study of physical and economic factors that underlie production. The roles of climate, soils, and landforms; and geographic distribution of agricultural, power and mineral resources, and the nature and uses of cartographic materials.

FOR GRADUATES AND ADVANCED UNDERGRADUATES

GEOG 100. REGIONAL GEOGRAPHY OF EASTERN ANGLO-AMERICA. (3)

Prerequisite, GEOG 10 or GEOG 15, or permission of the instructor. A study of the cultural and economic geography and the geographic regions of eastern United States and Canada, including an analysis of the significance of the physical basis for present-day diversification of development, and the historical geographic background.

GEOG 101. REGIONAL GEOGRAPHY OF WESTERN ANGLO-AMERICA. (3)

Prerequisite, GEOG 10 or GEOG 15, or permission of the instructor. A study of western United States, western Canada, and Alaska along the lines mentioned under GEOG 100.

GEOG 103. GEOGRAPHIC CONCEPTS AND SOURCE MATERIALS. (3)

A comprehensive and systematic survey of geographic concepts designed exclusively for teachers. Stress will be placed upon the philosophy of geography in relation to the social and physical sciences, the use of the primary tools of geography, source materials, and the problems of presenting geographic principles. (Kinerney)

GEOG 104. GEOGRAPHY OF MAJOR WORLD REGIONS. (3)

A geographic analysis of the patterns, problems, and prospects of the world's principal human-geographic regions, including Europe, Anglo-America, the Soviet Union, the Far East, and Latin America. Emphasis upon the causal factors of differentiation and the role geographic differences play in the interpretation of the current world scene. This course is designed especially for teachers.

GEOG 105. GEOGRAPHY OF MARYLAND AND ADJACENT AREAS. (3)

An analysis of the physical environment, natural resources, and population in relation to agriculture, industry, transport, and trade in the state of Maryland and adjacent areas.

GEOG 109. INTRODUCTION TO GEOGRAPHIC RESEARCH AND WRITING. (3)

Development of research methods in geography including the formulation of problem, the establishment of hypotheses, development of structures for testing hypotheses, and practice with forms of geographic presentation. Maps, quantitative, and field methods will be used as appropriate.

GEOG 110. ECONOMIC AND CULTURAL GEOGRAPHY OF CARIBBEAN AMERICA. (3)

An analysis of the physical framework, broad economic and historical trends, cultural patterns, and regional diversification of Mexico, Central America, the West Indies, and parts of Colombia and Venezuela. (Chaves)

GEOG 111. ECONOMIC AND CULTURAL GEOGRAPHY OF SOUTH AMERICA. (3)

A survey of natural environment and resources, economic development and cultural diversity of the South American republics, with emphasis upon problems and prospects of the countries. (Chaves)

GEOG 118. GEOMORPHOLOGY. (3)

Study of major morphological processes, the development of land forms, and the relationships between various types of land forms and land use problems. Examination of the physical features of the earth's surface and their geographic distributions. (Ahnert)

GEOG 119. CLIMATOLOGY. (3)

The geographic aspects of climate with emphasis on energy-moisture budgets, steady-state and non-steady state climatology, and climatic variations at both macro and micro-scales. (Dando)

GEOG 120. GEOGRAPHY OF EUROPE. (3)

First and second semesters. Agricultural and industrial

development of Europe and present-day problems in relation to the physical and cultural setting of the continent and its natural resources.

GEOG 122. ECONOMIC RESOURCES AND DEVELOPMENT OF AFRICA. (3)

The natural resources of Africa in relation to agricultural and mineral production; the various stages of economic development and the potentialities of the future. (Deshler)

GEOG 125. GEOGRAPHY OF ASIA. (3)

Lands, climates, natural resources and major economic activities in Asia (except Soviet Asia). Outstanding differences between major regions. (Hu)

GEOG 126. CULTURAL GEOGRAPHY. (3)

Prerequisite, GEOG 10, GEOG 11, or consent of instructor. An analysis of the impact of man through his ideas and technology on the evolution of geographic landscapes. Major themes in the relationships between cultures and environments. (Fonaroff)

GEOG 127. HISTORICAL GEOGRAPHY OF NORTH AMERICA BEFORE 1800. (3)

An analysis of the changing geography of the U.S. and Canada from pre-Columbian times to the end of the 18th century. Emphasis on areal variations and changes in the settlements and economies of Indian and colonial populations. Areal specialization and the changing patterns of agriculture, industry, trade and transportation. Population growth, composition and interior expansion. Regionalization. (Mitchell)

GEOG 128. HISTORICAL GEOGRAPHY OF NORTH AMERICA AFTER 1800. (3)

An analysis of the changing geography of the U.S. and Canada from 1800 to the 1920's. Emphasis on the settlement expansion and socio-economic development of the U.S., and comparisons with the Canadian experience. Immigration economic activities. Industrialization, transportation and urbanization. (Mitchell)

GEOG 129. HISTORICAL GEOGRAPHY OF EUROPE. (3)

An analysis of the changing geography of Europe at selected periods from prehistoric times until the end of the 19th Century with particular emphasis on Western Europe. Changing patterns of population, agriculture, industry, trade and transportation. Development of the nation-state. Impact of overseas expansion. Agricultural and Industrial Revolutions.

GEOG 130. ECONOMIC AND POLITICAL GEOGRAPHY OF EASTERN ASIA. (3)

Study of China, Korea, Japan, the Philippines; physical geographic setting; population; economic and political geography. Potentialities of major regions and recent developments. (Hu)

GEOG 131. ECONOMIC AND POLITICAL GEOGRAPHY OF SOUTHEAST ASIA. (3)

Study of the Indian subcontinent. Farther India, Indonesia; physical geographic setting; population; economic and political geography. Potentialities of various countries and regions and their role in present Asia. (Hu)

GEOG 134. CULTURAL GEOGRAPHY OF CHINA AND JAPAN. (3)

Survey of geographical distribution and interpretation of cultural patterns of China and Japan. Emphasis on basic cultural institutions, outlook on life, unique characteristics of various groups. Trends of cultural change and contemporary problems. (Hu)

GEOG 140. GEOGRAPHY OF THE SOVIET UNION. (3)

The natural environment and its regional diversity. Geography factors in the expansion of the Russian state. The geography of agricultural and industrial production, in relation to available resources, transportation problems, and diversity of population. (Dando)

GEOG 145. SYSTEMATIC AND REGIONAL CLIMATOLOGY. (3)

Prerequisite, GEOG 42, or permission of instructor. Methodology and techniques of collecting and evaluating climatological information. A critical examination of climatic classifications. Distribution of world climates and their geographical implications. (Lewis)

GEOG 146. REGIONAL GEOMORPHOLOGY. (3)

Regional and comparative morphology, with special emphasis upon Anglo-America. (Ahnert)

GEOG 150. HISTORY AND THEORY OF CARTOGRAPHY. (3)

The development of maps throughout history. Geographical orientation, coordinates, and map scales. Map projections, their nature, use and limitations. Principles of representation of features on physical and cultural maps. Modern uses of maps and relationships between characteristics of maps and use types.

GEOG 151, 152. CARTOGRAPHY AND GRAPHICS PRACTICUM. (3, 3)

One hour lecture and two two-hour laboratory periods a week. Techniques and problems of compilation, design, and construction of various types of maps and graphs. Relationships between map making and modern methods of production and reproduction. Trips to representative plants. Laboratory work directed toward cartographic problems encountered in the making of nontopographic maps. (Wiedel)

GEOG 153. PROBLEMS OF CARTOGRAPHY REPRESENTATION AND PROCEDURE. (3)

Two hours lecture and two hours laboratory a week. Study of cartographic compilation methods. Principles and problems of symbolization, classification, and representation of map data. Problems of representation of features at different scales and for different purposes. Place-name selection and lettering; stick-up and map composition. (Wiedel)

GEOG 154. PROBLEMS OF MAP EVALUATION. (3)

Two hours lecture and two hours laboratory a week. Schools of topographic concepts and practices. Theoretical and practical means of determining map reliability, map utility, and source materials. Nature, status, and problems of topographic mapping in different parts of the world. Non-topographic special use maps. Criteria of usefulness for purposes concerned and of reliability. (Wiedel)

GEOG 155. INTERPRETATION OF TOPOGRAPHIC MAPS AND AERIAL PHOTOGRAPHS. (3)

Two hours of lecture and two hours of laboratory per week. Interpretation of aerial photographs with emphasis on the recognition of landforms of different types and man-made features. Study of vegetation, soil, and other data that may be derived from aerial photographs. Types of aerial photographs and limitations of photo interpretation. (Wray)

GEOG 156. QUANTITATIVE METHODS IN GEOGRAPHY. (3)

Prerequisite, MATH 10 and 11. SOCY or BSAD 130 or consent of instructor. The geographic applications of statistical methods. Emphasis will be placed on sources of quantitative data useful to geographers, measurements of location and association, and graphic analysis and representation of quantitative data. (Brodsky, Thompson)

GEOG 160. ADVANCED ECONOMIC GEOGRAPHY I. AGRICULTURAL RESOURCES. (3)

Prerequisite, GEOG 10 or GEOG 15. The nature of agricultural resources, the major types of agricultural exploitation in the world, and the geographic distribution of certain major crops and animals in relation to physical environment and economic geographic conditions. Main problems of conservation. (Deshler)

GEOG 161. ADVANCED ECONOMIC GEOGRAPHY II. MINERAL RESOURCES. (3)

Prerequisite, GEOG 10 or GEOG 15. The nature and geographic distribution of the principal power, metallic and other minerals. Economic geographic aspects of modes of exploitation. Consequences of geographic distribution and problems of conservation. (Hudson)

GEOG 163. WATER RESOURCES AND WATER RESOURCE PLANNING. (3)

GEOG 10 or 15, or permission of instructor. Water as a component of the human environment. A systematic examination of various aspects of water, including problems of domestic and industrial water supply, irrigation, hydroelectric power, fisheries, navigation, flood damage reduction and recreation. (Hudson)

GEOG 170. LOCAL FIELD COURSE. (3)

Training in geographic field methods and techniques. Field observation of land use in selected rural and urban areas in eastern Maryland. One lecture per week with Saturday and occasional weekend field trips. Primarily for undergraduates.

GEOG 171a, b, c, d. FIELD STUDY (1, 1, 1, 1)

Each section of this course will center on a different type of field study: a-physical geography, b-rural geography, c-urban geography, and d-field techniques. Each section will consist of several field study experiences in the local area. Geography majors must complete three of the four sections of the course.

GEOG 180. SCIENTIFIC METHODOLOGY AND HISTORY OF GEOGRAPHY. (3)

For undergraduate and graduate majors in Geography. May be taken also by students with a minimum of nine hours in systematic and six hours in regional geography. A comprehensive and systematic study of the history, nature, and basic principles of geography, with special

reference to the major schools of geographic thought; a critical evaluation of some of the important geographical works and methods of geographic research. (Hu)

GEOG 190. POLITICAL GEOGRAPHY. (3)

Geographical factors in national power and international relations; an analysis of the role of "geopolitics" and "geostategy," with special reference to the current world scene. (Rosenthal, Chaves)

GEOG 191. POPULATION GEOGRAPHY. (3)

Prerequisite, GEOG 10 or 15, or permission of the instructor. An analysis of world population distribution patterns as revealed by demographic data. Emphasis is placed upon a comparison of population density, growth, composition and migration with natural resources and state of technological advancement. Case studies from the geographical literature will be used. (Fonaroff)

GEOG 195. GEOGRAPHY OF TRANSPORTATION. (3)

The distribution of transport routes on the earth's surface; patterns of transport routes; the adjustment of transport routes and media to conditions of the natural environment centers and their distribution. (Thompson)

GEOG 196. INDUSTRIAL LOCALIZATION. (3)

Factors and trends in the geographic distribution of the manufacturing industries of the world, analyzed with reference to theories of industrial location. (Groves)

GEOG 197. URBAN GEOGRAPHY. (3)

Origins of cities, followed by a study of elements of site and location with reference to cities. The patterns and functions of some major world cities will be analyzed. Theories of land use differentiation within cities will be appraised. (Brodsky)

GEOG 198. TOPICAL INVESTIGATIONS. (1-3)

Independent study under individual guidance. Restricted to advanced undergraduate students with credit for at least 24 hours in geography, and to graduate students. Any exception should have the approval of the Head of the Department.

GEOG 199. UNDERGRADUATE RESEARCH. (3)

Directed regional or systematic study involving several subfields of geography, including cartographic presentation, and usually requiring field work; and leading to an undergraduate thesis.

FOR GRADUATES

See the Graduate School Catalog for course descriptions.

GEOG 200. FIELD COURSE. (3)

GEOG 202, 203. SEMINAR IN ECONOMIC GEOGRAPHY. (3, 3)

GEOG 204, 205. SEMINAR IN CULTURAL GEOGRAPHY. (3, 3)

GEOG 206, 207. SEMINAR IN PHYSICAL GEOGRAPHY. (3, 3)

GEOG 210, 211. SEMINAR IN THE GEOGRAPHY OF LATIN AMERICA. (3, 3)

GEOG 220, 221. SEMINAR IN THE GEOGRAPHY OF EUROPE AND AFRICA. (3, 3)

GEOG 230, 231. SEMINAR IN THE GEOGRAPHY OF EAST ASIA. (3, 3)

GEOG 240, 241. SEMINAR IN THE GEOGRAPHY OF THE U.S.S.R. (3, 3)

GEOG 246. SEMINAR IN THE GEOGRAPHY OF THE NEAR EAST. (3)

GEOG 250. SEMINAR IN CARTOGRAPHY. (Credit Arranged)

GEOG 260. ADVANCED GENERAL CLIMATOLOGY. (3)

GEOG 261. APPLIED CLIMATOLOGY. (3)

GEOG 262, 263. SEMINAR IN METEOROLOGY AND CLIMATOLOGY. (3, 3)

GEOG 280. GEOMORPHOLOGY. (3)

GEOG 290, 291. SELECTED TOPICS IN GEOGRAPHY. (1-3)

GEOG 399. DISSERTATION RESEARCH. (Credit to be arranged)

GOVERNMENT AND POLITICS

The Department of Government and Politics offers programs designed to prepare students for government service, politics, foreign assignments, and intelligent and purposeful citizenship.

Business and Public Administration students may major in Government and Politics. At the Jun-

ior/Senior level they may pursue the general GVPT curriculum or they may pursue a more specialized curriculum either in International Affairs or in Public Administration.

REQUIREMENTS FOR THE GOVERNMENT AND POLITICS MAJOR

Government and Politics majors must take a minimum of 36 semester hours in GVPT courses and may not count more than 42 hours in GVPT toward graduation. No course in which the grade is less than "C" may be counted as part of the major work.

The Government and Politics fields are as follows: (1) American Government and Politics; (2) Comparative Government; (3) International Affairs; (4) Political Theory; (5) Public Administration; (6) Public Law; and (7) Public Policy and Political Behavior.

All GVPT majors are required to take GVPT 1, 3, 20, and 141 or 142 (Political Theory). They must take one GVPT course from three separate GVPT fields as designated by the Department; and in addition: (a) GVPT majors (general) must take at least 15 GVPT semester hours at the 100 level; (b) GVPT majors taking the International Affairs curriculum must complete at least 15 semester hours at the 100 level in International Affairs and Comparative Government courses, including GVPT 101; (c) GVPT majors taking the Public Administration curriculum must complete at least 15 semester hours at the 100 level in Public Administration, including GVPT 110.

All students majoring in GVPT (general) or GVPT with specialization in Public Administration must complete the intermediate level of a foreign language. Students majoring in GVPT with specialization in International Affairs must take a minimum of 12 semester hours in one foreign language **above the first year elementary course**. (The first year elementary requirement may be waived by high school credit or placement tests).

All students majoring GVPT must fulfill the requirements of a minor, which involves the completion of 15 semester hours from approved Departments other than GVPT. At least six of the 15 hours must be taken at the 100 level from a single Department. Students majoring in GVPT with specialization in International Affairs may choose to take all minor courses either in geographical area studies or on a Departmental basis; geographical area minors may be chosen, with the consent of the departmental adviser, from the following: Africa, East Asia, Europe, Latin America, the Middle East, and the Soviet Union. GVPT general majors and GVPT majors specializing in Public Administration may not minor in geographical area studies.

Students who major in G. & P. may apply for admission to the G. & P. Honors Program during the second semester of their sophomore year. Additional information concerning the Honors Program may be obtained at the departmental offices.

FRESHMAN AND SOPHOMORE REQUIREMENTS	Hours
ECON 31, 32.....	6
ENGL 1, 3, 4.....	9
Fine Arts or Philosophy.....	3
Foreign Language.....	12
(International Affairs students must have 12 foreign language credits above the first year elementary level.)	
GVPT 1, 3, 20.....	9
History.....	6
MATH 10, 11.....	6
Science (One Physical Science and one Biological Science).....	7
Social Science (to fulfill Gen. Educ. Program requirement).....	3
SPCH 1.....	3
	64

JUNIOR AND SENIOR REQUIREMENTS FOR THE G. & P. GENERAL CURRICULUM

	Hours
GVPT 141 or 142 (Political Theory).....	3
One course from each of three GVPT fields as designated by the Department.....	9
Additional 100-level GVPT courses.....	15
(May not all be taken in International Affairs/Comparative Government, or all in Public Administration)	
Requirements for minor.....	18
Statistics.....	3
Electives recommended by adviser.....	12
	60

JUNIOR AND SENIOR REQUIREMENTS FOR THE G. & P. INTERNATIONAL AFFAIRS CURRICULUM

	Hours
GVPT 141 or 142 (Political Theory).....	3
One course from each of three GVPT fields as designated by the Department.....	9
Additional 100-level International Affairs and Comparative Government courses including GVPT 101.....	15
Requirements for minor.....	18
(Departmental or Geographical Area Studies)	
Statistics.....	3
Electives recommended by adviser.....	12
	60

GVPT 141 or 142 (Political Theory).....	3
One course from each of three GVPT fields as designated by the Department.....	9
Additional 100-level Public Administration courses including GVPT 110.....	15
Requirements for minor.....	18
Statistics.....	3
Electives recommended by adviser.....	12
	60

Professor and Department Head: Don C. Piper.
Professors: Anderson, Burdette, Dillon, Harrison, Hathorn, Hsueh, Jacobs, McNelly and Plischke.
Associate Professors: Byrd, Claude, Conway, Koury, Stone, Wolfe and Randal (visiting 1969-70).
Assistant Professors: Bechtold, Butterworth, Chaples, Devine, Glendening, Heisler, Ingles, Lanning, McGregor, McCarrick, Oliver, Spencer, Terchek, Werlin and Wilkenfeld.
Lecturers: Barber, King, Larson, Melnick, Reeves and Sebert.

- GVPT 1. AMERICAN GOVERNMENT. (3)
This course is designed as the basic course in government and it or its equivalent is a prerequisite to other courses in the Department as specified in the catalogue. It is a comprehensive study of government in the United States—national, state, and local.
- GVPT 3. PRINCIPLES OF GOVERNMENT AND POLITICS. (3)
A study of the basic principles and concepts of political science. This course may be used to satisfy, in part, the Social Science requirement in the General Education Program.
- GVPT 20. INTRODUCTION TO POLITICAL BEHAVIOR. (3)
Prerequisite, GVPT 1. Development, concepts, and techniques of the behavioral approach to political science. Comparison with traditional approaches.
- GVPT 40. POLITICAL IDEOLOGIES. (3)
Prerequisite, GVPT 1. A survey and analysis of the leading ideologies of the modern world, including anarchism, communism, socialism, fascism, nationalism, and democracy.
- GVPT 60. STATE AND LOCAL GOVERNMENT. (3)
Prerequisite, GVPT 1. A study of the functioning and problems of state and local government in the United States, with illustrations from Maryland jurisdictions.
- GVPT 90. COMPARATIVE POLITICS AND GOVERNMENT. (3)
An introduction to the field of comparative politics including exposure to the analytic frameworks through which comparative studies of politics and governmental institutions can be undertaken and a survey of the salient types of political systems. (Replaces GVPT 97).

FOR GRADUATES AND ADVANCED UNDERGRADUATES

- GVPT 101. INTERNATIONAL POLITICAL RELATIONS. (3)
A study of the major factors underlying international relations, the methods of conducting foreign relations, the foreign policies of the major powers, and the means of avoiding or alleviating international conflicts. This course may be used to satisfy, in part, the Social Science requirement in the General Education Program.
- GVPT 102. INTERNATIONAL LAW. (3)
Prerequisite, GVPT 1. A study of the basic character,

- general principles, and specific rules of international law, with emphasis on recent and contemporary trends in the field and its relation to other aspects of international affairs.
- GVPT 103. CONTEMPORARY AFRICAN POLITICS. (3)
Prerequisite, GVPT 1. A survey of contemporary development in the international politics of Africa, with special emphasis on the role of an emerging Africa in world affairs
- GVPT 104. INTER-AMERICAN RELATIONS. (3)
Prerequisite, GVPT 1. An analytical and historical study of the Latin-American policies of the United States and of problems in our relations with individual countries, with emphasis on recent developments.
- GVPT 105. RECENT FAR EASTERN POLITICS. (3)
Prerequisite, GVPT 1. The background and interpretation of recent political events in the Far East and their influence on world politics.
- GVPT 106. AMERICAN FOREIGN RELATIONS. (3)
Prerequisite, GVPT 1. The principles and machinery of the conduct of American foreign relations, with emphasis on the Department of State and the Foreign Service, and an analysis of the major foreign policies of the United States.
- GVPT 107. CONTEMPORARY MIDDLE EASTERN POLITICS. (3)
Prerequisite, GVPT 1. A survey of contemporary development in the international politics of the Middle East, with special emphasis on the role of emerging Middle East nations in world affairs.
- GVPT 108. INTERNATIONAL ORGANIZATION. (3)
Prerequisite, GVPT 1. A study of the objectives, structure, functions, and procedures of international organizations, including the United Nations and such functional and regional organizations as the Organization of American States.
- GVPT 109. FOREIGN POLICY OF THE U.S.S.R. (3)
Prerequisite, GVPT 1. A study of the development of the foreign policy of the Soviet Union, with attention paid to the forces and conditions that make for continuities and changes from Tsarist policies.
- GVPT 110. PRINCIPLES OF PUBLIC ADMINISTRATION. (3)
Prerequisite, GVPT 1. A study of public administration in the United States giving special attention to the principles of organization and management and to fiscal, personnel, planning, and public relations practices.
- GVPT 111. PUBLIC PERSONNEL ADMINISTRATION. (3)
Prerequisite, GVPT 110 or BSAD 160. A survey of public personnel administration, including the development of merit civil service, the personnel agency, classification, recruitment, examination techniques, promotion, service ratings, training, discipline, employee relations, and retirement.
- GVPT 112. PUBLIC FINANCIAL ADMINISTRATION. (3)
Prerequisite, GVPT 110 or ECON 142. A survey of governmental financial procedures, including processes of current and capital budgeting, the administration of public borrowing, the techniques of public purchasing, and the machinery of control through pre-audit and post-audit.
- GVPT 113. GOVERNMENTAL ORGANIZATION AND MANAGEMENT. (3)
Prerequisite, GVPT 110. A study of the theories of organization and management in American government with emphasis on new trends, experiments, and reorganizations.
- GVPT 120. PROBLEMS IN POLITICAL BEHAVIOR. (3)
Prerequisite, GVPT 1. The problem approach to political behavior with emphasis on theoretical and empirical studies on selected aspects of the political process.
- GVPT 122. QUANTITATIVE POLITICAL ANALYSIS. (3)
Prerequisite, GVPT 20, or consent of instructor. Introduction to quantitative methods of data analysis, including selected statistical methods, bloc analysis, content analysis, and scale construction.
- GVPT 124. LEGISLATURES AND LEGISLATION. (3)
Prerequisite, GVPT 1. A comprehensive study of legislative organization, procedure, and problems. The course includes opportunities for student contact with Congress and with the Legislature of Maryland.
- GVPT 127. POLITICAL SOCIOLOGY. (3)
Prerequisite, GVPT 20, or consent of instructor. A study of the societal aspects of political life, including selected aspects of the sociology of group formation and group dynamics, political association, community integration and political behavior presented in the context of the societal environments of political systems.
- GVPT 131. INTRODUCTION TO CONSTITUTIONAL LAW. (3)
Prerequisite, GVPT 1. A systematic inquiry into the general principles of the American constitutional system, with special reference to the role of the judiciary in the interpretation and enforcement of the federal constitution.
- GVPT 132. CIVIL RIGHTS AND THE CONSTITUTION. (3)
Prerequisite, GVPT 131. A study of civil rights in the American constitutional context, emphasizing freedom of religion, freedom of expression, minority discrimination, and the rights of defendants.
- GVPT 133. THE JUDICIAL PROCESS. (3)
Prerequisite, GVPT 1. An examination of judicial organization in the United States at all levels of government, with some emphasis on legal reasoning, legal research, and court procedures.
- GVPT 134. RACE RELATIONS AND PUBLIC LAW. (3)
Prerequisite, GVPT 1. A political and legal examination of the constitutionally protected rights affecting racial minorities and of the constitutional power of the Federal Courts, Congress, and the Executive to define, protect and extend these rights.
- GVPT 141. HISTORY OF POLITICAL THEORY. (3)
Prerequisite, GVPT 1. A survey of the principal political theories set forth in the works of writers before Machiavelli.
- GVPT 142. RECENT POLITICAL THEORY MODERN AND RECENT. (3)
Prerequisite, GVPT 1. A survey of the principal political theories set forth in the works of writers from Machiavelli to J.S. Mill.
- GVPT 143. CONTEMPORARY POLITICAL THEORY. (3)
Prerequisite, GVPT 141 or GVPT 142. A survey of the principal political theories and ideologies from Karl Marx to the present.
- GVPT 144. AMERICAN POLITICAL THEORY. (3)
Prerequisite, GVPT 1. A study of the development and growth of American political concepts from the colonial period to the present.
- GVPT 145. RUSSIAN POLITICAL THOUGHT. (3)
Prerequisite, GVPT 1. A survey and analysis of political ideas in Russia and the Soviet Union from early times to the present.
- GVPT 150H. HONORS SEMINAR IN AMERICAN GOVERNMENT AND PUBLIC ADMINISTRATION. (3)
Prerequisite, admission to Honors Program. Directed reading, reporting, and discussion on the major materials of historical and contemporary relevance in the fields of American government and public administration.
- GVPT 151H. HONORS SEMINAR IN COMPARATIVE GOVERNMENT AND INTERNATIONAL RELATIONS. (3)
Prerequisite, admission to Honors Program. Directed reading, reporting and discussion centering on the major materials of historical and contemporary relevance in the fields of comparative government and international relations.
- GVPT 152H. HONORS SEMINAR IN PUBLIC LAW AND POLITICAL THEORY. (3)
Prerequisite, admission to Honors Program. Directed reading, reporting, and discussion centering on the major materials of historical and contemporary relevance in the fields of public law and political theory.
- GVPT 153H. HONORS SEMINAR IN PUBLIC POLICY AND POLITICAL BEHAVIOR (AND METHODOLOGY). (3)
Prerequisite, admission to Honors Program. Directed reading, reporting, and discussion centering on the major materials of historical and contemporary relevance in the fields of public policy and political behavior.
- GVPT 154. PROBLEMS OF WORLD POLITICS. (3)
Prerequisite, GVPT 1. A study of governmental problems of international scope, such as causes of war, problems of neutrality, and propaganda. Students are required to report on readings from current literature.
- GVPT 155H. HONORS RESEARCH. (3, 3)
Prerequisite, admission to Honors Program. Individual and research. In his last semester each student prepares an original research paper.
- GVPT 156H. CURRENT LITERATURE IN GOVERNMENT AND POLITICS. (1, 1, 1, 1)
Each student is assigned designated journals in consultation with the instructor. He prepares and distributes to his colleagues abstracts of selected articles, answers questions on the abstracts, and reports orally, in turn, on one or more articles of his choice.
- GVPT 160. STATE AND LOCAL ADMINISTRATION. (3)
Prerequisite, GVPT 1. A study of the administrative structure, procedures, and policies of state and local governments with special emphasis on the state level and on

- intergovernmental relationships, and with illustrations from Maryland governmental arrangements.
- GVPT 161. METROPOLITAN ADMINISTRATION. (3)
Prerequisite, GVPT 1. An examination of administrative problems relating to public services, planning, and coordination in a metropolitan environment.
- GVPT 162. URBAN POLITICS. (3)
Urban political processes and institutions considered in the light of changing social and economic conditions.
- GVPT 171. PROBLEMS OF AMERICAN PUBLIC POLICY. (3)
Prerequisite, GVPT 1. The background and interpretation of various factors which affect the formation and execution of American public policy.
- GVPT 174. POLITICAL PARTIES. (3)
Prerequisite, GVPT 1. A descriptive and analytical examination of American political parties, nominations, elections, and political leadership.
- GVPT 175. THE PRESIDENCY AND THE EXECUTIVE BRANCH. (3)
Prerequisite, GVPT 1. An examination of the executive, legislative and party roles of the president in the political process.
- GVPT 178. PUBLIC OPINION. (3)
Prerequisite, GVPT 1. An examination of public opinion and its effect on political action, with emphasis on opinion formation and measurement, propaganda, and pressure groups.
- GVPT 181. ADMINISTRATIVE LAW. (3)
Prerequisite, GVPT 1. A study of the discretion exercised by administrative agencies, including analysis of their functions, their powers over persons and property, their procedures, and judicial sanctions and controls.
- GVPT 185. COMPARATIVE STUDY OF PUBLIC ADMINISTRATION. (3)
Prerequisite, GVPT 90, GVPT 110, or consent of instructor. An introduction to the study of governmental administrative systems viewed from the standpoint of comparative typologies and theoretical schemes useful in cross-national comparisons and empirical studies of the politics of the administrative process in several nations. Both Western and Non-western countries are included.
- GVPT 189. COMPARATIVE STUDY OF FOREIGN POLICY FORMATION. (3)
Prerequisite, GVPT 90, GVPT 101 or consent of instructor. An introduction to the comparative study of foreign policy formation structures and processes followed by a survey of the domestic sources of policy for major states. A conspectus of substantive patterns of foreign policy in analytically salient types of systems is presented. Domestic and global systemic sources of foreign policy are compared.
- GVPT 190. COMPARATIVE STUDIES IN EUROPEAN POLITICS. (3)
Prerequisite, GVPT 90, or consent of instructor. A comparative study of political processes and governmental forms in selected European countries.
- GVPT 191. GOVERNMENT AND ADMINISTRATION OF THE SOVIET UNION. (3)
Prerequisite, GVPT 1. A study of the adoption of the communist philosophy by the Soviet Union, of its governmental structure, and of the administration of government policy in the Soviet Union.
- GVPT 192. GOVERNMENT AND POLITICS OF LATIN AMERICA. (3)
Prerequisite, GVPT 1. A comparative study of the governmental systems and political processes of the Latin American countries, with special emphasis on Argentina, Brazil, Chile, and Mexico.
- GVPT 193. GOVERNMENT AND POLITICS OF ASIA. (3)
Prerequisite, GVPT 97, or GVPT 105, or HIST 61, or HIST 62, or HIST 187, or HIST 188, or HIST 189. A comparative study of the political systems of China, Japan, India, and other selected Asian countries.
- GVPT 194. GOVERNMENT AND POLITICS OF AFRICA. (3)
Prerequisite, GVPT 1. A comparative study of the governmental systems and political processes of the African countries, with special emphasis on the problems of nation-building in emergent countries.
- GVPT 195. GOVERNMENT AND POLITICS OF THE MIDDLE EAST. (3)
Prerequisite, GVPT 1. A comparative study of the governmental systems and political processes of the Middle Eastern countries, with special emphasis on the problems of nation-building in emergent countries.
- GVPT 197. COMPARATIVE POLITICS SYSTEMS. (3)
Prerequisite, GVPT 97 and at least one other course in
- comparative government. A study, along functional lines, of major political institutions, such as legislatures, executives, courts, bureaucracies, public organizations, and political parties.
- GVPT 199. SEMINAR IN GOVERNMENT AND POLITICS. (3)
Reading, research, discussion, analysis, and writing in the area of politics. Both substantive issues and methodological approaches will be considered. Primarily for Government and Politics undergraduate majors. Not open to graduate students.

FOR GRADUATES

- See the Graduate School Catalog for course descriptions.
- GVPT 200. SEMINAR IN NATIONAL SECURITY POLICY. (3)
- GVPT 201. SEMINAR IN INTERNATIONAL POLITICAL ORGANIZATION. (3)
- GVPT 202. SEMINAR IN INTERNATIONAL LAW. (3)
- GVPT 203. FUNCTIONAL PROBLEMS IN INTERNATIONAL RELATIONS. (3)
- GVPT 204. AREA PROBLEMS IN INTERNATIONAL RELATIONS. (3)
- GVPT 205. SEMINAR IN AMERICAN POLITICAL INSTITUTIONS. (3)
- GVPT 206. SEMINAR IN AMERICAN FOREIGN RELATIONS. (3)
- GVPT 207. SEMINAR IN COMPARATIVE GOVERNMENTAL INSTITUTIONS. (3)
- GVPT 208. SEMINAR IN THE GOVERNMENT AND POLITICS OF EMERGING NATIONS. (3)
- GVPT 209. SEMINAR IN INTERNATIONAL ADMINISTRATION. (3)
- GVPT 210. GOVERNMENTAL ORGANIZATION THEORY. (3)
- GVPT 212. SEMINAR IN PUBLIC FINANCIAL ADMINISTRATION. (3)
- GVPT 213. PROBLEMS OF PUBLIC ADMINISTRATION. (3)
- GVPT 214. PROBLEMS OF PUBLIC PERSONNEL ADMINISTRATION. (3)
- GVPT 215. PROBLEMS OF STATE AND LOCAL GOVERNMENT. (3)
- GVPT 216. GOVERNMENT ADMINISTRATIVE PLANNING AND MANAGEMENT. (3)
- GVPT 217. DEVELOPMENTAL PUBLIC ADMINISTRATION. (3)
- GVPT 218. SEMINAR IN URBAN ADMINISTRATION. (3)
- GVPT 219. STUDIES IN COMPARATIVE GOVERNMENTAL ADMINISTRATION. (3)
- GVPT 221. SEMINAR IN PUBLIC OPINION. (3)
- GVPT 222. SELECTED PROBLEMS IN POLITICAL BEHAVIOR. (3)
- GVPT 223. SEMINAR IN LEGISLATURES AND LEGISLATION. (3)
- GVPT 224. SEMINAR IN POLITICAL PARTIES AND POLITICS. (3)
- GVPT 226. SCOPE AND METHOD OF POLITICAL SCIENCE. (3)
- GVPT 228. PROBLEMS IN QUANTITATIVE POLITICAL ANALYSIS. (3)
- GVPT 231. SEMINAR IN PUBLIC LAW. (3)
- GVPT 241. GREAT POLITICAL THINKERS. (3)
- GVPT 242. MAN AND THE STATE. (3)
- GVPT 243. CURRENT PROBLEMS IN POLITICAL THEORY. (3)
- GVPT 244. AMERICAN POLITICAL THEORY. (3)
- GVPT 245. SEMINAR IN NON-WESTERN POLITICAL THEORY. (3)
- GVPT 246. THEORIES OF DEMOCRACY. (3)
- GVPT 247. ANALYTICAL SYSTEMS AND THEORY CONSTRUCTION. (3)
- GVPT 248. MARXIST POLITICAL THEORY. (3)
- GVPT 259. RESPONSIBILITY IN PUBLIC ADMINISTRATION. (3)
- GVPT 261. PROBLEMS IN AMERICAN GOVERNMENT AND POLITICS. (3)
- GVPT 262. SEMINAR ON INTERGOVERNMENTAL RELATIONS. (3)
- GVPT 280. SEMINAR IN INTERNATIONAL RELATIONS THEORY. (3)
- GVPT 290. SEMINAR IN THE COMPARATIVE STUDY OF POLITICS. (3)
- GVPT 398. READINGS IN GOVERNMENT AND POLITICS. (3)

JOURNALISM

The first objective of the Department of Journalism is to provide a four-year liberal education for the student of superior writing ability who intends to make a career in some phase of journalism. It also serves the major within the department whose career intention may be in a field related to journalism.

The department's curriculum in news editorial journalism has been accredited by the American Council on Education for Journalism. The department is a member of the American Association of Schools and Departments of Journalism and of the American Association of Schools and Departments of Journalism School Administrators.

Particular features of the curriculum are (1) a two-year introductory program of general education, centered in the liberal arts, (2) a required core program, equivalent to approximately one semester, in basic aspects of journalism, (3) specialization beyond the core in news-editorial work, photojournalism, public relations, radio-television work, or advertising, (4) the equivalent of approximately one semester of upper-division study in a subject chosen from outside the Department of Journalism, (5) elective courses and (6) opportunities for field contacts.

The student may declare his intention to major in the Department of Journalism at the beginning of any semester, but normally before the junior year. His choices of specialization within the department and of related study in other departments should be made by the beginning of the junior year and after consultation with a faculty adviser.

An average grade of "C" or better in courses taken in the department is required of journalism majors for graduation.

Majors are urged and helped to write for publication and to obtain professional experience between the junior and senior years on the job or in summer internships. The department maintains close working relations with professional journalists, public relations practitioners and their organizations. One of the purposes is to provide speakers, trips, laboratories, internships and other types of supervised professional training for students.

An essential part of the work in editorial journalism consists of supervised training on the Baltimore Sun or the Baltimore News American and nearby weekly papers. The experience may also be obtained on other publications, approved by the adviser. This professional training helps students to become familiar with reporting, editing and advertising for professional publications covering Maryland and Capitol Hill in Washington, D.C.

REQUIREMENTS FOR THE JOURNALISM MAJOR

Listed below are the lower-division and the upper-division requirements for majors in the Department of Journalism. In qualifying for the degree, the student must complete 120 semester hours, 57 hours of which must be upper-division credit. The exceptions to the upper-division rule are noted on page of this catalog.

Course substitutions may be made by the faculty adviser to take account of previous professional ex-

perience and to develop programs to include special study. Within the broad outlines of the upper-division courses themselves, students are encouraged to develop individual interests by careful choice of elective courses.

LOWER-DIVISION CURRICULUM

	I	II
Freshman Year		
ENGL 1 (or 21), 3-Composition and American Literature	3	3
Science (one course of which must be a lab science)	4	3
Foreign language	3	3
PSYCH 1 and SOCY 1	3	3
SPCH 1 - Public Speaking	1	
MATH 10 - Introduction to Mathematics	1	
HLTH 5 - Science and Theory of Health	1	2
Physical Activities	1	1
Total	17	18
Sophomore Year		
JOUR 10 and JOUR 11	3	3
ENGL 4 - Composition and World Literature	3	3
Foreign Language	3	3
History	3	3
GVPT 1 and ECON 37	3	3
FINE ARTS (Elected from PHIL 1 or 41 or 45 or 53, ART 10 or 60, 61, 80, SPCH 16, MUSC 20)	1	3
Total	15	15

UPPER-DIVISION CURRICULUM

The core program:

Journalism requirements: 24 credit hours in upper division Journalism courses including JOUR 160, News Editing. At least six credit hours should be taken in one of the following areas for depth in a special field of Journalism:
 News Reporting: JOUR 100 and JOUR 175
 Public Relations: JOUR 166 and JOUR 170
 Advertising: JOUR 152 and JOUR 163
 News Photography: JOUR 181 and JOUR 182
 News Broadcasting: JOUR 101 and JOUR 184
 All Journalism majors should elect at least six credit hours from the following courses for breadth in mass communication:
 JOUR 176: Comparative Mass Communication Systems
 JOUR 186: Govt. and Mass Communication
 JOUR 192: History of Mass Communication
 JOUR 194: Public Opinion and Mass Communication

Non-Journalism requirements:
 12-18 credit hours in upper-division courses in one subject outside of the Journalism Department ... 12-18
 15 credit hours of upper-division, non-journalism courses, to be spread or concentrated according to individual needs ... 15

27-33

Total Upper-Division ... 54-60

PROFESSOR AND DEPARTMENT HEAD: Hiebert.
PROFESSORS: Bryan, Crowell, Martin, Newsom.
ASSISTANT PROFESSORS: Brown, Flippen, Grunig, Midura, Petrick.
LECTURERS: Geraci, Lee.

- JOUR 10. INTRODUCTION TO MASS COMMUNICATION. (3)
 Survey of the process and effects of mass communication; historical development and social, economic, legal, and professional aspects of the mass media. Open to all students. (Staff)
- JOUR 11. WRITING FOR THE MASS MEDIA. (3)
 Introduction to news, feature and publicity writing for the printed and electronic media; development of news concepts; laboratory in news gathering tools and writing skills. Prerequisite: Typing ability and JOUR 10 (which may be taken concurrently, with permission). (Staff)
- JOUR 100. NEWS REPORTING. (3)
 Principles and practice of news reporting, with special emphasis on news gathering for all the media; covering news beats and other news sources, including researching a news story for accuracy, comprehensiveness and interpretation. Prerequisites: JOUR 10 and 11. (Midura)
- JOUR 101. BROADCAST NEWS WRITING. (3)
 Study of and practice in the special application of news writing and editing to the broadcasting media, including the use of wire copy and tape recorders in producing newscasts. Prerequisites: JOUR 110 and 120. (Midura)
- JOUR 152. ADVERTISING COPY AND LAYOUT. (3)
 Theory of and practice in advertising copy and layout.

with emphasis on newspaper advertising, for letterpress and photo-offset printing; Study of illustrations, type selection, copy-fitting, and media selection. Prerequisites: JOUR 10 and 11. (Newsom)

JOUR 160. NEWS EDITING. (3)

Principles of the editing process and practice in copy editing, headline writing, newspaper page layout, and editorial judgment. Prerequisites: JOUR 10 and 11. (Crowell)

JOUR 161. SEMINAR IN JOURNALISM. (3)

Seminar for Journalism seniors in newsroom problems and policies, emphasizing ethics and responsibilities, in cooperation with the Baltimore Sun, Baltimore News-American, and other area news media. Prerequisite: Permission of the Instructor. (Newsom)

JOUR 163. PRINCIPLES OF TYPOGRAPHY AND PRODUCTION. (3)

Study of layout, typography, design, and printing in the planning and production of the printed media. Prerequisites: JOUR 10 and 11. (Newsom)

JOUR 165. MAGAZINE ARTICLE AND FEATURE WRITING. (3)

Study of types of feature articles, particularly for the magazine market; analysis of the magazine medium and specialized audiences; practice in researching and writing the feature article; analysis of free-lance markets. Prerequisites: JOUR 10 and 11. (Flippen, Grunig)

JOUR 166. PUBLIC RELATIONS. (3)

Study of the principles and historical development of public relations. Attention is given to fact-finding, planning, communication, and evaluation aspects of public relations. Study of the use of public relations in business, government, associations, and organizations. Prerequisites: JOUR 10 and 11. (Midura)

JOUR 170. PRINCIPLES OF PUBLICITY. (3)

Study of the strategy and techniques of purposive communication; analysis of the techniques and effects of the publicity campaign; laboratory in special publicity projects. Prerequisite: JOUR 130. (Martin, Grunig)

JOUR 171. INDUSTRIAL JOURNALISM. (3)

Industrial communications, management and production of company periodicals, public relations aspects of industrial journalism. Prerequisites: JOUR 10 and 11. (Crowell)

JOUR 174. JOURNALISM OF SCIENCE AND TECHNOLOGY. (3)

Study and practice of the basic techniques of writing and editing scientific and technical material for both the general audience and the specialist. Prerequisites: JOUR 10 and 11. (Grunig)

JOUR 175. REPORTING OF PUBLIC AFFAIRS. (3)

Advanced training in writing news for publication in specialized areas, particularly city, county, and federal news. Students meet in seminar with news sources and leading news reporters and work in Washington, D.C., Annapolis, and Baltimore in covering news in depth for publication. Prerequisites: JOUR 120 and permission of instructor. (Lee)

JOUR 176. COMPARATIVE MASS COMMUNICATION SYSTEMS. (3)

Survey of the history and status of the mass media throughout the world; comparative analysis of the role of the press in different societies. Prerequisites: JOUR 10 and consent of Instructor for Non-Majors. (Bryan)

JOUR 181. NEWS PHOTOGRAPHY. (3)

Fundamentals of shooting, developing, and printing of news and feature pictures for all media. Department furnishes equipment and student furnishes supplies. Prerequisites: JOUR 10 and 11. (Geraci)

JOUR 182. ADVANCED NEWS PHOTOGRAPHY. (3)

Advanced training in shooting, developing, and printing pictures, with emphasis on the photo story. Analysis of the role of photography in mass communication. Department furnishes equipment and student furnishes supplies. Prerequisite: JOUR 150. (Geraci)

JOUR 184. REPORTING THROUGH AUDIO-VISUAL MEDIA. (3)

Principles of live photography and recording in the production of news and documentaries for all the media. Prerequisites: JOUR 150 and 162. (Staff)

JOUR 186. GOVERNMENT AND MASS COMMUNICATION. (3)

Study of the relationship between the news media and government. Analysis of media coverage of government and politics. Study of governmental and political information and persuasion techniques. Prerequisites: JOUR 10 and 11. (Hiebert)

JOUR 191. LAW OF MASS COMMUNICATION. (3)

Study of the legal rights and constraints of mass media; libel, privacy, copyright, monopoly, and contempt, and other aspects of the law applied to mass communication. Previous study of the law not required. Prerequisites: JOUR 10 and 11. (Lee)

JOUR 192. HISTORY OF MASS COMMUNICATION. (3)

Study of the development of newspapers, magazines, radio, television, and motion pictures as media of mass communication. Analysis of the influences of the media on the historical development of America. Prerequisites: JOUR 10 and 11. (Bryan)

JOUR 194. PUBLIC OPINION AND MASS COMMUNICATION. (3)

The role and responsibilities of the mass media in the formation of public opinion; research methods and cases in the use of propaganda, advertising, public relations and education through mass communication in the service of governments, public and private organizations and individuals. Prerequisites: JOUR 10 and 11. (Martin, Flippen)

JOUR 196. PROBLEMS IN JOURNALISM. (1 or 2)

Group and individual projects in journalism. (Staff)

JOUR 197S. SUPERVISED INTERNSHIP. (0)

Summer session. To be taken following junior year of major in journalism, with permission of Instructor. Ten weeks of organized, supervised study, experience, and on-the-job training in journalism. (Newsom)

BUREAU OF GOVERNMENTAL RESEARCH

Activities of the Bureau of Governmental Research relate primarily to the problems of state and local government in Maryland. The Bureau engages in research and publishes findings with reference to local, state and national governments and their interrelationships. It undertakes surveys and offers its assistance and service to units of government in Maryland and serves as a clearing house of information for them. The Bureau furnishes opportunities for qualified students interested in research and career development in state and local administration.

Urban affairs have become a central focus with the establishment of an Urban Research Group, which draws on a variety of interdisciplinary faculty interests within the University.

The Maryland Technical Advisory Service, a division of the Bureau, provides consulting services to county and municipal governments of the State. Technical consultation and assistance are provided on specific problems in such areas as regulatory or other drafting and codification, fiscal management, personnel management, utility and other service operations, planning and zoning, and related local or intergovernmental activities. The staff analyzes and shares with governmental officials information concerning professional developments and opportunities for new or improved programs and facilities.

BUREAU OF BUSINESS AND ECONOMIC RESEARCH

The responsibilities of the Bureau of Business and Economic Research are research, training and public service.

The research activities of the Bureau are primarily focused on basic research in the field of regional economic development. Although the Bureau's long-run research program is carried out largely by its own staff of faculty members, faculty members from other departments also participate. The Bureau also undertakes co-operative research contracts under the sponsorship of federal and state governmental agencies, research foundations, and other groups.

The training functions of the Bureau are achieved through active participation by advanced graduate and undergraduate students in the Bu-

reau's research program. This direct involvement of students in the research process under faculty supervision provides research skills that equip students for responsible posts in business, government, and higher education.

The Bureau observes its service responsibilities to government, business, and private groups primarily through the publication and distribution of its research findings. In addition, the Bureau staff welcomes the opportunity to be of service to governmental, business, and private groups by consulting with them on problems in business and economics, particularly those related to regional development.

INFORMATION SYSTEMS MANAGEMENT

The program of studies in information systems management is designed to meet the needs of those wishing to concentrate on the application of the digital computer to the analysis, design, and administration of complex information systems. Students who expect to enter business administration, public administration, or organizations in other fields will find that this program offers a relevant preparation.

The student entering this program will place emphasis on the study of digital computer applications and relevant mathematical methods. With the aid of a faculty advisor, he will select a minimum of 15 hours of course work in a secondary field such as Business Administration, Computer Science, Economics, Mathematics, Psychology, Public Administration, or the Sciences.

INFORMATION SYSTEMS MANAGEMENT CURRICULUM

Freshman Year		3	4	3-4	3	2	3	16-17	16-17
ENGL 001—Composition and American Literature	3	4							
ENGL 003—Composition and World Literature	3	4							
MATH 019, 020—Analysis I, II	3	4							
SPCH 001—Public Speaking	3	4							
Natural Science (one biological and one physical)	3-4	3-4							
Fine Arts and Philosophy Elective	3	3							
Physical Activities (Men and Women)	3	1							
HTLH 005—Science and Theory of Health	3	2							
Elective	3	3							
								16-17	16-17
Sophomore Year									
BSAD 020, 021—Principles of Accounting	3	3							
ECON 031, 032—Principles of Economics	3	3							
History	3	3							
ENGL 004—Composition and World Literature	3	3							
PSYC 001—Introduction to Psychology	3	3							
CMSC 012 or 020—Introductory Algorithmic Methods or Elementary Algorithmic Analysis	3	3							
Physical Activities	1	3							
Elective	3	3							
								16	15
Junior Year									
ISM 101—Electronic Data Processing	3	3							
ISM 102—Electronic Data Processing Applications	3	3							
ISM 167—Operations Research I	3	3							
BSAD 130, 131—Business Statistics I, II	3	3							
BSAD 135—Statistical Analysis and Forecasting	3	3							
ECON 102—National Income Analysis	3	3							
ECON 132—Intermediate Price Theory	3	3							
Electives	6	6							
								15	15
Senior Year									
ISM 103—Introduction to Systems Analysis	3	3							
ISM 110—Information Processing Problems of Models of Administrative, Economic and Political Systems	3	3							
ISM 120—Information Processing and Computational Problems in Operations Analysis	3	3							
BSAD 134—Statistical Quality Control	3	3							
Electives	5	12							
								15	15

ASSISTANT PROFESSOR: Sprague.
ASSOCIATE PROFESSOR: Courtright.
INSTRUCTORS: Akman, Chappell, Hartness.
LECTURER: Golding.

ISM 101. ELECTRONIC DATA PROCESSING. (3)

Prerequisite, junior standing, MATH 11 or the equivalent. The electronic digital computer and its use as a tool in processing data. The course includes the following areas: (1) Organization of data processing systems, (2) environmental aspects of computer systems, (3) management control problems and potentials inherent in mechanized data processing systems.

ISM 102. ELECTRONIC DATA PROCESSING APPLICATIONS. (3)

Prerequisite, ISM 101 and BSAD 130, or consent of instructor. Intensive study of computer applications using a problem-oriented language. Introduction of computer methods for the solution of organizational problems. Laboratory exercises in programming and development of computer techniques.

ISM 103. INTRODUCTION TO SYSTEMS ANALYSIS. (3)

Prerequisite, ISM 102, BSAD 131, MATH 20, or the equivalent. Prerequisites may be waived with consent of instructor. The use of the computer in the management and operation of organizations. The course includes the following areas: (1) the principles of systems analysis, (2) recent applications and innovations of the systems concept, (3) design and implementation of computer systems, including such techniques as mathematical programming, simulation, business games and network analysis, and (4) laboratory use of a digital computer in the application of these techniques.

ISM 110. INFORMATION PROCESSING PROBLEMS OF MODELS OF ADMINISTRATIVE, ECONOMIC AND POLITICAL SYSTEMS. (3)

Prerequisites, MATH 20 or equivalent; ISM 102, BSAD 130, and some familiarity with administrative, economic and/or political models. Prerequisites may be waived with the consent of instructor. Data processing requirements underlying the creation and maintenance of a data base to be used in estimating the parameters of socio-economic models. An analysis of the structure and development of recent socio-economic models as relevant to data processing considerations. Extractions and preparation of data from the data base to facilitate the appropriate transformation necessary for model construction and also to minimize the processing cost of data input. The course draws upon a knowledge of models of administrative, economic and political systems. Case studies and experience with data processing for selected models are included.

ISM 120. INFORMATION PROCESSING AND COMPUTATIONAL PROBLEMS IN OPERATIONS ANALYSIS. (3)

Prerequisite, MATH 20 or equivalent; ISM 102, and a course in Statistics, such as BSAD 135, dealing with multivariate models. Prerequisites may be waived with the consent of the instructor. Implementation of applications requiring the integration of data processing and analytical programming techniques. Such applications feature the calculation of various statistical estimates of the parameters in a multivariate model within the context of a file maintenance problem (e.g., the writing of a matrix inversion routine for revenue forecasting within a master updating program or sales forecasting and/or sales performance evaluation within a sales transaction—master updating program). A universal, problem-oriented language such as COBAL will be used with strong emphasis on the use of the mathematical FORT IV library subroutines. Class projects include case studies and solutions of problems using real-world data.

ISM 136. OPERATIONS RESEARCH I. (3)

To meet this course requirement, all students enrolled in the Information Systems Management Curriculum will register in BSAD 136. For detailed information on prerequisites and description of the course refer to BSAD 136.

For Graduates

See the Graduate School Catalog for course descriptions.

ISM 210. DESIGN OF LARGE-SCALE INFORMATION SYSTEMS. (3)

ISM 220. MANAGEMENT OF INFORMATION PROCESSING SYSTEMS. (3)

ISM 230. APPLICATIONS OF ADVANCED DEVELOPMENTS IN INFORMATION PROCESSING EQUIPMENT. (3)





THE COLLEGE OF EDUCATION meets the needs of the following classes of students: (1) persons preparing to teach in colleges, secondary schools, elementary schools, kindergarten, and nursery schools; (2) persons preparing to teach classes in special education and to be school librarians; (3) present or prospective teachers who wish to supplement their preparation; (4) students preparing for educational work in the trades and industries; (5) graduate students preparing for teaching, supervisory, or administrative positions; (6) certain students whose major interests are in other fields, but who desire courses in education.

Because of the location of the University in the suburbs of the nation's capital, unusual facilities for the study of education are available to its students and faculty. The Library of Congress, the library of the United States Office of Education, and special libraries of other government agencies are accessible, as well as the information services of the National Education Association, American Council on Education, United States Office of Education, and other organizations, public and private. The school systems of the District of Columbia, Baltimore and the counties of Maryland offer generous cooperation.

The teacher education programs preparing early childhood, elementary school, and secondary school teachers at the bachelor's degree and master's degree levels, and the programs preparing school service personnel (elementary and secondary school principals, general school administrators, supervisors, curriculum coordinators, guidance counselors, student personnel administrators, and vocational rehabilitation counselors) at the master's advanced graduate specialist, and doctoral degree

levels are all fully accredited by the National Council for Accreditation of Teacher Education.

ORGANIZATION

The College is organized into six departments, an institute, and other non-departmental areas. These offer a wide range of programs in teacher education or education specialties.

FACILITIES

The College is housed in two buildings. All departments and special areas with the exception of Industrial Education have their offices and instructional facilities in the new College of Education Building. This building was planned with the special needs of teacher education in mind. It was built in 1965 and the basement was completed in 1967. The Industrial Education Department is housed in the J. Milton Patterson Building. The facilities of this building are devoted exclusively to the work of the Department.

GENERAL REQUIREMENTS FOR ADMISSION

In selecting students emphasis will be placed upon high marks and other indications of probable success in college rather than upon a fixed pattern of subject matter. Of the sixteen required units, four units of English and one unit of social sciences, natural sciences, and mathematics are required. Additional units in mathematics, natural sciences, and social sciences are desirable for a program that permits the greatest amount of flexibility in meeting the requirements of various College of Education curricula. A foreign language is desirable for certain

programs. Fine arts, trade and vocational subjects are acceptable as electives. Every prospective applicant should be certain that his preparation in mathematics is adequate for any program that he might wish to enter.

Candidates for admission whose high school or college records are consistently low are strongly advised not to seek admission to the College of Education.

GUIDANCE IN REGISTRATION

At the time of matriculation each student is tentatively assigned to a member of the faculty who acts as the student's advisor. The choice of subject areas within which the student will prepare to teach will be made under faculty guidance during the freshman year. The student will confer regularly with the faculty member in the College of Education responsible for his teaching major. While it may be possible to make satisfactory adjustments as late as the junior year for students from other colleges who have not already entered upon the sequence of professional courses, it is highly desirable that the student begin his curriculum work in the freshman year. **Students who intend to teach** (except Agriculture and Physical Education) **should register in the College of Education**, in order that they may have the continuous counsel and guidance of the faculty directly responsible for teacher education at the University of Maryland.

GENERAL REQUIREMENTS OF THE COLLEGE

Minimum requirements for graduation are 120 academic semester hours plus the four semester hours in required physical education and health. Specific program requirements for more than the minimum must be fulfilled. In no case may a student graduate with less than a total of 124 hours.

In addition to the University General Education Program and the specific requirements for each curriculum, the College requires a minimum of 20 hours of education courses and three (3) hours of speech.

Marks in all required upper division courses in education and in subjects in major and minor fields must be "C" or higher. A general average of "C" or higher must be maintained.

Exceptions to curricular requirements and rules of the College of Education must be recommended by the student's advisor and approved by the dean.

Students who are not enrolled in the College of Education but who are preparing to teach and wish to register in professional education courses required for certification must meet all curricular and scholastic requirements of the College of Education.

ADMISSION TO TEACHER EDUCATION

All students, full or part-time, who are in a teacher education curriculum, must apply to the Admission to Teacher Education Committee for admission to teacher education at the beginning of the semester immediately after earning 42 hours, excluding required physical education. Transfer students with 42 or more hours of acceptable transfer credit must apply at time of transfer. Transfer students must complete a minimum of 12 Maryland hours before they can be admitted to Teacher Education. Post-graduate certification students must apply at the beginning of their program. Application

forms may be obtained from the College of Education office, advisors, or departmental offices.

In considering applications, the following criteria have been established by the committee:

1. For full approval, applicants shall have a cumulative g.p.a. of at least 2.20. Those who do not have a 2.20 g.p.a. by the end of the semester in which they apply will not be allowed to enter the program.
2. For full approval, a new transfer student with 42 or more hours of acceptable transfer credit will be required to earn a g.p.a. of 2.20 in University credits in his first semester at the University of Maryland, or, if part-time, by the time he has completed 12 hours at the University.
3. No student will be allowed to enroll in EDUC. 110 and methods classes until he has received full approval, except those transfer students who transfer in with 56 hours of acceptable credit and with a 2.20 g.p.a. for all work attempted at previous institutions. For full approval, transfer students who fit this category must earn a 2.20 g.p.a. during their first semester, or, if part-time, by the time 12 hours have been completed.
4. Full approval is always granted with the understanding that the student must have a successful field experience in EDUC. 110, and that any case may be reconsidered by the committee if subsequent academic performance falls consistently below the 2.30 which is required for student teaching.
5. Secondary education applicants must show evidence of ability to achieve on an above average level in courses directly related to their major field.
6. Applicants must be of good moral and ethical character. This will be determined as fairly as possible from such evidences as advisers' recommendations and records of serious campus delinquencies.
7. Applicants must be physically and emotionally capable of functioning as teachers. This will mean freedom from serious chronic illness, emotional instability, and communicable disease, as determined in cooperation with the Health Service and the Counseling Center.
8. Applicants must be free of serious speech handicaps.

The purpose of the screening procedure associated with admission to teacher education is to insure that graduates of the teacher education program will be well prepared for teaching and can be recommended for certification with confidence.

MAJORS AND MINORS

In the Early Childhood-Elementary Curriculum, no major or minor is required but students must complete at least 80 hours of academic work which includes an area of concentration of at least 18 hours.

In secondary education, majors only are required (except in Speech Education), although minors may be developed in most programs if students desire them. Specific programs should be consulted for information concerning minors.

REMISSION OF FEES

A full time undergraduate student in the College of Education who signs and honors a pledge to teach for two years full-time in the public schools of Maryland immediately following graduation and who re-

mains in good standing academically may receive remission of fixed charges for a maximum of four academic years while enrolled at the University of Maryland. **This opportunity is available to residents of Maryland only.** (Because of declared surpluses, the fields of Physical Education for men on the secondary level, English Education, and Social Studies Education are not supported by this program.) For further details write to the College of Education.

STUDENT TEACHING

In order to be admitted to a course in student teaching, a student must have been admitted to the Teacher Education Program (see above) and have a grade point average of 2.30, based on University of Maryland courses only, a physician's certificate indicating that the applicant is free of communicable diseases, and the consent of the instructor in the appropriate area. Application must be made with the Coordinator of Laboratory Experiences at the beginning of the semester which precedes the one in which student teaching will be done. Any applicant for student teaching must have been enrolled previously at the University of Maryland for at least one semester.

CERTIFICATION OF TEACHERS

The State Department of Education certifies to teach in the approved public schools of the state only graduates of approved colleges who have satisfactorily fulfilled subject-matter and professional requirements. The curricula of the College of Education fulfill State Department requirements for certification.

DEGREES

The degrees conferred upon students who have met the conditions prescribed for a degree in the College of Education are Bachelor of Arts and Bachelor of Science. Majors in art, English, languages, social sciences, and speech receive the B.A. degree. Mathematics and elementary art majors may receive either degree. All others receive the B.S. degree.

COURSE OFFERINGS NON-DEPARTMENTAL AREAS

Non-Departmental areas offer programs which prepare students for certification and offer service for graduate majors. Included are school librarianship; history, philosophy and sociology of education and comparative education (social foundations of education); research design, statistics and measurement; and higher education.

EDUC 88. SPECIAL PROBLEMS IN EDUCATION (1-6)

Prerequisites, consent of Education advisor. Available only to freshmen and sophomore students who have definite plans for individual study of approved problems relative to their preparation for teaching. Course cards must have the title of the problem and the name of the faculty member who has approved it. (Staff)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

EDUC 100. HISTORY OF EDUCATION IN WESTERN CIVILIZATION (3)

Educational institutions through the ancient, medieval, and early modern periods in the western civilization, as seen against a background of socio-economic development. (Lindsay)

EDUC 102. HISTORY OF EDUCATION IN THE UNITED STATES. (3)

A study of the origins and development of the chief features of the present system of education in the United States. (Finkelstein, Wiggin)

EDUC 107. PHILOSOPHY OF EDUCATION. (3)

A study of the great educational philosophers and systems of thought affecting the development of modern education. (Agre, Noll)

EDUC 108. LOGIC OF TEACHING. (3)

An analysis of the structure of basic subject matters in the curriculum and of the standard logical moves in teaching. (Agre)

EDUC 110. HUMAN DEVELOPMENT AND LEARNING. (6)

Open only to students approved for teacher education. Studies scientific facts that describe growth, development, and learning, and the implications of these for the teacher and the school. A study of an individual child and a classroom participation experience are integral parts of the course and require a one-half day per week assignment in a public school as a teacher aide. Students are scheduled for field assignments in an elementary or high school according to the curriculum they are in. Each group is under the supervision of a faculty member with whom it meets every second week in a seminar session. (Staff)

EDUC 111. FOUNDATIONS OF EDUCATION. (3)

Prerequisites, EDUC 110, completion of at least 90 hours, and approval for admission to teacher education. Historical, social, cultural and philosophical foundations of American education. Considers education as a profession, and the organizational structure, operation and function of modern school systems. Comparative education and contemporary issues are included. (Staff)

EDUC 146. QUANTITATIVE RESEARCH METHODS I (3)

An introduction to research design principles and the scientific method as applied to behavioral phenomena. Instrumentation procedures including the planning and construction of simple data collection instruments and their analysis; assessment of the reliability and validity of such instruments; Statistical procedures appropriate to the analysis of data from simple research designs. Laboratory experiences in instrumentation and research design are emphasized. (Staff)

EDUC 147. AUDIO-VISUAL EDUCATION. (3)

First semester and summer session. Sensory impressions in their relation to learning projection apparatus, its cost and operation; slides, filmstrips, and films, physical principles underlying projection; auditory aids to instruction; field trips; pictures, models, and graphic materials; integration of sensory aids with organized instruction. Recommended for all education students. (Beckman, Wedberg)

EDUC 148. INSTRUCTIONAL MEDIA SERVICES. (3)

Prerequisites: Teaching experience and EDUC 147, or equivalent. Procedures for coordinating instructional media programs; instructional materials acquisition, storage, scheduling, distribution, production, evaluation, and other service responsibilities; instructional materials center staff coordination of research, curriculum improvement, and faculty development programs. (Staff)

EDUC 149. PROGRAMMED INSTRUCTION. (3)

Analysis of programmed instruction techniques; selection, utilization, and evaluation of existing programs and teaching machines; developing learning objectives; writing and validating programs. (Staff)

EDUC 150. EDUCATIONAL MEASUREMENT. (3)

First and second semesters; summer session. Constructing and interpreting measures of achievement. Not for graduate credit. (Staff)

EDUC 151. STATISTICAL METHODS IN EDUCATION. (3)

Designed as a first course in statistics for students in education. Emphasis is upon educational applications of descriptive statistics, including measures of central tendency, variability, and association. (Staff)

EDUC 155. LABORATORY PRACTICES IN READING. (2-4)

Prerequisite, EDEL 153 and EDUC 157. A laboratory course in which each student has one or more pupils for analysis and instruction. At least one class meeting per week to diagnose individual cases and to plan instruction. (Brigham, Sullivan, Wilson)

- EDUC 157. CORRECTIVE-REMEDIAL READING INSTRUCTION. (3)
Prerequisite, EDEL 153 or equivalent. For teachers, supervisors, and administrators who wish to identify and assist pupils with reading difficulties. Concerned with diagnostic techniques, instructional materials, and teaching procedures useful in the regular classroom. (Brigham, Sullivan, Wilson)
- EDUC 160. EDUCATIONAL SOCIOLOGY. (3)
Deals with data of the social sciences which are germane to the work of teachers. Implications of democratic ideology for educational endeavor, educational tasks imposed by changes in population and technological trends, the welfare status of pupils, the socio-economic attitudes of individuals who control the schools, and other elements of community background. (Huden)
- EDUC 187. FIELD EXPERIENCE IN EDUCATION. (1-4)
A. Adult Education
B. Social Foundations
C. Measurement and Statistics
Prerequisites, at least six semester hours in education at the University of Maryland plus such other prerequisites as may be set by the major area in which the experience is to be taken. Planned field experience may be provided for selected students who have had teaching experience and whose application for such field experience has been approved by the Education faculty. Field experience is offered in a given area to both major and non-major students.
Note: The total number of credits which a student may earn in EDUC 187, EDUC 224, and EDUC 287 is limited to a maximum of twenty (20) semester hours. (Staff)
- EDUC 188. SPECIAL PROBLEMS IN EDUCATION. (1-3)
Prerequisites, consent of instructor. Available only to mature students who have definite plans for individual study of approved problems. **Course cards must have the title of the problem and the name of the faculty member who has approved it.** (Staff)
- EDUC 189. WORKSHOPS, CLINICS, AND INSTITUTES. (1-6)
The maximum number of credits that may be earned under this course symbol toward any degree is six semester hours; the symbol may be used two or more times until six semester hours have been reached. The following type of educational enterprise may be scheduled under this course heading: workshops conducted by the College of Education (or developed cooperatively with other colleges and universities) and not otherwise covered in the present course listing; clinical experiences in pupil-testing centers, reading clinics, speech therapy laboratories, and special education centers; institutes developed around specific topics or problems and intended for designated groups such as school superintendents, principals, and supervisors. (Staff)
- EDUC 246. QUANTITATIVE RESEARCH METHODS II (3) (Staff)
- EDUC 251. INTERMEDIATE STATISTICS IN EDUCATION. (3) (Staff)
- EDUC 255, 256. ADVANCED LABORATORY EXPERIENCES IN READING INSTRUCTION (3,3) (Brigham, Sullivan, Wilson)
- EDUC 257. DIAGNOSIS AND REMEDIATION OF READING DISABILITIES. (3) (Brigham, Sullivan, Wilson)
- EDUC 262. MEASUREMENT IN PUPIL APPRAISAL. (3) (Staff)
- EDUC 265. THEORY OF MEASUREMENT. (2) (Giblette)
- EDUC 266. PRACTICUM IN INDIVIDUAL TESTING (3) (Staff)
- EDUC 271. ADVANCED STATISTICS IN EDUCATION. (3) (Dayton)
- EDUC 272. SPECIAL TOPICS IN APPLIED STATISTICS IN EDUCATION. (1-4) (Staff)
- EDUC 275, 276. ADVANCED PROBLEMS IN ART EDUCATION. (3,3) (Staff)
- EDUC 279. SEMINAR IN ADULT EDUCATION. (2) (Staff)
- EDUC 280. RESEARCH METHODS AND MATERIALS. (2) (Stunkard)
- EDUC 281. SOURCE MATERIALS IN EDUCATION. (1-2) (Wiggin)
- EDUC 287. INTERNSHIP IN EDUCATION. (3-16)
A. Adult Education
B. Social Foundations
C. Measurement and Statistics (Staff)
- EDUC 288. SPECIAL PROBLEMS IN EDUCATION. (1-6) (Staff)
- EDUC 290. DOCTORAL SEMINAR. (1-3) (Staff)
- EDUC 302. CURRICULUM IN HIGHER EDUCATION. (3) (Kelsey)
- EDUC 303. ORGANIZATION AND ADMINISTRATION OF HIGHER EDUCATION. (3) (Wiggin)
- EDUC 305. COLLEGE TEACHING. (3) (Kelsey and Staff)
- EDUC 309. SEMINAR IN PROBLEMS OF HIGHER EDUCATION. (2) (Kelsey)
- EDUC 399. THESIS RESEARCH. (Master's Level) (Staff)
- EDUC 499. DISSERTATION RESEARCH. (Doctorate Level) (Staff)

EARLY CHILDHOOD-ELEMENTARY EDUCATION

The Department of Early Childhood-Elementary Education offers two undergraduate curriculums leading to the Bachelor of Science degree:

1. Early Childhood Education—for the preparation of teachers in nursery school, kindergarten, and primary grades (grades one, two, and three).
2. Elementary Education—for the preparation of teachers of grades one through six.

Students who wish to become certificated teachers for nursery school and/or kindergarten must follow the Early Childhood Education curriculum (1. above). Students who seek certification for teaching the intermediate grades must follow the Elementary Education curriculum (2. above). Students who plan to teach in the primary grades can achieve certification in either 1. or 2.

After June commencement 1972, all students graduating in Early Childhood Education or Elementary Education will fulfill the requirements of the appropriate present curriculum or its counterpart as of June, 1966, depending upon the date of admission to the Department of Early Childhood-Elementary Education.

AREA OF ACADEMIC CONCENTRATION

Students in Early Childhood-Elementary Education are required to develop within their degree pro-

FOR GRADUATES*

* See Graduate Catalog for descriptions

- EDUC 202. THE JUNIOR COLLEGE. (3) (Kelsey)
- EDUC 203. PROBLEMS IN HIGHER EDUCATION. (3) (Kelsey)
- EDUC 204. SEMINAR IN EDUCATIONAL SOCIOLOGY. (2) (Grambs)
- EDUC 205. COMPARATIVE EDUCATION. (3) (Lindsay, Male)
- EDUC 206. SEMINAR IN COMPARATIVE EDUCATION. (2) (Lindsay, Male)
- EDUC 207. SEMINAR IN HISTORY AND PHILOSOPHY OF EDUCATION. (2) (Staff)
- EDUC 208. ANALYSIS OF EDUCATIONAL CONCEPTS (3) (Agre)
- EDUC 209. ADULT EDUCATION. (3) (Staff)
- EDUC 224. APPRENTICESHIP IN EDUCATION. (1-9)
A. Adult Education
B. Social Foundations
C. Measurement and Statistics (Staff)
- EDUC 230. MEDIATED INSTRUCTIONAL SYSTEMS. (3) (Staff)
- EDUC 231. PRACTICUM IN INSTRUCTIONAL SYSTEMS. (2-6) (Staff)
- EDUC 232. SEMINAR IN EDUCATIONAL TECHNOLOGY RESEARCH AND THEORY. (2) (Staff)
- EDUC 237. CURRICULUM THEORY AND RESEARCH. (2) (Hovet)
- EDUC 245. INTRODUCTION TO RESEARCH. (2) (Staff)

grams an Area of Academic Concentration consisting of a minimum of eighteen semester hours, at least twelve semester hours beyond required work in the area. Approved areas are: Anthropology, Astronomy, Botany, Chemistry, Economics, English, Fine Arts (Arts, Dance, Drama, and Music), Foreign Language, Geography, Geology, History, Mathematics, Natural Sciences (Astronomy, Botany, Chemistry, Geology, Meteorology, Physics, Zoology), Philosophy, Physics, Psychology, Social Science (Economics, Government and Politics, Psychology, Sociology), Sociology, Zoology.

GRADUATION REQUIREMENTS

One hundred twenty (120) academic credits plus the four semester hours in required Health and Physical Education are necessary for graduation. At least eighty (80) of the academic credits must be in fields other than Education.

EARLY CHILDHOOD EDUCATION

(Nursery-Kindergarten-Primary)

The early childhood education curriculum has as its primary goal the preparation of nursery school, kindergarten, and primary teachers.

Observation and student teaching are done in the University Nursery-Kindergarten School on the campus and in approved schools in nearby communities.

Graduates receive a B.S. degree and meet the requirements for certification for teaching, kindergarten, nursery school, and primary grades in Maryland. Students should have had extensive experience in working with children prior to the junior year.

	Semester	
	I	II
FRESHMAN YEAR		
ENGL 001 – Composition or ENGL 021 – Honors Composition.....	3	...
ENGL 003 – World Literature.....	3	3
SPCH 003 – Fundamentals of General American Speech or SPCH 001 – Public Speaking or SPCH 004 – Voice and Diction.....	2	...
HLTH 005 – Science and Theory of Health.....	3	...
PHYSICAL EDUCATION.....	1	1
MUSC 016 – Fundamentals ART 040 – Fundamentals of Art Education or APPLIED DESIGN 001 – Fundamentals of Design.....	1	3
BOTN 001 – General Botany or ENTM 005 Insects or MICB 001 – General Microbiology or ZOOL 001 – General Zoology.....	3 or 4	...
ASTR 001 – Introduction to Astronomy or CHEM 008 – General Chemistry or GEOL 001 – Geology or PHYS 001 – Elements of Physics: Mechanics, Heat and Sound.....	3 or 4	3 or 4
HIST 021 – History of the U.S. to 1865 or HIST 022 – History of the U.S. since 1865 or HIST 023 – Social and Cultural History of Early America or HIST 024 – Social and Cultural History of Modern America or HIST 029 – The U.S. in World Affairs.....	3	3
Approved elective.....	3	3
	15 or 16	16 or 17

	Semester	
	I	II
SOPHOMORE YEAR		
ENGL 004 – World Literature.....	3	...
MATH 030 – Elements of Mathematics.....	4	...
MATH 031 – Elements of Geometry.....	3	3
GEOG 010 – Introduction to Geography.....	3	3
ANTH 001 or ECON 031 or ECON 037 or GNED 060 or GVPT 001 or GVPT 003 or GVPT 101 or PSYC 001 or SOCY 001.....	3	3
BOTN 001 or ENTM 005 or MICB 001 or ZOOL 001 or ASTR 001 or CHEM 001 or GEOL 001 or PHYS 001.....	3 or 4	...
HIST 031 – Latin American History or HIST 031 – Latin American History or HIST 041 – Western Civilization or HIST 042 – Western Civilization or HIST 051 – The Humanities or HIST 052 – The Humanities or	3 or 4	...

HIST 053 – History of England and Great Britain or HIST 054 – History of England and Great Britain or HIST 061 – Far Eastern Civilization or HIST 062 – Far Eastern Civilization or HIST 071 – Islamic Civilization or HIST 072 – Islamic Civilization		3	3
Approved elective.....		3	3
		16 or 17	16
JUNIOR YEAR			
Fine Arts or Philosophy.....	3	...	6
EDEL 110 – Human Development and Learning EDEL 115 – Activities and Materials in Early Childhood Education.....	3	6 or 6	6
EDMU 116 – Music in Early Childhood Education.....	3	...	2
EDEL 105A – Science in the Elementary School EDEL 122A – Social Studies in the Elementary School.....	2	2	2
EDEL 123A – The Child and the Curriculum EDEL 126A – Mathematics in the Elementary School.....	2	2	2
EDEL 153A – The Teaching of Reading Approved electives.....	6	6 or 6	15
		15	16
SENIOR YEAR			
EDUC 111 – Foundations of Education.....	3	...	8
EDEL 149 – Student Teaching in the Elementary School: A – Nursery School, 4 s.h.; B – Kindergarten, 4 s.h.; C – Primary Grades, 8 s.h.	8	8	8
Approved electives.....	4	7	15
		15	15

ELEMENTARY EDUCATION

This curriculum is designed for regular undergraduate students who wish to qualify for teaching positions in elementary schools. Students who complete the curriculum will receive the Bachelor of Science degree, and they will meet the Maryland State Department of Education requirements for the Standard Professional Certificate in Elementary Education. The curriculum also meets certification requirements in many other states, Baltimore, and the District of Columbia.

	Semester	
	I	II
FRESHMAN YEAR		
ENGL 001 – Composition or ENGL 021 – Honors Composition.....	3	...
ENGL 003 – World Literature.....	3	3
SPCH 003 – Fundamentals of General American Speech or SPCH 001 – Public Speaking or SPCH 004 – Voice and Diction.....	2	...
HLTH 005 – Science and Theory of Health.....	3	...
PHYSICAL EDUCATION.....	1	1
MUSC 016 – Fundamentals ART 040 – Fundamentals of Art Education or APDS 001 – Fundamentals of Design.....	1	3
BOTN 001 – General Botany or ENTM 005 – Insects or MICB 001 – General Microbiology or ZOOL 001 – General Zoology.....	3 or 4	...
ASTR 001 – Introduction to Astronomy or CHEM 008 – General Chemistry or GEOL 001 – Geology or PHYS 001 – Elements of Physics: Mechanics, Heat and Sound.....	3 or 4	3 or 4
HIST 021 – History of the U.S. to 1865 or HIST 022 – History of the U.S. since 1865 or HIST 023 – Social and Cultural History of Early America or HIST 024 – Social and Cultural History of Modern America or HIST 029 – The U.S. in World Affairs.....	3	3
Approved elective.....	3	3
	15 or 16	16 or 17

	Semester	
	I	II
SOPHOMORE YEAR		
ENGL 004 – World Literature.....	3	...
MATH 030 – Elements of Mathematics.....	4	...
MATH 031 – Elements of Geometry.....	3	3
GEOG 010 – Introduction to Geography.....	3	3
ANTH 001 or ECON 031 or ECON 037 or GNED 060 or GVPT 001 or GVPT 003 or GVPT 101 or PSYC 001 or SOCY 001.....	3	3
BOTN 001 or ENTM 005 or MICB 001 or ZOOL 001 or ASTR 001 or CHEM 001 or GEOL 001 or PHYS 001.....	3 or 4	...
HIST 031 – Latin American History or HIST 031 – Latin American History or HIST 041 – Western Civilization or HIST 042 – Western Civilization or HIST 051 – The Humanities or HIST 052 – The Humanities or	3 or 4	...

or HIST 052—The Humanities or HIST 053—
History of England and Great Britain or
HIST 054—History of England and Great
Britain or HIST 061—Far Eastern
Civilization or HIST 062—Far Eastern
Civilization or HIST 071—Islamic
Civilization or HIST 072—Islamic
Civilization

3

JUNIOR YEAR

FINE ARTS AND PHILOSOPHY.....	3	
EDUC 110—Human Development and Learning.....	6	or 6
EDEL 105B—Science in the Elementary School EDEL 121B—Language Arts in the Elementary School.....	2 ⁵	2 ³
EDEL 122B—Social Studies in the Elementary School.....	2 ⁴	
EDEL 126B—Mathematics in the Elementary School.....		2 ⁴
EDEL 153B—The Teaching of Reading.....		2 ⁴
Approved electives.....	2 or 8	3 or 9
	15	15

SENIOR YEAR

EDEL 149D—Student Teaching in the Elementary School.....	16	
EDUC 111—Foundations of Education.....		3
EDEL 125—Art in the Elementary School or EDMU 128—Music for the Elementary Classroom Teacher or PHED 120—Physical Education for Elementary Schools.....		2 or 3
Approved electives.....	0	9
	16	14 or 15

PHYSICAL EDUCATION AND HEALTH EDUCATION CURRICULUM—ELEMENTARY SCHOOL

Students enrolled in the College of Education and majoring in elementary education may pursue an area of specialization in elementary school physical education and health education. Students interested in this area should consult the Dean of the College of Physical Education, Recreation and Health.

MUSIC EDUCATION CURRICULUM—ELEMENTARY SCHOOL

Students enrolled in the College of Education and majoring in Elementary Education may pursue an area of specialization in elementary school music education with vocal or instrumental emphasis, and thereby qualify for the Bachelor of Science certificate in special subjects.

In order to fulfill requirements in this area, the following courses should be taken in addition to those required in the Elementary Education curriculum. Students are also required to pass the Musicianship Examination given by the Music Education Division before the students enroll for student teaching. (Students should consult their advisor in Music Education for details.)

- A. **General Music**, 18 semester hours. Music theory, MUSC 007, 008, 070 (3,3,4); music literature and history, MUSC 001, 121 (3,3,); conducting, MUSC 160 (2).
- B. **Applied Music**, 14 semester hours divided between private and class instruction. Students must complete MUSC 53 on their major instrument. Students in the instrumental option elect 6 semester hours of class instruction from MUSC 061-068.
- C. **Professional Courses**, 8 semester hours. Methods, EDMU 139 (2) for vocal emphasis, or EDMU 129 (2) for instrumental emphasis; 6 semester hours of student teaching.

Methods in the Elementary School, Arts and Science foreign language majors, and Secondary Education foreign language majors are also eligible for admission. Students interested in FLES should

contact the Foreign Language Education advisor in the Department of Secondary Education for further information concerning the requirements for certification in FLES.

FACULTY

EARLY CHILDHOOD EDUCATION: Sarah Lou Leeper, Joan E. Moyer, Margaret A. Stant.

ELEMENTARY EDUCATION: Kathleen G. Amershek, Robert B. Ashlock, Glenn O. Blough, Bruce W. Brigham, Janet Carsetti, Robert V. Duffey, George Eley, Walter N. Gantt, Mary Anne Hall, Wayne L. Herman, C. Keith Martin, Susannah M. McCuaig, Richard W. O'Donnell, Leo W. O'Neill, Jesse A. Roderick, Alvin W. Schindler, Elisabeth Schumacher, Dorothy D. Sullivan, V. Phillips Weaver, David L. Williams, Robert M. Wilson, Lillian B. Zachary.

PRIMARILY FOR FRESHMEN AND SOPHOMORES

EDEL 88. SPECIAL PROBLEMS IN EDUCATION (1-6)
See EDUC 88 for description. (Staff)

FOR ADVANCED UNDERGRADUATES

EDEL 105. SCIENCE IN THE ELEMENTARY SCHOOL. A.—EARLY CHILDHOOD; B.—ELEMENTARY. (2-3)

Designed to help teachers acquire general science understandings and to develop teaching materials for practical use in classrooms. Includes experiments, demonstrations, constructions, observations, field trips, and use of audio-visual materials. The emphasis is on content and method related to science units in common use in elementary schools. Formerly Sci. Ed. 105.

(Blough, Eley, Williams)

EDEL 115. ACTIVITIES AND MATERIALS IN EARLY CHILDHOOD EDUCATION. (3)

First and second semesters. Prerequisites, EDUC 110 (or concurrent enrollment). Storytelling, selection of books, the use, preparation, and presentation of such raw materials as clay, paints (easel and finger), blocks, wood, and scrap materials. (Stant)

EDEL 121. LANGUAGE ARTS IN THE ELEMENTARY SCHOOL. A.—EARLY CHILDHOOD; B.—ELEMENTARY. (2-3)

Teaching of spelling, handwriting, oral and written expression, and creative expression.

(Gantt, McCuaig, O'Donnell, Roderick, Schumacher, Zachary)

EDEL 122. SOCIAL STUDIES IN THE ELEMENTARY SCHOOL. A.—EARLY CHILDHOOD; B.—ELEMENTARY. (2-3)

Consideration given to curriculum, organization and methods of teaching, evaluation of newer materials, and utilization of environmental resources.

(Duffey, Herman, O'Donnell, O'Neill, Potterfield, Weaver)

EDEL 123. THE CHILD AND THE CURRICULUM. A.—EARLY CHILDHOOD; B.—ELEMENTARY. (2-3)

Relationship of the elementary school curriculum to child growth and development. Recent trends in curriculum organization; the effect of environment on learning; readiness to learn; and adapting curriculum content and methods to maturity levels of children.

(Amershek, Schumacher)

EDEL 125. ART IN THE ELEMENTARY SCHOOL. (2-3)

Concerned with art methods and materials for elementary schools. Includes laboratory experiences with materials appropriate for elementary schools.

(Lembach, Longley)

EDEL 126. MATHEMATICS IN THE ELEMENTARY SCHOOL. A.—EARLY CHILDHOOD; B.—ELEMENTARY. (2-3)

Emphasis on materials and procedures which help pupils sense arithmetical meanings and relationships. Helps teachers gain a better understanding of the number system and arithmetical processes.

(Ashlock, Martin, Schindler)

EDEL 127. TEACHING IN THE ELEMENTARY SCHOOL. A.—NURSERY SCHOOL AND KINDERGARTEN; B.—ELEMENTARY SCHOOL. (2-6)

An overview of elementary school teaching designed for in-

dividuals without specific preparation for elementary school teaching or for individuals without recent teaching experience. (Staff)

EDEL 140. CURRICULUM AND INSTRUCTION. A.—COOPERATIVE NURSERY SCHOOL; B.—EARLY CHILDHOOD; C.—ELEMENTARY. (3)

Philosophy of early childhood education, observation of the developmental needs at various age levels, with emphasis upon the activities, materials, and methods by which educational objectives are attained. (Staff)

EDEL 143. FOREIGN LANGUAGE METHODS IN THE ELEMENTARY SCHOOL. (3)

Graduate credit allowed by special arrangement and adviser's approval. Registration limited and based upon approval of adviser. Methods and techniques for developmental approach to the teaching of modern foreign languages in elementary schools. Use of realia development of oral-aural skills and understanding of young children in language development are stressed. (Staff)

EDEL 149. STUDENT TEACHING IN ELEMENTARY SCHOOLS. A.—NURSERY SCHOOL (4-8); B.—KINDERGARTEN (4-8); C.—PRIMARY (4-16); D.—ELEMENTARY (4-16).

A grade point average of 2.30, a doctor's certificate indicating freedom from communicable diseases, and approval of the instructor required. Undergraduate credit only. No other courses may be taken during a full semester of student teaching. For 16 credits, full time for one semester is devoted to this work. For experienced teachers the time and credit may be reduced to not less than 8 credits. (Staff)

EDEL 152. LITERATURE FOR CHILDREN AND YOUNG PEOPLE. (3)

Development of literary materials for children and young people. Timeless and ageless books, and outstanding examples of contemporary publishing. Evaluation of the contributions of individual authors and illustrators and children's book awards.

(Amershek, E. Anderson, Hall, Roderick, Zachary)

EDEL 153. THE TEACHING OF READING. A.—EARLY CHILDHOOD; B.—ELEMENTARY; (2-3)

Concerned with the fundamentals of development reading instruction, including reading readiness, use of experience records, procedures in using basal readers, the improvement of comprehension, teaching reading in all areas of the curriculum, uses of children's literature, the program in word analysis, and procedures for determining individual needs.

(Duffey, Hall, Herman, McCuaig, Sullivan, Wilson, Zachary)

EDEL 187. FIELD EXPERIENCE IN EDUCATION. (1-4)
See EDUC 187 for description. (Staff)

EDEL 188. SPECIAL PROBLEMS IN EDUCATION. (1-3)
See EDUC 188 for description. (Staff)

EDEL 189. WORKSHOPS, CLINICS, AND INSTITUTES. (1-6)
See EDUC 189 for description. (Staff)

FOR GRADUATES

See Graduate Catalog for Descriptions

EDEL 200. SEMINAR IN ELEMENTARY EDUCATION. (2)

EDEL 205. PROBLEMS IN TEACHING SCIENCE IN ELEMENTARY SCHOOLS. (3)

(Blough, Eley, Williams)

EDEL 210. CURRICULUM PLANNING IN NURSERY-KINDERGARTEN EDUCATION. (3)

(Leeper)

EDEL 211. THE YOUNG CHILD IN THE COMMUNITY. (3)

(Amershek)

EDEL 212. THE YOUNG CHILD IN SCHOOL. (3)

(Leeper)

EDEL 213. TEACHER-PARENT RELATIONSHIPS. (3)

(Amershek)

EDEL 214. INTELLECTUAL AND CREATIVE EXPERIENCES OF THE NURSERY-KINDERGARTEN CHILD. (3)

(Moyer)

EDEL 221. PROBLEMS OF TEACHING LANGUAGE ARTS IN ELEMENTARY SCHOOLS. (3)

EDEL 222. PROBLEMS OF TEACHING SOCIAL STUDIES IN ELEMENTARY SCHOOLS. (3)

(Duffey, Herman, O'Donnell, O'Neill, Potterfield, Weaver)

EDEL 224. APPRENTICESHIP IN EDUCATION. (1-9) (Staff)

EDEL 226. PROBLEMS OF TEACHING MATHEMATICS IN ELEMENTARY SCHOOLS. (3)

(Ashlock, Martin, Schindler)

EDEL 227. DIAGNOSIS AND REMEDIATION OF ARITHMETIC DISABILITIES. (3)

(Staff)

EDEL 253. PROBLEMS OF TEACHING READING IN ELEMENTIC DISABILITIES. (3)

(Staff)

EDEL 287. INTERSHIP IN EDUCATION. (3-16) (Staff)

EDEL 288. SPECIAL PROBLEMS IN EDUCATION. (1-6) (Staff)

EDEL 399. THESIS RESEARCH (Master's Level) (Staff)

EDEL 499. DISSERTATION RESEARCH. (Doctorate Level) (Staff)

INDUSTRIAL EDUCATION

This department offers programs leading to teacher certification in Industrial Arts and Vocational-Industrial Education. It also offers a program in Education for Industry which prepares individuals for supervisor and industrial management positions, and an Industrial Technology program for persons with advanced technical preparation who wish to teach in technical institutes or junior colleges.

Three curriculums are administered by the Industrial Education Department: (1) Industrial Arts Education, (2) Vocational-Industrial Education, and (3) Education for Industry. The overall offering includes both undergraduate and graduate programs leading to the degrees of: Bachelor of Science, Master of Education, Master of Arts, Doctor of Education, and Doctor of Philosophy.

The industrial arts education curriculum prepares persons to teach industrial arts at the secondary school level. It is a four-year program leading to a Bachelor of Science degree. While trade or industrial experience contributes significantly to the background of the industrial arts teacher, previous work experience is not a condition of entrance into this curriculum. Students who are enrolled in the curriculum are encouraged to obtain work in industry during the summer months. Industrial arts as a secondary school subject area is a part of the general education program characterized by extensive laboratory experiences.

The vocational-industrial curriculum may lead either to certification as a vocational-industrial teacher with no degree involved or to a Bachelor of Science degree, including certification. The University of Maryland is designated as the institution which shall offer the "Trade and Industrial" certification courses and hence the courses which are offered are those required for certification in Maryland. The vocational-industrial curriculum requires trade competence as specified by the **Maryland State Plan for Vocational Education**. A person who aspires to take the certification courses should review the state plan and may well contact Maryland State Department of Education officials. If the person has in mind teaching in a designated city or county he may discuss his plans with the vocational-industrial official of that city or county inasmuch as there are variations in employment and training procedures.

	Semester	
	I	II
ENGL 001—Composition.....	3	...
ENGL 003—World Literature or	...	...
ENGL 004—World Literature.....	...	3
SOCY 001—Introduction to Sociology or PHIL	...	...
001—Introduction to Philosophy or PSYC	...	...
001—Introduction to Psychology.....	3	...
PHED 001, 003—Physical Activities.....	1	1
SPCH 001—Public Speaking.....	3	...
EDIN 001—Mechanical Drawing I.....	2	...
EDIN 002—Woodworking I.....	3	...
EDIN 012—Shop Calculation.....	...	3
ART—Art elective or.....	...	...
PHIL—Philosophy elective.....	...	3
HLTH 005—Science and Theory of Health.....	...	2
EDIN 021—Mechanical Drawing II.....	...	2
EDIN 022—Woodworking II.....	...	3
Total.....	15	17

SOPHOMORE YEAR		
ENGL 004—World Literature or		
ENGL 003—World Literature	3	
HIST 021—History of U.S. to 1865, or		
HIST 022—History of U.S. since 1865	3	
HIST—History elective		3
PHYS 001 and PHYS 002—Elements of		
Physics: Mechanics, Heat and Sound	3	3
EDIN 028—Electricity—Electronics	3	
EDIN 033—Automotives I	3	
EDIN 041—Architectural Drawing	2	
MAATH 010—Introduction to Mathematics		3
EDIN 048—Electricity—Electronics II		3
EDIN 023—Arc and Gas Welding		1
EDIN 110—Foundry		1
Total	17	14

JUNIOR YEAR		
CHEM 008, 009—General Chemistry	4	4
EDUC 110—Human Development and Learning	6	
ECON 037—Fundamentals of Economics		3
EDIN 069—Machine Shop Practice I	3	
EDIN 026—General Metal Work		3
EDIN 111—Laboratory Practicum in Industrial		3
Arts	3	
EDIN 034—Graphic Arts I		3
ELEC—Electric (Laboratory)	4	
ELEC—Electric (Unspecified)		3
Total	17	19

SENIOR YEAR		
EDIN 140—Curriculum, Instruction and		
Observation	3	
EDIN 148—Student Teaching in Secondary		
Schools	8	
EDIN 145—Principles and Methods of		
Secondary Education	3	
EDIN 164—Laboratory Organization and		
Management		3
EDIN 166—Educational Foundation of		
Industrial Arts	2	
EDUC 111—Foundations of Education		3
EDUC—Electives	6	
or Elec.—Electives (Unspecified)		3
Total	14	17

VOCATIONAL-INDUSTRIAL EDUCATION

The vocational-industrial curriculum is a four-year program of studies leading to a Bachelor of Science degree in education. It is intended to develop the necessary competencies for the effective performance of the tasks of a vocational teacher. In addition to establishing the adequacy of the student's skills in a particular trade and the development of instructional efficiency, the curriculum aims at the professional and cultural development of the individual. Courses are included which would enrich the person's scientific, economic, psychological and sociological understandings. The vocational-certification courses for the state of Maryland are a part of the curriculum requirements.

Persons pursuing this curriculum must present documentary evidence of having an apprenticeship or comparable learning period and journeyman experience. This evidence of background and training is necessary in order that the trade examination phase of the curriculum may be accomplished.

Persons having completed the necessary certification courses prior to working on the degree program may use such courses toward meeting graduation requirements. However, after certification course requirements have been met, persons continuing studies toward a degree must take courses in line with the curriculum plan and University regulations. For example, junior level courses cannot be taken until the student has reached full junior standing.

FRESHMAN YEAR		Semester	
ENGL 001—Composition		1	11
ENGL 003—World Literature or		3	
ENGL 004—World Literature			3
SOCY 001—Introduction to Sociology		3	
SPCH 001—Public Speaking		3	
ECON 037—Fundamentals of Economics			3
EDIN 012—Shop Calculation		3	
MATH 010—Introduction to Mathematics or			
MATH 003—Fundamentals of Mathematics			1
PHED 001, 003—Physical Activities		1	3
HLTH 005—Science and Theory of Health			1
Total		13	12

SOPHOMORE YEAR		
ENGL 003—World Literature or		
ENGL 004—World Literature	3	
ART—Art elective or		
PHIL—Philosophy elective		3
HIST 021—History of the U.S. to 1865, or		
HIST 022—History of the U.S. since 1865	3	
HIST—History elective		3
Physical Sciences		3
PSYC 001—Introduction to Psychology		3
CHEM 008—General Chemistry or ZOOL 001		
—General Zoology or GEOG 030—Principles		
of Morphology		4
Total		12
Trade Examination		20

JUNIOR YEAR		
EDIN 150—Training Aids Development		3
EDIN 165—Modern Industry	3	
EDUC 110—Human Development and Learning	6	
EDIN 169—Occupational Analysis and Course		
Construction		4
CHEM 009 or Botany I or GEOL 040		3
EDIN 171—History and Principles of		
Vocational Education		3
EDIN 157—Tests and Measurements		3
Approved electives		3
Total	16	12

SENIOR YEAR		
EDIN 140—Curriculum, Instruction and		
Observation		3
EDIN 145—Principles and Methods of Sec. Ed.		3
EDIN 148—Student Teaching in Secondary		
Schools		8
EDCP 161—Introduction to Counseling and		
Personnel Services		3
Electives		6
EDUC 111—Social Foundations of Education		3
EDIN 164—Laboratory Organization and		
Management		3
Ed electives		2
Total	17	14

STUDENT TEACHING REQUIREMENT

Persons currently teaching in the secondary schools with three or more years of satisfactory experience at that level are not required to take EDIN 148—Student Teaching in Secondary Schools. Evidence of satisfactory teaching experience shall be presented in the form of written statements from the principal, area supervisor, and department head in the school where such teaching is done. Instead of the eight credits required for student teaching, the individual meeting the above qualifications will have eight additional semester hours of elective credits.

ELECTIVE CREDITS

Courses in history and philosophy of education, sociology, speech, psychology, economics, business administration, and other areas may be taken with the permission of the student's adviser.

Elective courses in the technical area (shop and drawing) will be limited to courses and subjects not covered in the trade training experience. Courses dealing with advanced technology and recent improvements in field practices will be acceptable.

VOCATIONAL-INDUSTRIAL CERTIFICATION

A person to become certified as a Trade, Industrial and Service Occupations teacher in the State of Maryland must successfully complete 18 credit hours of instruction.

The following courses must be included in the 18 credit hours of instruction:

EDIN 050—Methods of Teaching	
EDIN 164—Laboratory Organization and Management	
EDIN 157—Tests and Measurements	
EDIN 169—Occupational Analysis and Course Construction	

The remainder of the credit hours shall be met through the election of the following courses:

EDIN 150—Training Aids Development	
EDIN 161—Principles of Vocational Guidance	
EDIN 165—Modern Industry	
EDIN 167—Problems in Occupational Education	
EDIN 171—History and Principles of Vocational Education	
EDCP 161—Introduction to Counseling and Personnel Services	
EDCP 172—Mental Hygiene in the Classroom	
PSYC 110—Educational Psychology or its equivalent	

A person in vocational-industrial education may use his certification courses toward a Bachelor of Science degree. In doing so the general requirements of the University and College of Education must be met. A maximum of twenty semester hours of credit may be earned through examination in the trade in which the student has competence. Prior to taking the examination, the student shall provide documentary evidence of his apprenticeship or learning period and journeyman experience. For further information about credit by examination refer to the academic regulations in appendix.

EDUCATION FOR INDUSTRY

The Education for Industry curriculum is a four-year program leading to a Bachelor of Science degree. The purpose of the program is to prepare persons for jobs within industry and, as such it embraces four major areas of competence, (a) technical competence, (b) human relations and leadership competence, (c) communications competence, and (d) social and civic competence.

	Semester	
FRESHMAN YEAR	I	II
ENGL 001—Composition	3	...
ENGL 003—World Literature or	3	...
ENGL 004—World Literature	3	3
SOCY 001 or ANTH 001—Introduction to Sociology or Introduction to Anthropology	3	...
EDIN 001—Mechanical Drawing I	2	...
EDIN 012—Shop Calculation	3	...
EDIN 021—Mechanical Drawing II	2	1
EDIN 022—Woodworking I	3	2
EDIN 023—Arc and Gas Welding	...	1
EDIN 069—Machine Shop Practice I	...	1
EDIN 110—Foundry	1	1
PHED 001, 003—Physical Activities	1	1
MATH 010—Introduction to Mathematics	...	3
Total	15	14

SOPHOMORE YEAR

ART—Art Elective	...	3	
ENGL 003—World Literature or	...	3	...
ENGL 004—World Literature	2	...	...
EDIN 024—Sheet Metal Work	3	...	3
BSAD 010—Elements of Business Enterprise	3	...	...
SPCH 007—Public Speaking	...	2	...
PHYS 001, 002—Elements of Physics: Mechanics, Heat and Sound or Elements of Physics: Magnetism, Electricity, and Optics or PHYS 010, 011—Fundamentals of Physics	3 or 4	3 or 4	...
MATH 011—Introduction to Mathematics	3	...	...
HLTH 005—Science and Theory of Health	...	2	...
HIST 042—Western Civilization	...	3	...
ECON 037—Fundamentals of Economics	...	3	...
EDIN 084—Organized and Supervised Work Experience	3	...	...
Total	17 or 18	16 or 17	

JUNIOR YEAR		
History Elective	3	...
PSYC 001—Introduction to Psychology	3	...
PSYC 005—Personality and Adjustment	3	3
CHEM 008, 009—General Chemistry	4	4
ECON 160—Labor Economics	3	...
EDIN 124—Organized and Supervised Work Experience	3	...
EDIN 143-144—Industrial Safety Education I and II	2	2
BSAD 160—Personnel Management I	3	3
SOCY 115—Industrial Sociology	3	3
Electives	3	3
Total	21	18

SENIOR YEAR

BSAD 161—Personnel Management II or		
BSAD 130—Business I	3	...
BSAD 163—Labor Relations	3	...
BSAD 169—Production Management	3	3
EDIN 165—Modern Industry	3	...
EDIN 125—Industrial Training in Industry or		
EDIN 175—Recent Technological Developments in Products and Processes	3	3
PSYC 161—Industrial Psychology	5	3
Electives	7	7
Total	14	16

FACULTY

Lowell D. Anderson, Donald A. Bailey, Charles Beatty, Clifton Campbell, Kineth Chambliss, Edmund D. Crosby, Karl E. Gettle, Paul E. Harrison, Joseph F. Luetkemeyer, Donald Maley, Walter Mietus, Kenneth F. Stough, William F. Tierney

EDIN 001. MECHANICAL DRAWING. (2)

Four hours of laboratory per week. This course constitutes an introduction to orthographic multi-view and isometric projection. Emphasis is placed upon the visualization of an object when it is represented by a multi-view drawing and upon the making of multi-view drawings. The course carries through auxiliary views, sectional views, dimensioning, conventional representation and single stroke letters. (Campbell)

EDIN 002. WOODWORKING I. (3)

Six hours of laboratory per week. The course is designed to give the student an orientation into the woodworking industry with regard to materials, products, and processes while providing for skill development in the care and use of hand and power tools. (Beatty)

EDIN 009. INDUSTRIAL ARTS IN THE ELEMENTARY SCHOOL I. (2)

Four hours of laboratory per week. A course for pre-service and in-service elementary school teachers covering construction activities in a variety of media suitable for classroom use. The work is organized on the unit basis so that the construction aspect is supplemented by reading and other investigative procedures. (Gettle)

EDIN 010. INDUSTRIAL ARTS IN THE ELEMENTARY SCHOOL II. (2)

Prerequisite, EDIN 009. This is a continuation of EDIN 009. Four hours of laboratory per week. It provides the teacher with opportunities to develop further competence in construction activities. Some of the basic phenomena of industry are studied, particularly those which apply to the manufacture of common products, housing, transportation and communication. (Gettle)

EDIN 012. SHOP CALCULATIONS. (3)

Shop Calculations is designed to develop an understanding and working knowledge of the mathematical concepts related to the various aspects of industrial education. The course includes phases of algebra, geometry, trigonometry, and general mathematics as applied to shop and drawing activities. (Stough)

EDIN 021. MECHANICAL DRAWING. (2)

Four hours of laboratory per week. Prerequisite, EDIN 001. A course dealing with working drawings, machine design, pattern layouts, tracing and reproduction. Detail drawings followed by assemblies are presented. (Campbell)

EDIN 022. WOODWORKING II. (3)

Six hours of laboratory per week. Prerequisite, EDIN 002, for industrial arts teacher education majors. The course

- is designed to give the student a comprehensive knowledge of machine production with emphasis on safety, industrial processes, and maintenance. (Beatty)
- EDIN 023. ARC AND GAS WELDING. (1)**
Two hours of laboratory per week. A course designed to develop a functional knowledge of the principles and use of electric and acetylene welding. Practical work is carried on in the construction of various projects using welded joints. Instruction is given in the use and care of equipment, types of welded joints, methods of welding, importance of welding processes in industry, safety consideration, etc. (Gelina)
- EDIN 024. SHEET METAL WORK. (2)**
Four hours of laboratory per week. Articles are made from metal in its sheet form and involve the operations of cutting, shaping, soldering, riveting, wiring, folding, seaming, beading, burning, etc. The student is required to develop his own patterns inclusive of parallel line development, radial line development, and triangulation. (Crosby)
- EDIN 026. GENERAL METAL WORK. (3)**
Six hours of laboratory per week. This course provides experiences in constructing items from aluminum, brass, copper, pewter, and steel. The processes included are designing, layout, heat treating, forming, surface decorating, fastening, and assembling. The course also includes a study of the aluminum, copper, and steel industries in terms of their basic manufacturing processes. (Staff)
- EDIN 028. ELECTRICITY-ELECTRONICS I. (3)**
Six hours of laboratory per week. An introductory course to electricity-electronics in general, dealing with electrical circuits and wiring, the measurement of electrical energy, the theory of motors and generators, and an introduction to vacuum tubes, transistors and power supplies. (Bradley)
- EDIN 031. MECHANICAL DRAWING. (2)**
Four hours of laboratory per week. Prerequisites, EDIN 001 and 021. A course dealing with the topics enumerated in EDIN 021 but on a more advanced basis. The reading of prints representative of a variety of industries is a part of this course. (Luetkemeyer)
- EDIN 033. AUTOMOTIVES I. (3)**
Six hours of laboratory per week. Automotives I is a study of the fundamentals of internal combustion engines as applied to transportation. A study of basic materials and methods used in the transportation industry is included. (Cooksey)
- EDIN 034. GRAPHIC ARTS I. (3)**
Six hours of laboratory per week. An introductory course involving experiences in letterpress and offset printing practices. This course includes typographical design, hand composition, proof reading, stock preparation, offset plate making, imposition, lock-up, stock preparation, press-work, linoleum, block cutting, paper marbelizing, and book-binding. (Staff)
- EDIN 041. ARCHITECTURAL DRAWING. (2)**
Four hours of laboratory per week. Prerequisite, EDIN 001 or equivalent. Practical experience is provided in the design and planning of houses and other buildings. Working drawings, specifications, and blue-prints are featured. (Campbell)
- EDIN 042. WOODWORKING III. (3)**
Six hours of laboratory per week. Prerequisite, EDIN 022. The course is designed to give the student a comprehensive knowledge of contemporary woodworking technology with emphasis on mass production techniques, industrial research, and materials testing. (Beatty)
- EDIN 043. AUTOMOTIVES II. (3)**
Six hours of laboratory per week. Prerequisite, EDIN 033. This is an advanced course in transportation and power generation covering engines, fuel systems, ignition systems, and power trains. (Cooksey)
- EDIN 044. GRAPHIC ARTS II. (3)**
Six hours of laboratory per week. Prerequisite, EDIN 034. An advanced course designed to provide further experiences to letterpress and offset printing and to introduce other reproduction processes. Silk screen printing, dry print etching, mimeograph reproduction, and rubber stamp making are the new processes introduced in this course. (Staff)
- EDIN 048. ELECTRICITY-ELECTRONICS II. (3)**
Six hours of laboratory per week. Prerequisite, EDIN 028 or equivalent. An intermediate course designed to provide more extensive knowledge in electricity-electronics including the principles of the transmission and reception of radio waves, the applications of transistors and other semiconductors and an introduction to industrial electronics. (Bradley)
- EDIN 050. METHODS OF TEACHING. (3)**
(Offered at University College Centers.) For vocational and occupational teachers of shop work and related subjects. The identification and analysis of factors essential to helping others learn; types of teaching situations and techniques; measuring results and grading student progress in shop and related technical subjects. (Maley, Chambliss)
- EDIN 066. ART METAL WORK. (2)**
Four hours of laboratory per week. Prerequisite, EDIN 026, or equivalent. Advanced practicum. It includes methods of bowl raising and bowl ornamenting. (Crosby)
- EDIN 069. MACHINE SHOP PRACTICE I. (3)**
Six hours of laboratory per week. Prerequisite, EDIN 001, or equivalent. Bench work, turning, planing, milling, and drilling. Related technical information. (Bailey)
- EDIN 084. ORGANIZED AND SUPERVISED WORK EXPERIENCES. (3)**
See description under EDIN 124. (Crosby)
- EDIN 88. SPECIAL PROBLEMS IN EDUCATION (1-6)**
See EDUC 88 for description. (Staff)
- EDIN 089. MACHINE SHOP PRACTICE II. (2)**
Four hours of laboratory per week. Prerequisite, EDIN 069, or equivalent. Advanced shop practicum in thread cutting, grinding, boring, reaming, and gear cutting. Work-production methods are employed. (Bailey)
- EDIN 101. OPERATIONAL DRAWING. (2)**
Four hours of laboratory per week. Prerequisite, EDIN 001, or equivalent. A comprehensive course designed to give students practice in the modern drafting methods of industry. (Campbell)
- EDIN 105. GENERAL SHOP. (2)**
Designed to meet needs in organizing and administering a secondary school shop. Students are rotated through skill and knowledge developing activities in a variety of shop areas. (Gettle)
- EDIN 108. ELECTRICITY-ELECTRONICS III. (3)**
Six hours of laboratory per week. Prerequisite, EDIN 028, or equivalent. An advanced course designed to provide more extensive knowledge in electricity or electronics including the advanced theory and applications of semiconductors and the principles of the storage and transmission of electronically coded information. (Bradley)
- EDIN 109. EXPERIMENTAL ELECTRICITY AND ELECTRONICS—A, B, C, D. (2,2,2,2)**
(Staff)
- EDIN 110. FOUNDRY. (1)**
Two hours of laboratory per week. Bench and floor molding and elementary core making. Theory and principles covering foundry materials, tools and appliances. (Gelina)
- EDIN 111. LABORATORY PRACTICUM IN INDUSTRIAL ARTS EDUCATION. (3)**
Six hours of laboratory per week. Prerequisite, eighteen semester hours of shopwork and drawing. A course devoted to the development of instructional materials and the refinement of instructional methods pertinent to the teaching of industrial arts at the secondary school level. (Maley, Gettle)
- EDIN 115. RESEARCH AND EXPERIMENTATION IN INDUSTRIAL ARTS. (3)**
This is a laboratory-seminar course designed to develop persons capable of planning, directing, and evaluating effective research and experimentation procedures with the materials, products, and processes of industry. (Maley)
- EDIN 121. INDUSTRIAL ARTS IN SPECIAL EDUCATION. (3)**
Four hours laboratory per week, one hour lecture. Prerequisite, EDSP 170 and 171 or consent of instructor. This course provides experiences of a technical and theoretical nature in industrial processes applicable for classroom use. Emphasis is placed on individual research in the specific area of one major interest in special education. (Staff)
- EDIN 124. ORGANIZED AND SUPERVISED WORK EXPERIENCES.**
(3 credits for each internship period, total: 6 credits). This is a work experience sequence planned for students enrolled in the curriculum, "Education for Industry." The purpose is to provide the students with opportunities for first-hand experiences with business and industry. The student is responsible for obtaining his own employment with the coordinator advising him in regard to the job opportunities which have optimum learning value. The nature of the work experience desired is outlined at the outset of employment and the evaluations made by the student and the coordinator are based upon the planned experiences. The minimum time basis for each internship period is 6 forty-hour weeks or 240 work hours. Any one pe-

riod of internship must be served through continuous employment in a single establishment. Two internships are required. The two internships may be served with the same business or industry. The completion for credit of any period of internship requires the employer's recommendation in terms of satisfactory work and work attitudes. More complete details are found in the handbook prepared for the student of this curriculum. (Staff)

EDIN 125, 126. INDUSTRIAL TRAINING IN INDUSTRY I, II. (3,3)

The first course is designed to provide an overview of the function of industrial training, type of programs, organization, development and evaluation. The second course (prerequisite the first course) is designed to study specific training programs in a variety of industries, plant program visitation, training, program development, and analyses of industrial training research. (Willard)

EDIN 140. (EDUC 140). CURRICULUM, INSTRUCTION, AND OBSERVATION. (3)

Major functions and specific contributions of industrial art education; its relation to the general objectives of the junior and senior high schools, selection and organization of subject matter in terms of modern practices and needs; methods of instruction; expected outcomes; measuring results; professional standards. Twenty periods of observation. (Beatty, Anderson, Tierney)

EDIN 143. INDUSTRIAL SAFETY EDUCATION I. (2)

This course deals briefly with the history and development of effective safety programs in modern industry and treats causes, effects, and values of industrial safety education inclusive of fire prevention and hazard controls. (Crosby, Smith, White)

EDIN 144. INDUSTRIAL SAFETY EDUCATION II. (2)

In this course exemplary safety practices are studied through conference discussions, group demonstration, and organized plant visits to selected industrial situations. Methods of fire precautions and safety practices are emphasized. Evaluative criteria in safety programs are formulated. (Crosby, Smith, White)

EDIN 148. STUDENT TEACHING IN THE SECONDARY SCHOOLS. (2-8)

First and second semesters. EDSE 148 for additional requirements. (Tierney, Beatty, Anderson)

EDIN 150. TRAINING AIDS DEVELOPMENT. (3)

Study of the aids in common use as to their source and application. Special emphasis is placed on principles to be observed in making aids useful to shop teachers. Actual construction and application of such devices will be required. (Maley, Beatty)

EDIN 157. TESTS AND MEASUREMENTS. (3)

The construction of objective tests for occupational and vocational subjects. (Luetkemeyer, Stough)

EDIN 160. ESSENTIALS OF DESIGN. (2)

Two laboratory periods a week. Prerequisite, EDIN 001 and basic shop work. A study of the basic principles of design and practice in their application to the construction of shop projects. (Anderson)

EDIN 161. PRINCIPLES OF VOCATIONAL GUIDANCE. (2)

This course identifies and applies the underlying principles of guidance to the problems of educational and vocational adjustment of students. (Mietus)

EDIN 164. LABORATORY ORGANIZATION AND MANAGEMENT. (3)

This course covers the basic elements of organizing and managing an industrial education program including the selection of equipment and the arrangement of the shop. (Mietus, Beatty)

EDIN 165. MODERN INDUSTRY. (3)

This course provides an overview of manufacturing industry in the American social, economic, and culture pattern. Representative basic industries are studied from the viewpoints of personnel and management organization, industrial relations, production procedures, distribution of products, and the like. (Harrison, Chambliss)

EDIN 166. EDUCATIONAL FOUNDATIONS OF INDUSTRIAL ARTS. (2)

A study of the factors which place industrial arts education in any well-rounded program of general education. (Beatty, Luetkemeyer)

EDIN 167. PROBLEMS IN OCCUPATIONAL EDUCATION. (3)

The purpose of this course is to secure, assemble, organize, and interpret data relative to the scope, character, and effectiveness of occupational education. (Chambliss)

EDIN 169. OCCUPATIONAL ANALYSIS AND COURSE CONSTRUCTION. (3)

Provides a working knowledge of occupational and job an-

alysis and applies the techniques in building and reorganizing courses of study for effective use in vocational and occupational schools. (Chambliss)

EDIN 171. HISTORY AND PRINCIPLES OF VOCATIONAL EDUCATION. (3)

An overview of the development of vocational education from primitive times to the present with special emphasis given to the vocational education movement with the American program of public education. (Luetkemeyer)

EDIN 175. RECENT TECHNOLOGICAL DEVELOPMENTS IN PRODUCTS AND PROCESSES. (3)

This course is designed to give the student an understanding of recent technological developments as they pertain to the products and processes of industry. The nature of the newer products and processes is studied as well as their effect upon modern industry and/or society. (Crosby, Mietus)

EDIN 187. FIELD EXPERIENCE IN EDUCATION. (1-4)

See EDUC 187 for description. (Staff)

EDIN 188. SPECIAL PROBLEMS IN EDUCATION. (1-3)

See EDUC 188 for description. (Staff)

EDIN 189. WORKSHOPS, CLINICS, AND INSTITUTES. (1-6)

See EDUC 189 for description. (Staff)

FOR GRADUATES

See Graduate School Catalog for descriptions.

EDIN 207. PHILOSOPHY OF INDUSTRIAL ARTS EDUCATION. (3)

(Harrison)

EDIN 214. SCHOOL SHOP PLANNING AND EQUIPMENT SELECTION. (3)

(Tierney)

EDIN 216. SUPERVISION OF INDUSTRIAL ARTS. (2)

(Tierney)

EDIN 220. ORGANIZATION, ADMINISTRATION AND SUPERVISION OF VOCATIONAL EDUCATION. (2)

(Chambliss)

EDIN 224. APPRENTICESHIP IN EDUCATION. (1-9)

(Staff)

EDIN 240. RESEARCH IN INDUSTRIAL ARTS AND VOCATIONAL EDUCATION. (2)

(Staff)

EDIN 241. CONTENT AND METHOD OF INDUSTRIAL ARTS. (3)

(Maley)

EDIN 242. COORDINATION IN WORK-EXPERIENCE PROGRAMS. (2)

(Chambliss)

EDIN 248. SEMINAR IN INDUSTRIAL ARTS AND VOCATIONAL EDUCATION. (2)

(Staff)

EDIN 250. TEACHER EDUCATION IN INDUSTRIAL ARTS. (3)

(Harrison, Luetkemeyer)

EDIN 287. INTERNSHIP IN EDUCATION. (3-16)

(Staff)

EDIN 288. SPECIAL PROBLEMS IN EDUCATION. (1-6)

(Staff)

EDIN 339. THESIS RESEARCH. (Master's Level)

(Staff)

EDIN 499. DISSERTATION RESEARCH. (Doctorate Level)

(Staff)

LIBRARY SCIENCE EDUCATION

All students anticipating work in Library Science Education should consult with advisors in this area at the beginning of the freshman year. Students enrolled in this curriculum will pursue a B.A. degree with an area of concentration of thirty-six hours in one of the following: Humanities, Social Sciences Science, or Foreign Languages. Students may concentrate in a subject area subsumed under one of these four fields, or they may choose a broad spectrum of courses in one of the four areas under the guidance of their advisors. The minor of eighteen hours will be Library Science Education.

All students who pursue a degree in Library Science Education are required to complete two years (twelve semester hours) of the same foreign language on the College level, or the equivalent. Students who have studied French, German, or Spanish for two or more years in high school, are required to take the Foreign Language Placement Examination before they continue their study of the language concerned. Students who are placed by the

examination in French, German, or Spanish 6 (the third College semester) are required to take six additional hours of that language. Students who are placed in French, German, or Spanish 7 (the fourth college semester) are required to take three additional hours of that language. Students who are placed in French or Spanish 11, or German 9 (the fifth college semester) are not required to take any further courses in that language. 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 chairman of the respective language section, if feasible, or by the Head of the Department of Foreign Languages. Native speakers of a foreign language shall satisfy the foreign language requirement by taking twelve hours of English.

Students in Library Science Education will complete eight semester hours in Directed Library Experience as their student teaching requirement. It will involve a half day in school, five days per week, for sixteen weeks. This period will be divided into two sections, with eight weeks spent in an elementary school and eight weeks in a secondary school. A concurrent weekly seminar will also be a part of this experience. Students completing this curriculum will be eligible for certification as elementary or secondary school librarians.

	Semester	
FRESHMAN YEAR		
ENGL 001—Composition	3	11
ENGL 003—World Literature	3	3
Social Science (Economics, Geography, Government and Politics, Sociology, Psychology, or Anthropology)	3	3
PHED 001, 003 (men) PHED 002, 004 (women)	1	1
Physical Activities	3	4
Art, Music, or Philosophy	1	4
Mathematics 3—Fundamentals of Mathematics	3	4
Science	3	4
Science (with laboratory)	3	4
Foreign Language, or elective if Advanced Placement	3	3
Total	16	18

SOPHOMORE YEAR		
SPCH 001—Public Speaking	3	3
ENGL 004—World Literature	3	3
History requirements	3	3
Foreign Language, or elective if Advanced Placement	3	3
HLTH 005—Science and Theory of Health	6	2
Area of concentration	6	9
Total	18	17

JUNIOR YEAR		
EDUC 110—Human Development and Learning	6	6
EDLS 120—Introduction to Librarianship	3	6
EDLS 122—Basic Reference and Information Sources	3	6
EDLS 126—Cataloging and Classification of Library Materials	3	6
EDLS 128—School Library Administration and Service	3	6
Area of concentration	3	6
Electives	3	6
Total	18	18

SENIOR YEAR		
EDUC 111—Foundations of Education	3	6
EDLS 130—Library Materials for Children	3	6
EDLS 132—Library Materials for Youth	3	6
EDLS 148—Directed Library Experience in Elementary Schools with Seminar and EDLS 149 Directed Library Experience in Secondary Schools with Seminar. (4 each)	6	8
Area of concentration	6	6
Electives	3	6
Total	18	17

FACULTY

Evelyn J. Anderson, Margaret E. Chisholm, James W. Liesener

FOR ADVANCED UNDERGRADUATES

- EDLS 120. INTRODUCTION TO LIBRARIANSHIP. (3)
An overview of the library profession. Development of public, academic, special, and school services. History of books and libraries. The library as a social institution. The impact of communication media on society. Philosophy of librarianship. Professional standards, organizations and publications. (Staff)
- EDLS 122. BASIC REFERENCES AND INFORMATION SOURCES. (3)
Evaluation, selection, and utilization of information sources, in subject areas, including encyclopedias, dictionaries, periodical indexes, atlases, yearbooks. Study of bibliographical methods and form. (Staff)
- EDLS 126. CATALOGING AND CLASSIFICATION OF LIBRARY MATERIALS. (3)
Principles and practice in the organization of library materials. Dewey Decimal Classification, rules for the dictionary catalog, Sears subject headings. Treatment of non-book materials. Cataloging aids and tools. (Staff)
- EDLS 128. SCHOOL LIBRARY ADMINISTRATION AND SERVICE. (3)
Acquisition, circulation, utilization and maintenance of library materials. Organization of effective school library programs. School library quarters and equipment. Publicity and exhibits. Evaluation of library services. (Staff)
- EDLS 130. LIBRARY MATERIALS FOR CHILDREN. (3)
Reading interests of children. Advanced study of children's literature. Survey and selection of informational materials in subject fields including: books, periodicals, films, film-strips, records, pictures, pamphlet materials. (Staff)
- EDLS 132. LIBRARY MATERIALS FOR YOUTH. (3)
Reading interests of young people. Literature for adolescents. Selection of informational materials in subject fields including: books, periodicals, films, filmstrips, records, pictures, pamphlet materials. (Staff)
- EDLS 148. STUDENT TEACHING IN SECONDARY SCHOOLS. (Directed Library Experience). (4)
See EDSE 148 for additional requirements.
- EDLS 149. STUDENT TEACHING IN ELEMENTARY SCHOOLS. (Directed Library Experience). (4)
See EDLE 149 for additional requirements. (Staff)

SECONDARY EDUCATION

This department is concerned with the preparation of teachers for junior and senior high schools in the following areas: business, dance, English, foreign languages, home economics, mathematics, science, social studies, and speech. In the areas of art and music, teachers are prepared to teach in the elementary, junior and senior high schools. Majors in physical education and agriculture are offered in the College of Physical Education, Recreation, and Health and the College of Agriculture in cooperation with the College of Education.

Students enrolled in this curriculum will meet the University general education requirements, plus the following:

All students who pursue the B.A. degree in secondary education are required to complete two years (12 semester hours) of the same foreign language on the college level, or the equivalent. Students who have studied French, German, or Spanish for two or more years in high school, or for two or three semesters in another college or university are required to take the Foreign Language Placement Examination before they continue or resume their study of the language concerned. Students who are placed in French, German, or Spanish 6 (the third college semester) are required to take six additional hours of that language. Students who are placed in

French, German or Spanish 007 (the fourth college semester) are required to take three additional hours of that language. Students who are placed in French or Spanish 11, or German 9 (the fifth college semester) are not required to take any further courses in that language. 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 chairman of the respective language section, if feasible, or by the Head of the Department of Foreign Languages. Native speakers of a foreign language shall satisfy the foreign language requirement by taking twelve hours of English.

All students who elect the secondary education curriculum will fulfill the preceding **general** requirements and also prepare to teach one or more school subjects which will involve meeting **specific** requirements in **particular** subject matter fields.

The Bachelor of Arts degree is offered in the teaching fields of art, English, dance, foreign languages, mathematics, social science, and speech. The Bachelor of Science degree is offered in business education, home economics, mathematics, music, science, and speech.

ART EDUCATION

Students in art education enroll in one of two programs, elementary or secondary art education. The proposed programs are listed below:

SECONDARY ART EDUCATION CURRICULUM

	Semester	
	I	II
FRESHMAN YEAR		
ENGL 001—Composition	1	3
ENGL 003—World Literature	3	3
Social Science requirement	3	3
ART 010—Introduction to Art	3	3
ART 012—Design I	3	3
ART 016—Drawing I	3	3
HLTH 005—Science and Theory of Health	2	2
PHED 001, 003 (men) PHED 002, 004 (women)	1	1
Physical Activities	3	3
Foreign Language	3	3
Total	16	15
SOPHOMORE YEAR		
ENG 004—World Literature	3	3
Science requirement	3	4
Mathematics	3	3
ART 060, 061—Art History	3	3
ART 017—Painting I	3	3
SPCH 001—Public Speaking	3	3
CRAF 020—Ceramics	3	3
Foreign Languages or electives	3	3
Total	18	16
JUNIOR YEAR		
EDUC 110—Human Development and Learning	6	3
History requirements	3	3
Science	3	4
Foreign Language or electives	3	3
Mathematics	3	3
ART 060, 061—Art History	3	3
ART 017—Painting I	3	3
DART 014—Stagecraft	3	3
CRAF 020—Ceramics	3	3
Electives in Art	3	3
Total	18	14 - 18
JUNIOR YEAR		
EDUC 110—Human Development and Learning	6	3
History requirements	3	3
Science	3	4
APDS 030—Typography and Lettering	3	3
ART 026—Drawing II	3	3
ART 119—Printmaking I	3	3
ART 118—Sculpture I	3	3
Total	15	16
SENIOR YEAR		
EDUC 111—Foundations of Education	3	3
EDUC 125A—Art in the Elementary School	2	3
Electives in Art	7	3
Electives	3	3
-EDEL 140C—Curriculum and Instruction	3	3
EDUC 147—Audio-Visual Ed. or Ed. Elective	3	3
EDEL 123—The Child and the Curriculum	3	3
-EDEL 149C—Student Teaching in the Elementary School	3	8
Total	15	17

Electives in Art ⁶	7	3
EDSE 140A—Curriculum, Instruction, Observation—Art	3	3
EDUC 147—Audio-Visual Education or Education Elective	3	3
EDSE 145—Principles and Methods of Secondary Education	3	3
EDSE 148A—Student Teaching in the Secondary School	8	3
Total	16	17

ELEMENTARY ART EDUCATION CURRICULUM

FRESHMAN YEAR		
ENGL 001, 003—Composition and World Literature	3	3
Social Science requirement	3	3
ART 010—Introduction to Art	3	3
ART 012—Design I or ART 040—Fundamentals of Art	3	3
ART 016—Drawing I	3	3
HLTH 005—Science and Theory of Health	2	2
PHED 001, 003 (men) PHED 002, 004 (women)	1	1
Physical Activities	3	3
Foreign Language or electives	3	3
Total	16	15
SOPHOMORE YEAR		
ENGL 004—World Literature	3	3
Science requirement	3	4
Mathematics	3	3
ART 060, 061—Art History	3	3
ART 017—Painting I	3	3
SPCH 001—Public Speaking	3	3
CRAF 020—Ceramics	3	3
Foreign Languages or electives	3	3
Total	18	16
JUNIOR YEAR		
EDUC 110—Human Development and Learning	6	3
History requirements	3	3
Foreign Language or electives	3	3
CRAF 102—Creative Crafts	3	3
ART 118—Sculpture I	3	3
DART 014—Stagecraft	3	3
Electives in Art	3	6
Total	18	15
SENIOR YEAR		
EDUC 111—Foundations of Education	3	3
EDEL 125A—Art in the Elementary School	2	3
Electives in Art	7	3
Electives	3	3
-EDEL 140C—Curriculum and Instruction	3	3
EDUC 147—Audio-Visual Ed. or Ed. Elective	3	3
EDEL 123—The Child and the Curriculum	3	3
-EDEL 149C—Student Teaching in the Elementary School	3	8
Total	15	17

BUSINESS EDUCATION

Two curricula are offered for the preparation of teachers of business subjects. The general business education curriculum qualifies for teaching all business subjects except shorthand. Providing thorough training in general business, including economics, this curriculum leads to teaching positions on both junior and senior high school levels.

The secretarial education curriculum is adapted to the needs of those who wish to become teachers of shorthand as well as other business subjects.

The distributive education curriculum prepares students for vocational teaching requirements in cooperative marketing and merchandising programs.

⁶ Art Electives must be chosen with the approval of the adviser and of the 12 credit hours required in the secondary program at least 3 must be in crafts.

⁷ Art Electives must be chosen with the approval of the adviser and of the 12 credit hours required in the elementary program at least 3 must be in crafts.

GENERAL BUSINESS EDUCATION

FRESHMAN YEAR

ENGL 001, 003—Composition, and World Literature	3	3
Fine Arts and Philosophy requirement	3	3
SPCH 001—Public Speaking	3	3
BSAD 010—Elements of Business Enterprise	3	3
GEOG 015—Introduction to Economic Geography	3	3
MATH 010, 011—Introduction to Mathematics	3	3
ECON 004—Economic Developments	3	3
EDSE 001, 002—Principles of Typewriting and Intermediate Typewriting	2	2
PHED 002, 004 (women) PHED 001, 003 (men)	1	1
Physical Activities	1	1
HLTH 005—Science and Theory of Health	2	2
Total	18	17

SOPHOMORE YEAR

ENGL 004—World Literature	3	3
History requirements	3	3
ECON 031, 032—Principles of Economics	3	3
EDSE 010—Office Typewriting Problems	2	2
Social Science requirement	3	3
EDSE 014—Survey of Office Machines	3	3
BSAD 020, 021—Principles of Accounting	3	3
Science requirements	4 or 3	3 or 4
Total	17 or 18	17 or 18

JUNIOR YEAR

EDUC 110—Human Development and Learning	6	6
BSAD 101—Electronic Data Processing	3	3
BSAD 149—Marketing Principles and Organization	3	3
BSAD 180—Business Law	3	3
BSAD 140—Business Finance	3	3
Elect 100 level course in Economics	3	3
Electives ¹	3	6
Total	15	15

SENIOR YEAR

EDUC 111—Foundations of Education	3	3
BSAD 102—Electronic Data Processing Applications	3	3
EDSE 140B—Curriculum, Instruction, and Observation—Business Subjects	3	3
EDSE 145—Principles and Methods of Secondary Education	3	3
EDSE 100—Techniques of Teaching Office Skills	3	3
EDSE 148B—Student Teaching in the Secondary Schools	8	8
EDSE 114—Financial and Economic Education	3	3
EDSE 115—Financial and Economic Education	3	3
Total	15	14

SECRETARIAL EDUCATION

FRESHMAN YEAR

ENGL 001, 003—Composition, and World Literature	3	3
Fine Arts or Philosophy requirement	3	3
MATH 010—Introduction to Mathematics	3	3
SPCH 001—Public Speaking	3	3
EDSE 001—Principles of Typewriting (if exempt, BSAD 010)	2	2
EDSE 002—Intermediate Typewriting	2	2
EDSE 012, 013—Principles of Shorthand I, II	3	3
Social Science requirement	3	3
PHED 002, 004 (women) PHED 001, 003 (men)	1	1
Physical Activities	1	1
HLTH 005—Science and Theory of Health	2	2
Total	15	17

SOPHOMORE YEAR

ENGL 004—World Literature	3	3
History requirement	3	3
Science requirement	3 or 4	4 or 3
ECON 031, 032—Principles of Economics	3	3
EDSE 010—Office Typewriting Problems	2	2
EDSE 014—Survey of Office Machines	2	2
EDSE 017—Advanced Shorthand and Transcription	3	3
EDSE 019—Problems in Transcription	3	3
Total	14 or 15	17 or 18

JUNIOR YEAR

EDUC 110—Human Development and Learning	6	6
BSAD 020, 021—Principles of Accounting	3	3
EDSE 110—Administrative Secretarial Procedures	3	3
ECON 140—Money and Banking (or BSAD 140)	3	3
BSAD 180—Business Law	3	3
Electives ²	3	6
Total	15	15

SENIOR YEAR

EDUC 111—Foundations of Education	3	3
EDSE 112—Secretarial Office Practice	3	3
BSAD 101—Electronic Data Processing	3	3
EDSE 100—Techniques of Teaching Office Skills	3	3
EDSE 140B—Curriculum, Instruction and Observation—Business Subjects	3	3
EDSE 145—Principles and Methods of Secondary Education	3	3
EDSE 148B—Student Teaching in Secondary Schools	8	8
Elective ³ —100 level	5	5
Total	17	14

DISTRIBUTIVE EDUCATION

FRESHMAN YEAR

ENGL 001, 003—Composition and American Literature	3	3
ART 010—Fine Arts	3	3
MATH 003—Fundamentals of Mathematics	3	3
Science requirement	3	4
BSAD 010—Elements of Business Enterprise	3	3
SPCH 001—Public Speaking	3	3
Electives	4	4
Health	2	2
PE	1	1
Total	16	17

SOPHOMORE YEAR

PSYCH 001—Introduction to Psychology	3	3
History requirement	3	3
ECON 031, 032—Principles of Economics	3	3
BSAD 020, 021—Principles of Accounting	3	3
ENGL 004—World Literature	3	3
Electives ¹	6	6
Total	15	15

JUNIOR YEAR

BSAD 149—Marketing Principles and Organization	3	3
BSAD 150—Marketing Management	3	3
BSAD 160—Personnel Management I	3	3
BSAD 161—Personnel Management II	3	3
EDUC 110—Human Development and Learning	6	6
EDSE 123—Field Experiences: Distribution of DE	3	3
EDSE 120—Organization and Coordination of DE	3	3
Electives ¹	4	4
Total	16	16

SENIOR YEAR

EDUC 111—Foundations of Education	3	3
BSAD 180—Business Law	3	3
JOURN 166—Public Relations	3	3
Electives	6	6
EDSE 140—Curriculum, Instruction, and Observation: Distributive Education	3	3
EDSE 145—Principles of Secondary Education	3	3
EDSE 148—Student Teaching	8	8
Total	15	14

DANCE EDUCATION

The Dance Education curriculum prepares students for teaching in the public schools, for further graduate study, and for possible teaching in college.

FRESHMAN YEAR

	Semester	
	I	II
ENGL 001—Composition	3	3
ENGL 003—World Literature	3	3
ZOO 001—General Zoology	3	3
Social Science Elective	3	3
DANC 050—Rhythmic Invention for Dance	2	2

¹A minimum of 55 semester hours of courses in Economics, Business Administration and Business Education are required.

²A minimum of 55 semester hours of courses in Economics and Business Administration and in business education courses are required.

DANC 052, 054—Dance Techniques	2	2
DANC 032—Introduction to Dance	2	3
MATH 10—Introduction to Mathematics	3	3
HLTH 005—Science and Theory of Health	2	2
History	3	3
DART 8 Acting	3	3
PHED 002 or 004	1	1
	17	18
SOPHOMORE YEAR		
ENGL 004—World Literature	3	3
MUSC 007—Theory of Music or MUSC 16—Fundamentals for the Classroom Teacher	3	3
ART (Studio or History)	3	3
ZOOL 014—Human Anatomy and Physiology	4	4
DANC 55—Dance Techniques	2	2
DANC 57—Dance Techniques	2	2
DANC 60—Elementary Dance Composition	3	3
Social Science Elective	3	3
MUSC 20—Survey of Music Literature	3	3
ZOOL 015—Human Anatomy and Physiology Elective	4	3
PHED 50—Rhythmic Activities	2	2
	17	18

JUNIOR YEAR		
History	3	3
DANC 070—Intermediate Modern Dance	2	2
DANC 170—Creative Dance for Children	3	3
DANC 100—Advanced Chroaeographic Forms	3	3
Electives	6	6
PHED 100—Kinesiology	4	4
EDUC 110—Human Development Learning	6	6
DANC 80—Advanced Modern Dance	2	2
DANC 114—Development of Dance Progression	3	3
Elective	3	3
	17	18

SENIOR YEAR		
EDUC 111—Foundations of Education	3	3
DANC 184—Theory and Philosophy of Dance	3	3
DANC 192—Percussion and Music Sources for Dance	3	3
Electives	6	6
EDSE 140C—Curriculum, Instruction and Observation	3	3
EDSE 145—Principles and Methods of Secondary Education	3	3
EDSE 148C—Student Teaching in Secondary Schools	8	8
	15	14

ENGLISH EDUCATION

A major in English requires 51 semester hours as follows:

ENGL 001, 003, 004, 008, 115, or 116; and 150 or 151; 101; 160; and 15 hours of English electives.

Related fields: HIST 041-042 or 051-052 or 053-054; SPCH 001 and 013.

All English majors are required to have one college course in U.S. history.

FRESHMAN YEAR		
ENGL 001—Composition	3	3
Social Science requirement	3	3
SPCH 001—Public Speaking	3	3
Foreign Language	3	3
Mathematics requirement	3 or 4	3 or 4
Science requirement	3	3 or 4
PHED 001, 003 (men) PHED 002, 004 (women) Physical Activities	1	1
Elective	2	3
HLTH 005—Science and Theory of Health	2	2
Total	15 or 16	16 or 17

SOPHOMORE YEAR		
ENGL 003, 004—World Literature	3	3
SPCH 013—Oral Interpretation	3	3
HIST 041, 042—Western Civilization ¹¹	3	3
Foreign Language	3	3
Science requirement	3 or 4	3
Fine Arts or Philosophy	3	3
ENGL 008—Introduction to English Grammar	3	3
Total	15 or 16	15

JUNIOR YEAR		
EDUC 110—Human Development and Learning	6	6
ENGL 115 or 116—Shakespeare	3	3
ENGL 150 or 151—American Literature 1810- 1865 or American Literature since 1865	3	3

¹¹or HIST 051, 052 Humanities, or HIST 053, 054 History of England and Great Britain.

ENGL 160—Advanced Expository Writing	3	3
Eng. elective (period)	3	3
Eng. elective (type)	3	3
Free electives	6	3
Total	15	15
SENIOR YEAR		
EDSE 140—Curriculum, Instruction, and Observation	3	3
EDSE 145—Principles and Methods of Secondary Education	3	3
EDSE 153—The Teaching of Reading in the Secondary Schools	3	3
EDSE 148—Student Teaching in Secondary Schools	8	8
ENGL elective (major figure)	3	3
ENGL 101—History of the English Language	3	3
EDUC 111—Foundations of Education	3	3
English electives	6	6
Total	17	15

FOREIGN LANGUAGE EDUCATION

The foreign language education curriculum is designed for prospective foreign language teachers in elementary and secondary schools.

Elementary Education majors are required to have a minimum of 24 semester hours in the foreign language plus EDEL 143, Foreign Language Methods in the Elementary School. College of Arts and Sciences foreign language majors and Secondary Education foreign language majors are also eligible for admission into the FLES program. Interested students should contact the Foreign Language Education adviser in the Department of Secondary Education for further information concerning the requirements for certification of FLES teachers.

CLASSICAL LANGUAGE—LATIN

A minor for teaching Latin requires 24 prescribed semester hours based upon two years of high school Latin. These students should take LATN 003, 004, 005, 051, 052, 061, 101 and 102. Students who have had four years of high school Latin should begin with LATN 005, and should select two additional courses from among LATN 103, 104, 94 105.

Prospective Latin teachers are urged to elect courses which relate to their teaching area: e.g. LATN 070, HIST 071, 151, 153, 155, 156; ART 060; CMLT 101, and ENGL 101.

MODERN FOREIGN LANGUAGES

All prospective foreign language teachers must take a minimum of 42 semester hours in the foreign languages including the following courses which are required for certification: one year of conversation, one year of advanced grammar and composition, one year survey of literature, one year of advanced literature (100 level) and one year of advanced civilization courses (100 level) or previously approved equivalents.

Prospective MFL teachers are urged to elect courses related to their teaching area and which will provide an integrated yet broad cultural background: e.g. LATN 070 and basic Latin courses; HIST 031, 032, 047 and 150 (for Spanish majors); HIST 041, 042, 051, 052; HIST 167, 168, 173 (for Russian majors); HIST 157, 175 (for French majors); ART 060-061; ECON 105, 106 (for Spanish majors); ECON 138 (for Russian majors); GVPT 003, 097, 101, 104 (for Spanish majors); CMLT 101, 102.

It is recommended that students who plan to teach a foreign language contact the appropriate foreign language education adviser early in their college career so that they can plan an integrated program of specialization, professional, and liberal (general) education.

FOREIGN LANGUAGE IN THE ELEMENTARY SCHOOL CURRICULUM (FELS): See Elementary Education Curriculum.

SECONDARY FOREIGN LANGUAGE EDUCATION

	Semester	
	I	II
FRESHMAN YEAR		
ENGL 001 – Composition	3	3
Engl 003 – World Literature	3	3
Social Science requirement	3	3
Science or Mathematics requirements	3 or 4	3 or 4
SPCH 001 – Public Speaking	3	3
HLTH 005 – Science and Theory of Health	2	2
PHED 001, 003 (men) PHED 002, 004 (women)	1	1
Foreign Language 6 and 7 (or appropriate level as certified by placement test)	3	3
Total	16 or 17	15 or 16
SOPHOMORE YEAR		
ENGL 004 – World Literature	3	3
History requirements	3	3
Science or Mathematics requirements	3 or 4	3 or 4
Fine Arts or Philosophy requirements	3	3
Foreign Languages 011 and 012	3	3
Electives (not in Foreign Languages)	3	3
Total	15 or 16	15 or 16
JUNIOR YEAR		
EDUC 110 – Human Development and Learning	6	6
Foreign Language 041-042 – Phonetics (recommended, but not required)	1	1
Foreign Language 071-072 – Review Grammar and Composition	3	3
Foreign Language 075-076 – Survey of Literature	3	3
Foreign Language 080-081 – Advanced Conversation	3	3
Electives	3	3
Total	16	16
SENIOR YEAR		
EDUC 111 – Foundations of Education	3	3
EDSE 140 – Curriculum, Instruction and Observation	3	3
EDSE 145 – Principles and Methods of Secondary Education	3	3
EDSE 148 – Student Teaching in the Secondary Schools	8	8
Elective from EDUC 147 – Audio Visual Education, EDUC 150 – Educational Measurement, EDEL 153 – The Teaching of Reading	2 or 3	2 or 3
Foreign Language – Advanced Literature (100 level)	6	6
Foreign Language 171 or 172 – Civilization ¹²	3	3
Elective in Foreign Language or related area (e.g. Foreign Language 100, History of France, Introduction Linguistics is recommended)	3 or 6	3 or 6
Total	16 or 17	15 or 18

HOME ECONOMICS EDUCATION

Students electing this curriculum may be registered in the College of Home Economics or in the College of Education.

The Home Economics Education Curriculum is designed for students who are preparing to teach home economics in the secondary schools. It includes study of each area of home economics and the supporting disciplines.

Fifteen hours of the total curriculum include an area of concentration which must be unified in content and which will be chosen by the student.¹³

	Semester	
	I	II
FRESHMAN YEAR		
ENGL 001 or 021 – Composition	3	3
SOCY 001 – Introduction to Sociology	3	3
FMCD 005 – Introduction to Family Living	3	3
FDNT 005 – Food and Nutr. of Indiv. & Fam. or NUTR 020 – Elements of Nutrition	3	3
MATH requirement	3 or 4	3 or 4
PHED	1	1

PSYC 001 – Introduction to Psychology	3	3
APDS 001 – Fundamentals of Design	3	3
ENGL 003 – World Literature	3	3
HLTH 005 – Science and Theory of Health	2	2
TXCL 005 – Textiles & Clothing in Contemp. Living	3	3
Total	16 or 17	15
SOPHOMORE YEAR		
ENGL 004 – World Literature	3	3
HIST	4	4
CHEM 008 – General Chemistry	4	4
HSAD 040 – Design and Furnishings in the Home or HSAD 041 – Family Housing	3	3
SPCH 001 – Public Speaking	3	3
CLTH 010 – Principles and Methods of Clothing Design (or CLTH 011)	2	2
HIST	3	3
CHEM 009 – General Chemistry	4	4
FOOD 010 – Scientific Principles of Food	3	3
Fine Arts or Philosophy requirement	3	3
FMCD 050 – Decision Making in Family Living	3	3
Total	16	18
JUNIOR YEAR		
EDUC 110 – Human Development and Learning	6	6
FOOD 060 – Meal Management	3	3
FMCD 141 – Personal and Family Finance or alternative	3	3
Area of concentration ¹³	3	3
FMCD 132 – The Child in the Family or EDHD 108 – Growth and Development in Early Childhood	3	3
ECON 037 – Fundamentals of Economics	3	3
EDSE 125 – Problems in Teaching Home Economics	3	3
ZOOL 001 or MICB 001	4	4
Area of concentration ¹³	3	3
Total	15	16
SENIOR YEAR		
EDSE 140 – Curriculum, Instruction & Observation ¹⁴	3	3
EDSE 145 – Principles & Methods of Secondary Education	3	3
EDSE 148 – Teaching Secondary Vocational Home Economics	8	8
FMCD 144 – Resident Experience in Home Management or FMCD 145 – H. M. Practicum	3	3
FMCD 060 – Family Relations or SOCY 164 – The Family & Society	3	3
EDUC 111 – Foundations of Education	3	3
Area of concentration ¹³	9	9
HDEC 180 – Professional Seminar ¹⁵	2	2
Total	17	17

MATHEMATICS EDUCATION

A major in mathematics requires the completion of MATH 022 or its equivalent and a minimum of 15 semester hours of mathematics courses at the 100 level. These 100 level courses must include MATH 103, MATH 146, and at least one of the geometry courses, MATH 120, 121, or 128. The remainder of the courses in mathematics are to be selected with the approval of the adviser. The mathematics major must be supported by a year of physical science, CHEM 008, and 009, or PHYS 010, 011, 015, 016 or PHYS 020 and 021.

A typical program might be as follows:

FRESHMAN YEAR		
SPCH 001 – Public Speaking	3	3
ENGL 001 – Composition	3	3
Fine Arts and Philosophy requirement	3	3
Social Science requirement	3	3
MATH 018, 019 – Introductory Analysis and Analysis I	3	4
HLTH 005 – Science and Theory of Health	2	2
PHED 001, 003 (men); PHED 002, 004 (women)	1	1

¹³ Area of Concentration: 15 s. semester hours.
¹⁴ Including maximum of two home economics courses, with the remainder of the 15 hours in supporting behavioral, physical and biological sciences, philosophy, special education, or human development.
¹⁵ Of the 15 hours, 9 must be upper division.

¹² Courses in related disciplines may be substituted with permission of Chairman of Foreign Language Department.

¹⁴ Student teaching block.
¹⁵ Required only of students registered in College of Home Economics.

- Physical Activities.....			1	1
Electives, including Foreign Language.....			3	3
Total.....			15	17
SOPHOMORE YEAR				
ENGL 003, 004—World Literature.....			3	3
History requirement.....			3	3
Science requirement.....			4	4
MATH 020, 021—Analysis II and Analysis III.....			4	4
Electives, including Foreign Language.....			3	3
Total.....			17	17
JUNIOR YEAR				
MATH 022—Analysis IV.....			4	4
MATH 103—Introduction to Abstract Algebra.....			3	3
Math. electives, including Geometry.....			3	3
requirement.....			3	3
EDUC 110—Human Development and Learning.....			6	6
Electives.....			9	3
Total.....			16	15
SENIOR YEAR				
EDSE 145—Principles and Methods of.....			3	3
Secondary Education.....			3	3
EDSE 140—Curriculum, Instruction, and.....			3	3
Observation—Mathematics.....			3	3
EDSE 148—Student Teaching in Secondary.....			8	8
Schools—Mathematics.....			3	3
Education elective.....			3	3
MATH 146—Fundamental Concepts of.....			3	3
Mathematics.....			3	3
Math. elective.....			3	3
EDUC 111—Foundations of Education.....			6	6
Electives.....			17	15
Total.....			17	15

MUSIC EDUCATION

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 growing demand for specialists, supervisors, and resource teachers in music in the schools. The program provides training in the teaching of vocal and instrumental music and leads to certification to teach music at both elementary and secondary school levels in Maryland and many other states. There are two options. The vocal option is for students whose principal instrument is voice or piano; the instrumental option is for students whose principal instrument is an orchestral instrument.

All students are carefully observed at various stages of their programs by members of the music education faculty. This is intended to insure the maximum development and growth of each student's professional and personal competencies. Each student is assigned to an advisor who guides him through the various stages of advancement in the program of music and music education.

INSTRUMENTAL OPTION

	Semester	
	I	II
FRESHMAN YEAR		
MUSC 012, 013—Applied Music (principal instr.).....		
	2	2
MUSC 001—Introduction to Music.....	3	3
MUSC 007, 008—Theory of Music.....	3	3
MUSC 023, 024—Class Piano.....	2	2
ENGL 001—Composition.....	3	3
SPCH 004—Voice and Diction.....	3	3
Social Science requirements.....	3	3
MATH 003—Fundamentals of Mathematics or MATH 010—Introduction to Mathematics.....	4 or 3	4 or 3
Total.....	16	17 or 16
MUSC 006—Orchestra or MUSC 010—Band.....	1	1
HLTH 005—Science and Theory of Health.....	2	2
PHED 001, 003 (men) PHED 002, 004 (women) —Physical Activities.....	1	1
SOPHOMORE YEAR		
MUSC 052, 053—Applied Music (principal instr.).....		
	2	2
MUSC 070, 071—Advanced Theory of Music.....	4	4
MUSC 061-064—Class Study of Instruments (3-4 courses).....	2 or 4	2 or 3
ENGL 003, 004—World Literature.....	3	3
Biological Science requirement.....	4	4
Physical Science requirement.....	3	3
Total.....	15 or 17	14 or 16
MUSC 006—Orchestra or MUSC 010—Band.....	1	1

MUSC 059—Chamber Music Ensemble (elective).....			1	1
JUNIOR YEAR				
MUSC 112, 113—Applied Music (principal instr.).....			2	2
MUSC 120, 121—History of Music.....	3	3	3	3
MUSC 160, 161—Conducting.....	2	2	2	2
MUSC 065, 068—Class Study of Instruments (2 or 3 courses).....	2	2	4 or 2	4 or 2
MUED 129—Methods of Class Instrumental Instruction.....	2	2	2	2
MUED 132—Music in Secondary Schools.....	2	2	2	2
EDUC 110—Human Development and Learning Elective.....	6	6	3	3
Total.....	17	17	16 or 14	16 or 14
MUSC 006—Orchestra or MUSC 010—Band (elective).....	1	1	1	1
MUSC 009—Chamber Music Ensemble (elective).....	2	2	1	1
SENIOR YEAR				
MUSC 152—Applied Music (principal instr.).....			2	2
MUSC 021—Class Voice.....	2	2	2	2
MUSC 147—Orchestration.....	1	1	1	1
MUED 163—Band and Orchestra Techniques and Administration.....	2	2	2	2
EDSE 148, EDL 149—Student Teaching.....	8	8	8	8
EDUC 111—Foundations of Education.....	3	3	3	3
EDSE 145—Principles and Methods of Secondary Education.....	3	3	3	3
History requirement.....	3	3	3	3
Total.....	15	15	13	13
MUSC 006—Orchestra or MUSC 010—Band (elective).....	1	1	1	1
MUSC 009—Chamber Music Ensemble (elective).....	1	1	1	1

VOCAL OPTION

FRESHMAN YEAR				
MUSC 012, 013—Applied Music (principal instr.).....			2	2
MUSC 001—Introduction to Music.....	3	3	3	3
MUSC 007, 008—Theory of Music.....	3	3	3	3
MUSC 021—Class Voice MUSC 999B—Applied Music (voice) ¹ /MUSC 023, 024—Class Piano ¹	2	2	2	2
ENGL 001—Composition.....	3	3	3	3
SPCH 004—Voice and Diction.....	3	3	3	3
Social Science requirement.....	3	3	3	3
MATH 003—Fundamentals of Mathematics or MATH 010—Introduction to Mathematics.....	4 or 3	4 or 3	4 or 3	4 or 3
Total.....	16	16	17 or 16	17 or 16
MUSC 004—Men's Glee Club, MUSC 005—Women's Chorus, MUSC 009 (A, F, H)—Chamber Music Ensemble, or MUSC 015—University Choir.....	1	1	1	1
HLTH 005—Science and Theory of Health.....	2	2	2	2
PHED 001, 003 (men) PHED 002, 004 (women) —Physical Activities.....	1	1	1	1
SOPHOMORE YEAR				
MUSC 052, 053—Applied Music (principal instr.).....			2	2
MUSC 031, 032—Advanced Class Voice.....	2	2	2	2
MUSC 033, 034—Advanced Class Piano.....	2	2	2	2
MUSC 070, 071—Advanced Theory of Music.....	4	4	4	4
ENGL 003, 004—World Literature.....	3	3	3	3
Biological Science requirement.....	4	4	4	4
Physical Science requirement.....	3	3	3	3
Total.....	17	17	16	16
MUSC 004—Men's Glee Club, MUSC 005—Women's Chorus, MUSC 009 (A, F, H)—Chamber Music Ensemble, or MUSC 015—University Choir.....	1	1	1	1
JUNIOR YEAR				
MUSC 112, 113—Applied Music (principal instr.).....			2	2
MUSC 080—Class Study of String Instruments, 081—Class Study of Wind Instruments.....	2	2	2	2
MUSC 120, 121—History of Music.....	3	3	3	3
MUSC 160, 161—Conducting.....	2	2	2	2
MUED 139—Music for the Elementary School Specialist.....	2	2	2	2
MUED 132—Music in Secondary Schools.....	2	2	2	2
EDUC 110—Human Development and Learning Elective.....	3	3	3	3
Total.....	14	14	17	17
MUSC 004—Men's Glee Club, MUSC 005—Women's Chorus, MUSC 009 (A, F, H)—Chamber Music Ensemble, or MUSC 015—University Choir.....	1	1	1	1
SENIOR YEAR				
MUSC 152—Applied Music (principal instr.).....			2	2
MUED 173—The Vocal Music Teacher and School Organization.....	2	2	2	2

MUED 175 – Methods and Materials in Vocal Music for Secondary Schools.....	2
EDSE 145 – Principles and Methods of Secondary Education.....	3
EDUC 111 – Foundations of Education.....	3
EDUC 148I, EDEL 149F – Student Teaching.....	4
History requirement.....	3
Total.....	14
MUSC 004 – Men’s Glee Club, MUSC 005 – Women’s Chorus, MUSC 009 (A, F, H) – Chamber Music Ensemble, or MUSC 015 – University Choir.....	1

Prerequisite, consent of instructor. A survey of repertoire and methods for teaching choral groups and voice classes. Diction, interpretation, tone production, intonation, phrasing, rehearsal techniques and style characteristics. (Grentzer, Shelley)

MUED 176. SPECIAL PROBLEMS IN THE TEACHING OF INSTRUMENTAL MUSIC. (2-3)

Prerequisite, MUSC 061-068 or the equivalent. A study, through practice on minor instruments, of the problems encountered in public school teaching of orchestral instruments. Literature and teaching materials, minor repairs, and adjustment of instruments are included. The course may be taken for credit three times since one of three groups of instruments (strings, woodwind, or brass-percussion) will be studied each time the course is offered.

MUED 180. INSTRUMENTAL MUSIC FOR SECONDARY SCHOOLS. (2)

Prerequisite, consent of instructor. A survey of the repertoires for high school orchestra, band, and small ensemble. Problems of interpretation, intonation, tone quality, and rehearsal techniques. The course may be repeated for credit, since different repertoires are covered each time the course is offered. (Staff)

FOR GRADUATES

See Graduate School Catalog for descriptions.

MUED 200. RESEARCH METHODS IN MUSIC AND MUSIC EDUCATION. (3) (deVermond, Grentzer)

MUED 201. ADMINISTRATION AND SUPERVISION OF MUSIC IN THE PUBLIC SCHOOLS. (3) (Taylor)

MUED 204. CURRENT TRENDS IN MUSIC EDUCATION. (3) (deVermond, Grentzer)

MUED 205. VOCAL MUSIC IN THE ELEMENTARY SCHOOLS. (3) (Blum, Grentzer)

MUED 206. CHORAL CONDUCTING AND REPERTOIRE. (3) (Traver)

MUED 207. VOCAL MUSIC IN THE SECONDARY SCHOOLS. (3) (Grentzer)

MUED 208. THE TEACHING OF MUSIC APPRECIATION. (3) (Staff)

MUED 209. SEMINAR IN INSTRUMENTAL MUSIC. (2) (Taylor)

MUED 210. ADVANCED ORCHESTRATION AND BAND ARRANGING (SEMINAR). (2) (Taylor)

MUED 250. HISTORY AND AESTHETICS OF MUSIC EDUCATION. (3) (Grentzer)

PHYSICAL EDUCATION AND HEALTH EDUCATION

This curriculum is designed to prepare students for teaching physical education in elementary and secondary schools. To obtain full particulars on course requirements, the student should refer to the catalog of the College of Physical Education, Recreation, and Health.

SCIENCE EDUCATION

A science major consists of 52 semester hours study in the academic sciences. Students desiring a minor other than science must complete 40 hours of academic science in addition to minor requirements.

The following courses are required for all science education majors: BOTN 001—General Botany (4); CHEM 008, 009—General Chemistry (4,4); PHYS 010, 011—Fundamentals of Physics (4,4); and ZOO 001—General Zoology (4); and a year of mathematics. Additional courses are selected from the academic sciences, with the approval of the student’s advisor, so as to provide subject matter strength (a minimum of 36 hours) in a particular science teaching area, e.g., biology, chemistry, physics, and earth sciences.

Preparation for BIOLOGY teaching will include BOTN 001, and 002, ZOO 001 and 002, MICB 001, Genetics (ZOO 006 or BOTN 117), Human Anatomy

FOR ADVANCED UNDERGRADUATES AND GRADUATES

MUED 116. MUSIC IN EARLY CHILDHOOD EDUCATION (3)

First and second semesters. Prerequisite, MUSC 016 or equivalent. Creative experiences in songs and rhythms, correlation of music and everyday teaching with the abilities and development of each level; study of songs and materials; observation and teaching experience with each age level. (Shelley)

MUED 125. CREATIVE ACTIVITIES IN THE ELEMENTARY SCHOOL. (2-3)

Prerequisite, music methods or teaching experience. A study of the creative approach to the development of music experiences for children in the elementary grades emphasizing contemporary music and contemporary music techniques. (Shelley)

MUED 128. MUSIC FOR THE ELEMENTARY CLASSROOM TEACHER. (2-3)

Prerequisite, MUSC 016 or consent of instructor. For non-music majors. Methods for guiding elementary school students in musical experiences; development of objectives and a survey of instructional materials. (Staff)

MUED 129. METHODS AND MATERIALS FOR CLASS INSTRUMENTAL INSTRUCTION. (2)

Prerequisite, previous or concurrent registration in MUSC 061-068. Two one-hour laboratories and one lecture per week. Teaching techniques and rehearsal techniques for beginning and intermediate instrumental classes—winds, strings, and percussion. (Gallagher, Taylor)

MUED 132. MUSIC IN SECONDARY SCHOOLS. (2-3)

Prerequisite, consent of instructor. A study of the music program in the junior and senior high school with emphasis on objectives, organization of subject matter, teaching techniques and materials for general music classes. (Blum, Shelley)

MUED 139. MUSIC FOR THE ELEMENTARY SCHOOL SPECIALIST. (2-3)

Prerequisite, consent of instructor. Teaching techniques and instructional materials for the music program in the elementary schools. For the music specialist. (Staff)

MUED 155. ORGANIZATION AND TECHNIQUE OF INSTRUMENTAL CLASS INSTRUCTION. (3)

Prerequisite, consent of instructor. Practical instruction in the methods of tone production, tuning, fingering, and in the care of woodwind and brass instruments. A survey of the materials and published methods for class instruction. (Staff)

MUED 163. BAND AND ORCHESTRA TECHNIQUES AND ADMINISTRATION. (2-3)

Prerequisites, MUSC 061-068 and 161. Comprehensive study of instructional materials, rehearsal techniques, program planning, and band pageantry for the high school instrumental program. Organization, scheduling, budgeting and purchasing are included. (Gallagher, Taylor)

MUED 170. METHODS AND MATERIALS FOR CLASS PIANO INSTRUCTION. (2)

Objectives, techniques and materials for teaching class piano. Special emphasis is placed on analysis of materials, audio-visual aids, use of electronic pianos and equipment. (deVermond)

MUED 173. THE VOCAL MUSIC TEACHER AND SCHOOL ORGANIZATION. (2)

Prerequisite, student teaching, previous or concurrent. The role of the vocal music specialist in the implementation of the supervision and administration of the music programs in the elementary and secondary schools. Open to graduate students by permission of instructor. (Blum)

MUED 175. METHODS AND MATERIALS IN VOCAL MUSIC FOR SECONDARY SCHOOLS. (2-4)

and Physiology (ZOO 014 and/or 015), a field course in both Botany and Zoology (BOTN 011, 102-103, or 153; ZOO 121, 130 or ENTM 015), CHEM 031, 033 and additional courses.

Preparation for CHEMISTRY teaching will include CHEM 008 and 009 (or 018), 015, 121, (19), 035, 036, 037, 038, and hundred-level courses from (101, 121, 125, 141, 161, 187, 192). In addition, MATH preparation should include MATH 018, 019. MATH 020, 021 are also recommended.

Preparation for PHYSICS teaching will include MATH through at least MATH 021 or the equivalent. Physics courses will include Introductory Physics with calculus (PHYS 020, 021, or PHYS 015 and 016); a lab course (PHYS 060, 061); intermediate classical (PHYS 104 through 107); modern physics (PHYS 118, 119 or 153), and additional work.

Preparation for earth science teaching will include one year of biology (BOTN 001 and ZOO 001), one year of chemistry (CHEM 008 and CHEM 009), one year of physics (PHYS 020 and 021 preferred, or MATH 010 and 011), and at least 30 hours of earth sciences with 18 hours' concentration in one of the earth science fields and 6 hours minimum in each of two other earth science areas: GEOL 001, 002, 004, 120, 121, 198; ASTR 005, 010, 100; GEOG 010, 030, 042, 145, 146, 155, 161, 163.

At least one course in each of the following areas: geography, sociology, (or ANTH 001) government and politics, and economics. Fifteen semester hours in any two of the following areas: economics, geography, sociology, government and politics, or psychology. One-half of these courses must be on the 100 level.

Option II (Geography Concentration)

Requires 27 semester hours in geography and 27 semester hours in history and social science. The geography requirements are: GEOG 010, 011, two of GEOG 015, 030 or 042, GEOG 103 or 104, 6 hours of upper-division systematic geography, and 104, 6 hours of regional geography. The history and social science requirements are: SOCY 001 (or ANTH 001), ECON 004, and 037, HIST 021, 022, 041 and 042, plus two 100-level history electives.

	Semester	
	I	II
FRESHMAN YEAR		
ENGL 001—Composition	3	3
BOTN 001—General Botany	4	...
CHEM 008, 009—General Chemistry	4	4
MATH 018—Introductory Analysis, MATH 019—Analysis	3	4
PHED 001, 003—(men) PHED 002, 004—(women) Physical Activities	1	1
ZOO 001—General Zoology	4	4
HLTH 005—Science and Theory of Health	2	2
Total	15	15

	Semester	
	I	II
SOPHOMORE YEAR		
ENGL 003, 004—World Literature	3	3
History requirement	3	3
PHYS 010, 011—Fundamentals of Physics or PHYS 020, 021—General Physics:		
Mechanics, Heat and Sound	4 or 5	4 or 5
Science	3 or 4	3 or 4
Arts or Philosophy requirement	3	3
SPCH 001—Public Speaking	3	...
Total	16 or 18	16 or 18

	Semester	
	I	II
JUNIOR YEAR		
EDUC 110—Human Development and Learning	6	9
Science and Mathematics	12	6
Social Science requirements	3	3
Total	15	18

	Semester	
	I	II
SENIOR YEAR		
EDSE 140—Curriculum, Instruction, and Observation	...	3
EDSE 145—Principles and Methods of Secondary Education	...	3
Elective from EDUC 150, 147, 189	...	3
EDSE 148—Student Teaching in the Secondary Schools	...	8
EDUC 111—Foundations of Education	3	...
Science and Mathematics	12	...
Total	15	17

SOCIAL SCIENCE EDUCATION

Option I (History Concentration)

Requires 54 semester hours of which at least 27 must be in history, including HIST 021, 022, 041, 042 and 12 hours of 100-level history courses including HIST 199; 27 hours of related social sciences as outlined below.

	Semester	
	I	II
FRESHMAN YEAR		
ENGL 001—Composition	3	3
SPCH 001—Public Speaking	3	...
Foreign Languages	3	3
Mathematics requirement	3 or 4	...
Science requirement	...	3 or 4
HIST 021, 022—History of The United States to 1865, History of The United States since 1865	3	3
Fine Arts or Philosophy requirement	...	3
HLTH 005—Science and Theory of Health	2	...
PHED 001, 003—(men); PHED 002, 004—(Women) Physical Activities	1	1
Total	15 or 16	16 or 17

	Semester	
	I	II
SOPHOMORE YEAR		
ENGL 003, 004—World Literature	3	3
HIST 041, 042—Western Civilization	3	3
GEOG 001—Introduction to Geography	3	...
GVPT 001—American Government	3	3
Science requirement	3 or 4	...
Foreign Languages	3	3
SOCY 001—Introduction to Sociology (or Anth. 001)	3	...
ECON 004—Economic Developments	...	3
Total	18 or 19	15

	Semester	
	I	II
JUNIOR YEAR		
ECON 037—Fundamentals of Economics or ECON 031—Principles of Economics	3	3
History electives	3	3
EDUC 110—Human Development and Learning	6	6
History elective (100 level)	6	3
Social Science electives	3	3
Total	15	15

	Semester	
	I	II
SENIOR YEAR		
111—Foundations of Education	3	...
HIST 199—Proseminar in Historical Writing	3	...
Social Science electives	6	...
Electives	3	...
EDSE 140—Curriculum, Instruction and Observation	...	3
EDSE 145—Principles and Methods of Secondary Education	...	3
Elective from EDUC 150, 147, EDSE 153, 189	...	3
EDSE 148—Student Teaching in Secondary Schools	...	8
Total	15	17

SPEECH EDUCATION

A major in speech requires 37 semester hours. It is the policy to build a program of study in anticipation of the needs of prospective teachers in the general field of speech and drama. The following speech courses are required: SPCH 001, 002, 004A, 008, 010, 021, 023, 105, plus 15 hours of electives in speech and drama (12 hours of which must be 100-level courses). A teaching minor in English is also required. Students desiring a B.A. degree also must meet departmental foreign language requirements.

	Semester	
	I	II
FRESHMAN YEAR		
SPCH 001—Public Speaking	3	...
ENGL 001—Composition	3	...
Social Science requirements	3	3

Science requirement	3	3
ENGL 003—World Literature	4	3
SPCH 004A—Voice and Diction	3	3
History requirement		3
PHED 001, 003 (men), PHED 002, 004 (women)		
Physical Activities	1	1
HLTH 005—Science and Theory of Health	2	2
SPCH 016—Introduction to the Theatre		3
Total	19	16

SOPHOMORE YEAR

ENGL 004—World Literature	3	3
SPCH 002—Advanced Public Speaking		3
SPCH 010—Group Discussion		3
Science requirement	3	3
SPCH 008—Acting	3	3
SPCH 021—Fundamentals of Speech Communication	3	3
MATH 003—Fundamentals of Mathematics		4
History requirement		3
Minor requirement		3
General elective	3	3
Total	15	16

JUNIOR YEAR

SPCH 113—Play Production		3
EDUC 110—Human Development and Learning	6	6
SPCH 105—Handicapped School Children	3	3
Speech electives	3	3
Minor requirements		6
SPCH 023—Parliamentary Law	1	1
General electives		6
Total	16	18

SENIOR YEAR

SPCH 129—Play Directing or SPCH 127—Children's Dramatics	3	3
EDSE 140—Curriculum, Instruction, and Observation		3
EDSE 145—Principles and Methods of Secondary Education		3
Elective from EDUC 150, EDUC 147, or EDSE 153		3
EDSE 148—Student Teaching in Secondary Schools		8
Speech elective	3	3
Minor requirements	6	6
EDUC 111—Foundations of Education	3	3
General elective	3	3
Total	18	17

FACULTY

ART EDUCATION: John Lembach, Edward L. Longley, Jr., Eleanor H. Yuspa

BUSINESS EDUCATION: C. R. Anderson, Martha Mead, Robert Peters, Jane O'Neill

DANCE EDUCATION: Dorothy Madden

ENGLISH EDUCATION: Bruce Brigham, John Carr, Edward James, Leonard Woolf

FOREIGN LANGUAGE EDUCATION: Solomon H. Flores, Augustine F. Quilici

HOME ECONOMICS EDUCATION: Elizabeth Brabble, Kinsey Green, LoisSe Lemmon

MATHEMATICS EDUCATION: Mildred Cole, Neil Davidson, James Fey, James Henkelman, Henry Walbesser

MUSIC EDUCATION: Beula B. Blum, Stavroula Fanos, Rose Marie Grentzer, Shirley J. Shelley, Corwin Taylor, Gustav Wachhaus, Bruce Wilson

PHYSICAL EDUCATION (Men): Albert W. Woods

PHYSICAL EDUCATION (Women): Alice M. Love

SCIENCE EDUCATION: Marjorie Gardner, J. David Lockard, Robert W. Meneffee, John A. Maccine

SOCIAL STUDIES EDUCATION: Arthur Adkins, Elwood Campbell, Richard Farrell, Jean Grambs, Eugene Kinerney, James H. Wirth

SPEECH EDUCATION: Andrew Wolvin

EDSE 001. PRINCIPLES OF TYPEWRITING. (2)

Five periods per week. Prerequisite, consent of instructor. The goal of this course is the attainment of the ability to operate the typewriter continuously with reasonable speed and accuracy by the use of the "touch" system. (Mead)

EDSE 002. INTERMEDIATE TYPEWRITING. (2)

Five periods per week. Prerequisite, minimum grade of

"C" in EDSE 001 or consent of instructor. Drills for improving speed and accuracy and an introduction to office production typewriting. This course must be completed prior to enrollment in EDSE 017. (Mead)

EDSE 010. OFFICE TYPEWRITING PROBLEMS. (2)

Five periods per week. Prerequisite, minimum grade of "C" in EDSE 002 or consent of instructor. A course to develop the higher degree of accuracy and speed possible and to teach the advanced techniques of typewriting with special emphasis on production. (O'Neill)

EDSE 012, 013. PRINCIPLES OF SHORTHAND. (3,3)

Prerequisite, consent of instructor. Five periods per week. This course aims to develop the mastery of the principles of Gregg Shorthand. In EDSE 013 special emphasis is placed on developing dictation speed. (O'Neill)

EDSE 014. SURVEY OF OFFICE MACHINES. (2)

Prerequisite, sophomore standing. The various types of office business machines are surveyed, their capacities and special functions compared. Skill is developed through actual use and demonstration of such machines as: accounting, duplicating, dictating and transcribing, adding and calculating, and other functional types of machines and equipment. The course is designed also to give special training in the handling of practical business problems with machine application. (Peters)

EDSE 017. ADVANCED SHORTHAND AND TRANSCRIPTION. (3)

Prerequisite, minimum grade of "C" in EDSE 002 and EDSE 003 or consent of instructor. Seven periods per week. Emphasis is placed on vocabulary development and new matter dictation for sustained speed at the highest level possible under varying conditions. Transcription is under timed conditions with emphasis on production involving quantity and quality of finished product. (O'Neill)

EDSE 019. PROBLEMS IN TRANSCRIPTION. (3)

Prerequisite, minimum grade of "C" in EDSE 017 or consent of instructor. Seven periods per week. A systematic development of recording skills under special and office-style dictation and transcription conditions with particular emphasis on transcriptional problems. (O'Neill)

EDSE 88. SPECIAL PROBLEMS IN EDUCATION (1-6)

See EDUC 88 for description.

EDSE 100. TECHNIQUES OF TEACHING OFFICE SKILLS (3)

First semester. An examination and evaluation of the aims, methods, and course contents of each of the office skill subjects offered in the high school curriculum. (Peters)

EDSE 101. PROBLEMS IN TEACHING OFFICE SKILLS. (3)

Problems in development of occupational competency, achievement tests, standards of achievement, instructional materials, transcription, and the integration of office skills. (Peters)

EDSE 102. METHODS AND MATERIALS IN TEACHING BOOKKEEPING, AND RELATED SUBJECTS. (3)

Important problems and procedures in the mastery of bookkeeping and related office knowledge and the skills including a consideration of materials and teaching procedures. (Peters)

EDSE 104. BASIC BUSINESS EDUCATION IN THE SECONDARY SCHOOLS. (3)

Includes consideration of course objectives; subject matter selection; and methods of organization and presenting business principles, knowledge, and practices. (Peters)

EDSE 110. ADMINISTRATIVE SECRETARIAL PROCEDURES. (3)

Prerequisite, EDSE 018 and 019 or consent of the instructor. The nature of office work, the secretary's function in communication, inter-company and public relations, handling records, supplies and equipment; and in direction of the office staff. Standardization and simplification of office forms and procedures in relation to correspondence, mailing, receiving callers, telephoning, handling conferences, and securing business information. Business etiquette and ethics. (O'Neill)

EDSE 112. SECRETARIAL OFFICE PRACTICE. (3)

Six periods per week. Prerequisite, senior standing and completion of EDSE 110. The purpose of this course is to give laboratory and office experience to senior students. A minimum of 90 hours of office experience under supervision is required. In addition, each student will prepare a written report on an original problem previously approved. (Peters)

EDSE 114, 115. FINANCIAL AND ECONOMIC EDUCATION. (3,3)

Materials, resources and methods of teaching personal finances and economics in the public schools. Special

attention will be directed toward the problems of teaching the consumer's role in relation to his earnings and spending power, and the need for intelligent planning and handling of personal and family resources. (Anderson)

EDSE 120. ORGANIZATION AND COORDINATION OF DISTRIBUTIVE EDUCATION PROGRAMS. (3)

This course deals specifically with such areas as the organization of a cooperative distributive education program; the development of an effective cooperative relationship between coordinator and training sponsor; the selection, orientation, and training of sponsors; analysis of training opportunities, reports and records; the evaluation and selection of students for part-time cooperative work assignments; and the evaluation of the program. (Anderson)

EDSE 121. METHODS AND MATERIALS IN DISTRIBUTIVE EDUCATION. (3)

This course covers basic methods and materials needed to teach the preparatory classroom related instruction of a one or two year distributive education program. It deals specifically with the organization of special supplementary materials for individual and group instruction—Youth Club programs, organization and administration. (Anderson)

EDSE 123. FIELD EXPERIENCES: DISTRIBUTION. (3)

First and second semesters and summer session. Supervised work experience in a distributive occupation to apply theory of distribution to the function of distribution as a basis for vocational teaching and guidance. By individual arrangement with adviser. (Anderson)

EDSE 125. PROBLEMS IN TEACHING HOME ECONOMICS. (3)

First and second semesters. Prerequisite, EDSE 140. A study of the managerial aspects of teaching and administering a home-making program; the physical environment, organization, and sequence of instructional units, resource materials, evaluation, home projects. (Lemmon)

EDSE 126. EVALUATION OF HOME ECONOMICS. (3)

The meaning and function of evaluation in education; the development of a plan for evaluating a homemaking program with emphasis upon types of evaluation devices, their construction, and use. (Lemmon)

EDSE 130. THE JUNIOR HIGH SCHOOL. (2-3)

A general overview of the junior high school. Purposes, functions and characteristics of this school unit; a study of its population, organization, program of studies, methods, staff, and other topics, together with their implications for prospective teachers. (Grambs)

EDSE 133.¹⁹ METHODS OF TEACHING SOCIAL STUDIES IN SECONDARY SCHOOLS. (2-3)

Designed to give practical training in the everyday teaching situations. Use of various lesson techniques, audio and visual aids, reference materials, and testing programs and the adaption of teaching methods to individual and group differences. Present tendencies and aims of instruction in the social studies. (Risinger, Farrell, Campbell)

EDSE 134. MATERIALS AND PROCEDURES FOR THE SECONDARY SCHOOL CORE CURRICULUM. (3)

This course is designed to bring practical suggestions to teachers who are in charge of core classes in junior and senior high schools. Materials and teaching procedures for specific units of work are stressed. (Grambs)

EDSE 137.¹⁹ METHODS OF TEACHING MATHEMATICS IN SECONDARY SCHOOLS. (3)

Considers the methods and procedures for presenting secondary mathematics in a meaningful way. Special attention will be given to the new experimental materials which have been prepared for grades 7-12 and the techniques needed to teach these courses. (Garstens, Henkelman)

EDSE 138.¹⁹ METHODS OF TEACHING SCIENCE IN SECONDARY SCHOOLS. (3)

Considers such topics as the objectives, selection, organization, and presentation of subject matter, appropriate classroom methods and procedures, instructional materials and evaluation of learning experiences in the areas of science. (Lockard)

EDSE 139. SPEECH METHODS AND RESOURCES IN SECONDARY SCHOOLS. (3)

Practical suggestions for developing curricular and extra-curricular speech programs. Planning units and courses of study, current trends, and aims of speech education, use of printed and audio-visual materials, evaluating of performance, directed speech activities, and the teaching of listening. (Wolvin)

EDSE 140. CURRICULUM, INSTRUCTION, AND OBSERVATION. (3)

First and/or second semesters. Offered in separate sections for the various subject matter areas namely, English, dance, social studies, foreign language, science, mathe-

tics, art education, business education, home economics education, industrial education, music education, physical education, and speech education. Registration cards must include the subject matter area as well as the name and number of the course. The objectives, selection and organization of subject matter, appropriate methods, lesson plans, textbooks, and other instructional materials, measurement, and other topics pertinent to the particular subject matter area are treated. Twenty periods of observation. Students must reserve all day each Tuesday for observation in public schools. (Staff)

EDSE 141.²⁰ METHODS OF TEACHING ENGLISH IN SECONDARY SCHOOLS. (3)

Content and method in teaching the English language arts. (Bryan, Woolf)

EDSE 142. TEACHING THE AUDIO-LINGUAL SKILLS IN FOREIGN LANGUAGES. (3)

Graduate credit allowed by special arrangement and adviser's approval. Designed for high school teachers. Methods in making and using tape recordings, using electronic laboratories, developing oral-aural skills and direct approach to language teaching are emphasized. (Staff)

EDSE 145. PRINCIPLES AND METHODS OF SECONDARY EDUCATION. (3)

First and second semesters; summer session. This course is concerned with the principles and methods of teaching in junior and senior high schools. Instructional problems common to all of the subject fields are considered in relation to the needs and interests of youth, the urgent social problems of today, and the central values to which our society is committed. (Adkins, Funaro, Van Ness)

EDSE 148. STUDENT TEACHING IN SECONDARY SCHOOLS. (2-8)

First and second semesters. In order to be admitted to a course in student teaching, a student must have an overall grade point average of 2.30, a doctor's certificate indicating that the applicant is free of communicable diseases, and the consent of the instructor to the appropriate area. He must have been previously enrolled at the University of Maryland for at least one semester. Undergraduate credit only. Application forms for this course must be submitted to the appropriate adviser by the middle of the semester preceding the one in which an assignment is desired. Students who register for this course serve as apprentice teachers in the schools to which they are assigned. For 8 credits, full time for one-half of the semester is devoted to this work. For experienced teachers and students in physical education, music education, and library science education who are planning to split student teaching assignment in elementary and secondary schools, the time and credit may be modified. (Staff)

EDSE 187. FIELD EXPERIENCE IN EDUCATION. (1-4)

See EDUC 187 for description. (Staff)

EDSE 188. SPECIAL PROBLEMS IN EDUCATION. (1-3)

See EDUC 188 for description. (Staff)

EDSE 189. WORKSHOPS, CLINICS, AND INSTITUTES. (1-6)

See EDUC 189 for description. (Staff)

FOR GRADUATES

See Graduate Catalog for course descriptions.

EDSE 200. ADMINISTRATION AND SUPERVISION OF BUSINESS EDUCATION. (3)

(Peters)

EDSE 205. SEMINAR IN BUSINESS EDUCATION. (2)

(Peters)

EDSE 224. APPRENTICESHIP IN EDUCATION. (1-9) (Staff)

EDSE 239. SEMINAR IN SECONDARY EDUCATION. (2)

(Risinger, Adkins, McClure)

EDSE 240. TRENDS IN SECONDARY SCHOOL CURRICULUM. (3)

(Staff)

EDSE 243. THEORY AND RESEARCH IN SECONDARY EDUCATION. (1-3)

(Staff)

EDSE 247. SEMINAR IN SPECIAL SUBJECT AREAS. (2)

(Staff)

EDSE 253. PROBLEMS OF TEACHING READING IN SECONDARY SCHOOL. (Staff)

(Staff)

EDSE 255. PRINCIPLES AND PROBLEMS OF BUSINESS EDUCATION. (2-3)

(Peters)

EDSE 256. CURRICULUM DEVELOPMENT IN BUSINESS EDUCATION. (2-3)

(Peters)

EDSE 260. SEMINAR IN HOME ECONOMICS EDUCATION. (2)

(Lemmon)

EDSE 261. TRENDS IN THE TEACHING AND SUPERVISION OF HOME ECONOMICS. (2-4) (Lemmon)	
EDSE 275, 276. ADVANCED PROBLEMS IN ART EDUCATION. (3, 3) (Staff, Longley)	
EDSE 287. INTERNSHIP IN EDUCATION. (3-16) (Staff)	
EDSE 288. SPECIAL PROBLEMS IN EDUCATION. (1-6) (Staff)	
EDSE 399. THESIS RESEARCH. (Master's Level) (Staff)	
EDSE 499. DISSERTATION RESEARCH. (Doctorate Level) (Staff)	

SPECIAL EDUCATION

This curriculum is designed for undergraduate students who wish to qualify for teaching positions in either regular elementary education or in special education. Students who complete the curriculum will receive the Bachelor of Science degree and they will meet the Maryland State Department of Education requirements for the **Standard Professional Certificate in Special Education as well as Elementary Education**. Students may pursue a sequential program in the area of the mentally retarded, the perceptually impaired (learning disabilities), and the gifted. Students interested in the Gifted program will have different programs developed for them in conjunction with the offerings in Early Childhood Education or Secondary Education. The following represents a "typical" program.

	Semester	
FRESHMAN YEAR	I	II
ENGL 001 (or 021) - Composition.....	3	3
ENGL 003 - World Literature.....	3	3
PSYCH 1 - Introduction to Psychology.....	3	3
SOC 001 - Introduction to Sociology.....	3	3
GEOG 001 - Introduction to Geography.....	3	3
ART 040 - Fundamentals of Art Education.....	3	3
MUSC 016 - Fundamentals for the Classroom Teacher.....	3	3
BIOLOGICAL SCIENCES - (BOTN 1, BOTN 2, BOTN 10, ZOO 1, ZOO 2, ZOO 6, ENTM 005, ENTM 015)	3 or 4	3
PHED 001, 003 (men) or PHED 002, 004 (women) - Physical Activities.....	1	1
HEALTH.....	2	3
FINE ARTS (Art, Dance, Music, Philosophy).....	3	3
Total.....	15 or 16	16
SOPHOMORE YEAR		
ENGL 004 - World Literature.....	3	3
U.S. HISTORY.....	3	3
HISTORY.....	3	3
PHYSICAL SCIENCE (CHEM 008, CHEM 009 (4) or GEOL 001 (3) or ASTR 001 (3) or PHYS 003 (4)).....	3 or 4	3
SCIENCE (Physical or Biological).....	3	3 or 4
MATH 030 - Elements of Mathematics.....	4	3 or 4
MATH 031 - Elements of Geometry.....	4	4
SPCH 003 - Fundamentals of General American Speech or SPCH 001 - Public Speaking.....	3	3
Area of concentration ²¹ or elective.....	3	3
Total.....	16 or 17	16 or 18
JUNIOR YEAR		
HISTORY.....	3	3
EDUC 110 - Human Development and Learning.....	6	3
EDEL 105-E ²² Science in the Elementary School.....	2	3
EDEL 153-E ²² The Teaching of Reading.....	2	3
EDEL 121-B ²² Language Arts in the Elementary School.....	2	3
EDEL 122-B ²² Social Studies in the Elementary School.....	2	3
EDEL 126-B ²² Mathematics in the Elementary School.....	2	3
EDSP 170 - Introduction to Special Education.....	3	3
EDSP 171 ²³ Characteristics of Exceptional Children.....	3	3
A - Mentally Retarded or B - Gifted or		

²¹Students in Special Education are required to develop within their degree programs an Area of Academic Concentration consisting of a minimum of eighteen semester hours, twelve semester hours of which must be beyond the required work in the area.

²²All five of these courses may not be taken in one Semester. Students will register for two in Semester I or II and the remaining three in the other semester. The distribution shown is one of the several possible distributions.

²³Students in Special Education may elect one of three sequences: A-Mental Retardation, B-Gifted, C-Perceptually Impaired

C - Perceptually Impaired		
Electives, Area of concentration.....	3	6
Total.....	16	18
SENIOR YEAR		
EDUC 111 - Foundations of Education.....	3	3
PHED 120 - Education in the Elementary Schools (3) or EDMU 128 - Music for the Elementary Classroom Teacher (2) or EDEL 125 - Art in the Elementary School (2).....	2 or 3	3
EDSP 172 - Education of Exceptional Children		
A - Mentally Retarded or B - Gifted or		
C - Perceptually Impaired.....	3	3
EDSP 173 - Curriculum for Exceptional Children		
A - Mentally Retarded or B - Gifted.....	3	3
EDEL 149 - Student Teaching in the Elementary School.....	8	8
EDSP 149 - Student Teaching of Exceptional Children.....	6	8
Electives, Area of concentration.....	6	6
Total.....	17 or 18	16
TOTAL.....	133 or 134 hours	

Students interested in graduate programs (Masters, Advanced Graduate Specialists and Doctoral) in Special Education are requested to consult the Graduate School catalog and the Department of Special Education concerning programs and advisers.

FACULTY

Jean R. Hebel, M. Dean Hoops, Linda Jacobs, Eric Seidman, Betty H. Simms.

EDSP 88. SPECIAL PROBLEMS IN EDUCATION (1-6)
See EDUC 88 for description. (Staff)

EDSP 149. STUDENT TEACHING OF EXCEPTIONAL CHILDREN. (8)
See EDEL 149 for additional requirements. (Staff)

FDR ADVANCED UNDERGRADUATES AND GRADUATES

EDSP 170. INTRODUCTION TO SPECIAL EDUCATION. (3)
Designed to give an understanding of the needs of all types of exceptional children, stressing preventive and remedial measures. (Staff)

EDSP 171. CHARACTERISTICS OF EXCEPTIONAL CHILDREN. (3-9)
A. Mentally Retarded. B. Gifted. C. Preceptual Learning Problems. Prerequisite, EDSP 170 or equivalent. Studies the diagnosis, etiology, physical, social, and emotional characteristics of exceptional children. (Staff)

EDSP 172. EDUCATION OF EXCEPTIONAL CHILDREN. (3-9)
A. Mentally Retarded. B. Gifted. C. Perceptual Learning Problems. Prerequisite, EDSP 171 or equivalent. Offers practical and specific methods of teaching exceptional children. Selected observation of actual teaching may be arranged. (Staff)

EDSP 173. CURRICULUM FOR EXCEPTIONAL CHILDREN. (3-6)
A. Mentally Retarded. B. Gifted. Prerequisite, EDSP 171 or equivalent. Examines the principles and objectives guiding curriculum for exceptional children; gives experience in developing curriculum for these children; studies various curricula currently in use. (Staff)

EDSP 175. EDUCATION OF THE SLOW LEARNER. (3)
Course content includes the characteristics of the slow learner and those educational practices which are appropriate for the child who is functioning as a slow learner. (Staff)

FOR GRADUATES

See Graduate Catalog for descriptions.
EDSP 187. FIELD EXPERIENCE IN EDUCATION. (1-4)
See EDUC 187 for description. (Staff)

EDSP 188. SPECIAL PROBLEMS IN EDUCATION. (1-3)
See EDUC 188 for description. (Staff)

EDSP 189. WORKSHOPS, CLINICS, AND INSTITUTES. (1-6)
See EDUC 189 for description. (Staff)

EDSP 200. EXCEPTIONAL CHILDREN AND YOUTH. (3) (Staff)

EDSP 201. EMOTIONALLY HANDICAPPED CHILDREN AND YOUTH. (3) (Staff)

- EDSP 205. THE EXCEPTIONAL CHILD AND SOCIETY. (3) (Staff)
 EDSP 210. ADMINISTRATION AND SUPERVISION OF SPECIAL EDUCATION PROGRAMS. (3) (Staff)
 EDSP 215. EVALUATION AND MEASUREMENT OF EXCEPTIONAL CHILDREN AND YOUTH. (3) (Staff)
 EDSP 220. EDUCATIONAL DIAGNOSIS AND PLANNING FOR EXCEPTIONAL CHILDREN AND YOUTH. (3) (Staff)
 EDSP 221. PSYCHO-EDUCATIONAL PROGRAMMING WITH EMOTIONALLY HANDICAPPED CHILDREN AND YOUTH. (3) (Staff)
 EDSP 224. APPRENTICESHIP IN EDUCATION. (1-9) (Staff)
 EDSP 225. PROBLEMS IN THE EDUCATION OF THE MENTALLY RETARDED. (3) (Staff)
 EDSP 230. PROBLEMS IN THE EDUCATION OF THE GIFTED. (3) (Staff)
 EDSP 235. PROBLEMS IN THE EDUCATION OF CHILDREN WITH EMOTIONAL DISTURBANCES. (3) (Staff)
 EDSP 240. PROBLEMS IN THE EDUCATION OF CHILDREN WITH PERCEPTUAL IMPAIRMENT. (3) (Staff)
 EDSP 278. SEMINAR IN SPECIAL EDUCATION. (2) (Staff)
 EDSP 287. INTERNSHIP IN EDUCATION. (3-16) (Staff)
 EDSP 288. SPECIAL PROBLEMS IN EDUCATION. (1-6) (Staff)
 EDSP 399. THESIS RESEARCH. (Master's Level) (Staff)
 EDSP 499. DISSERTATION RESEARCH. (Doctorate Level) (Staff)

- EDHD 106. A STUDY OF HUMAN BEHAVIOR. (3) (Gardner)
 EDHD 106. A STUDY OF HUMAN BEHAVIOR. (3)
 This course is planned for and limited to students who are not enrolled in the College of Education; and it does not satisfy the requirements of the professional Teacher Education Programs. The course is designed to introduce students to the scientific principles (physical, social and psychological) which describe human behavior, development and adjustment at all maturity levels and to use these principles in the study of individual children and youth. Each student will observe, record, and analyze the behavior of an individual throughout the semester and must have one half-day a week for this purpose.
 (Hardy, Huebner)
 EDHD 108. CHILD GROWTH AND DEVELOPMENT (3)
 Growth and development of the child from conception through the early childhood years, with emphasis on developmental sequences in physical, psychological and social areas. Implications for understanding and working with young children in the home, school, and in other settings. (Staff)
 EDHD 112, 114. SCIENTIFIC CONCEPTS IN HUMAN DEVELOPMENT I, II. (3, 3) (Staff)
 Summer session. (Staff)
 EDHD 113, 115. LABORATORY IN BEHAVIOR ANALYSIS I, II. (3, 3) (Staff)
 Summer session. (Staff)
 EDHD 116. SCIENTIFIC CONCEPTS IN HUMAN DEVELOPMENT III. (3)
 Guided reading and observation of pupils throughout the school year. Emphasis on human development concepts relating to impact of family, school, society, and peer group on the student. Collection and analysis of data affecting learning and behavior. For in-service educators. (Not open to persons with credit in EDHD 102, 103).
 EDHD 117. LABORATORY IN BEHAVIOR ANALYSIS III. (3)
 Prerequisite: EDHD 116. Guided reading and observation of pupils throughout the school year. Emphasis on analysis of intrinsic aspects of learning and behavior including cognitive processes, motivation, self-concept, attitudes, and values. For in-service educators. (Not open to persons with credit in EDHD 102, 103).
 EDHD 120, 121, 122. STUDY OF HUMAN DEVELOPMENT AND LEARNING IN SCHOOL SETTINGS I, II, III. (2, 2, 2) (2, 2, 2)
 A sequence of courses which enables in-service teachers and administrators to carry on advanced study of human development and learning principles in the continuous study and evaluation of several different phases of the school program over an extended period of time. (Staff)
 EDHD 145. GUIDANCE OF YOUNG CHILDREN. (3)
 Development of an appreciation and understanding of young children from different home and community backgrounds; study of individual and group problems. (Dittmann)
 EDHD 187. FIELD EXPERIENCE IN EDUCATION. (1-4)
 See EDUC 187 for description. (Staff)
 EDHD 188. SPECIAL PROBLEMS IN EDUCATION. (-3)
 See EDUC 188 for description. (Staff)
 EDHD 189. WORKSHOPS, CLINICS, AND INSTITUTES. (1-6)
 See EDUC 189 for description. (Staff)

THE INSTITUTE FOR CHILD STUDY

The Institute for Child Study institute carries on the following activities: (1) it undertakes basic research in human development; (2) it digests and synthesizes research findings from many sciences that study human beings; (3) it plans, organizes, and provides consultant service programs of direct child study by in-service teachers in individual schools or in municipal, county or state systems; (4) it offers field training to a limited number of properly qualified doctoral students, preparing them to render expert consultant service to schools and for college teaching of human development. The College of Education operates Workshops in Child Development and Education for six weeks each summer. Inquires should be addressed to Director, Institute for Child Study.

The Institute for Child Study offers a series of courses on human development and approaches to the direct study of children. Certain prerequisites are set up within the course sequences but these prerequisites are modified by the student's previous experience in direct study of children.

Undergraduate courses are designed both for prospective teachers and in-service teachers (EDHD 102, 103, 104; EDHD 112-13, 114-15, 116-17). (For graduate course descriptions and sequences, refer to graduate catalog.)

Human Development Education

For Advanced Undergraduates and Graduates

- EDHD 102, 103, 104. CHILD DEVELOPMENT LABORATORY I, II, and III. (2, 2, 2) These courses involve the direct study of children throughout the school year. Each participant gathers a wide body of information about an individual, presents the accumulating data from time to time to the study group for criticism and group analysis and writes an interpretation of the dynamics underlying the child's learning behavior and development. Provides opportunity for teachers in service to earn credit for participation in their own local child study group. (Staff)
 EDHD 105. ADOLESCENT DEVELOPMENT. (3)
 A study of the interplay of physical, cultural and self forces as they influence behavior, development, learning, and adjustment during adolescence. Includes observation and case study. This course cannot be used to met the psy-

FOR GRADUATES

See Graduates Catalog for Descriptions

- EDHD 200. INTRODUCTION TO HUMAN DEVELOPMENT AND CHILD STUDY. (3) (Hamby, Kurtz, Thompson.)
 EDHD 201. BIOLOGICAL BASES OF BEHAVIOR. (3) (Chapin)
 EDHD 202. SOCIAL BASES OF BEHAVIOR. (3) (Rogolsky)
 EDHD 203. INTEGRATIVE BASES OF BEHAVIOR. (3) (Newman)
 EDHD 204, 205. PHYSICAL PROCESSES IN HUMAN DEVELOPMENT. (3, 3) (Chapin)
 EDHD 206, 207. SOCIALIZATION PROCESSES IN HUMAN DEVELOPMENT I, II. (3, 3) (Kyle, Mershon, Kurtz)

EDHD 208, 209. SELF PROCESSES IN HUMAN DEVELOPMENT I AND II. (3, 3)
(Bowie, Goering, Mershon)

EDHD 210. AFFECTIONAL RELATIONSHIPS AND PROCESSES IN HUMAN DEVELOPMENT. (3)
(Hatfield)

EDHD 211. PEER-CULTURE AND GROUP PROCESSES IN HUMAN DEVELOPMENT. (3)
(Hatfield)

EDHD 221. LEARNING THEORY AND THE EDUCATIVE PROCESS I. (3)
(Perkins, Larson, Milhollan)

EDHD 222. LEARNING THEORY AND THE EDUCATIVE PROCESS II. (3)
(Milhollan, Perkins)

EDHD 224. APPRENTICESHIP IN EDUCATION. (1-9)
(Staff)

EDHD 230, 231. FIELD PROGRAM IN CHILD STUDY II. (2-6)
(Kurtz, Thompson)

EDHD 250a, 250b, 250c. DIRECT STUDY OF CHILDREN. (1, 1, 1)
(Staff)

EDHD 260. SYNTHESIS OF HUMAN DEVELOPMENT CONCEPTS. (3)
(Morgan)

EDHD 270. SEMINARS IN SPECIAL TOPICS IN HUMAN DEVELOPMENT. (2-6)
(Morgan)

EDHD 287. INTERNSHIP IN EDUCATION. (3-16)
(Staff)

EDHD 288. SPECIAL PROBLEMS IN EDUCATION. (1-6)
(Staff)

EDHD 399. THESIS RESEARCH (Master's Level)
(Staff)

EDHD 499. DISSERTATION RESEARCH. (Doctorate Level)
(Staff)

EDAD 217. ADMINISTRATION AND SUPERVISION IN ELEMENTARY SCHOOLS. (3)
(Dudley, Bennett)

EDAD 218. SCHOOL SURVEYS. (2-6)
(Staff)

EDAD 221. ADVANCED SCHOOL PLANT PLANNING. (2)
(van Zwoll)

EDAD 223. PRACTICUM IN PERSONNEL RELATIONSHIPS. (2-6)
(Newell)

EDAD 224. APPRENTICESHIP IN EDUCATION. (1-9)
(Staff)

EDAD 225. SCHOOL PUBLIC RELATIONS. (3)
(van Zwoll)

EDAD 226. CHILD ACCOUNTING. (2)
(van Zwoll)

EDAD 227. PUBLIC SCHOOL PERSONNEL ADMINISTRATION. (3)
(van Zwoll)

EDAD 234. THE SCHOOL CURRICULUM. (2-3)
(Berman, Hovet)

EDAD 235. PRINCIPLES OF CURRICULUM DEVELOPMENT. (3)
(V. Anderson, Berman, Bennett)

EDAD 249. SEMINAR IN EDUCATIONAL ADMINISTRATION AND SUPERVISION. (2-4)
(Staff)

EDAD 287. INTERNSHIP IN EDUCATION. (3-16)
(Staff)

EDAD 288. SPECIAL PROBLEMS IN EDUCATION. (1-6)
(Staff)

EDAD 399. THESIS RESEARCH.
(Master's Level)
(Staff)

EDAD 499. DISSERTATION RESEARCH. (Doctorate Level)
(Staff)

ADMINISTRATION, SUPERVISION AND CURRICULUM

Advanced Undergraduates (Dept. Permission Required)

The programs in the Department of Administration, Supervision and Curriculum are all at the graduate level and include preparation of school superintendents, principals, supervisors, curriculum directors, and administrative specialists in the areas of finance and business administration, personnel administration, public relations, and educational facilities. In addition, there are programs for the preparation of professors and research workers in all of the above areas. Preparation programs leading to administrative positions in junior colleges and other institutions of higher learning are available through a joint major in Administration-Higher Education.

EDAD 187. FIELD EXPERIENCE IN EDUCATION. (1-4)
See EDUC 189 for description. (Staff)

EDAD 188. SPECIAL PROBLEMS IN EDUCATION. (1-3)
See EDUC 188 for description. (Staff)

EDAD 189. WORKSHOPS, CLINICS, INSTITUTES. (1-6)
See EDUC 189 for description. (Staff)

FOR GRADUATES

See graduate catalog for description

EDAD 210. THE ORGANIZATION AND ADMINISTRATION OF PUBLIC EDUCATION. (3)
(Staff)

EDAD 211. THE ORGANIZATION AND ADMINISTRATION OF SECONDARY SCHOOLS. (3)
(J. P. Anderson, Goldman)

EDAD 212. SCHOOL FINANCE AND BUSINESS ADMINISTRATION. (3)
(McLoone)

EDAD 214. SCHOOL PLANT PLANNING. (2-3)
(van Zwoll)

EDAD 216. PUBLIC SCHOOL SUPERVISION. (3)
(Dudley, J. P. Anderson, Berman)

COUNSELING AND PERSONNEL SERVICES

Programs of preparation are offered by the Department of Counseling and Personnel Services at the master's degree, advanced graduate specialist, and doctoral degree levels for counselors in elementary and secondary schools, rehabilitation agencies, community agencies, college and university counseling centers. It also offers programs of preparation for other personnel services: college student personnel administration, visiting teacher, and psychological services in schools.

For Advanced Undergraduates and Graduates

EDCP 161. INTRODUCTION TO COUNSELING AND PERSONNEL SERVICES. (3)
Presents principles and procedures, and examines the functions of counselors, psychologists in schools, school social workers, and other personnel service workers. (Staff)

EDCP 165. INTRODUCTION TO REHABILITATION COUNSELING. (3) (Formerly Ed. 182)
Introductory course for majors in rehabilitation counseling, social work, psychology or education who desire to work professionally with physically or emotionally handicapped persons. (Staff)

EDCP 172. MENTAL HYGIENE IN THE CLASSROOM. (3) (formerly Ed. 162.)
The practical application of the principles of mental hygiene to classroom problems. (Staff)

EDCP 187. FIELD EXPERIENCE IN COUNSELING AND PERSONNEL SERVICES. (1-4)
See EDUC 187 for description. (Staff)

EDCP 188. SPECIAL PROBLEMS IN COUNSELING AND PERSONNEL SERVICES. (1-3)
See EDUC 188 for description. (Staff)

EDCP 189. WORKSHOPS, CLINICS, INSTITUTES. (1-6)
See EDUC 189 for description. (Staff)

FOR GRADUATE STUDENTS

See graduate catalog for descriptions

- EDCP 200. INTRODUCTION TO STUDENT PERSONNEL. (2)
(formerly Ed. 228) (Staff)
- EDCP 224. APPRENTICESHIP IN COUNSELING AND PERSONNEL SERVICES. (1-9) (Staff)
- EDCP 240. PSYCHO-SOCIAL ASPECTS OF DISABILITY. (3)
(formerly Ed. 283) (Staff)
- EDCP 241. STUDENT PERSONNEL AND THE COLLEGE STUDENT. (2) (Staff)
- EDCP 243. OCCUPATIONAL CHOICE THEORY AND INFORMATION. (3) (Staff)
- EDCP 244, 245. MEDICAL ASPECTS OF DISABILITY I, II. (3) (Staff)
- EDCP 249. PERSONALITY THEORIES IN COUNSELING AND PERSONNEL SERVICES. (3) (Staff)
- EDCP 250. CASES IN APPRAISAL. (3) (Staff)
- EDCP 254. ORGANIZATION AND ADMINISTRATION OF PERSONNEL SERVICES. (2) (Staff)
- EDCP 260. COUNSELING: THEORETICAL FOUNDATIONS AND PRACTICE. (3) (Staff)
- EDCP 261. PRACTICUM IN COUNSELING. (2-6) (Staff)
- EDCP 263, 264. MODIFICATION OF HUMAN BEHAVIOR: LABORATORY AND PRACTICUM. (3, 3) (Staff)
- EDCP 265. COUNSELING IN ELEMENTARY SCHOOLS. (3)
(formerly Ed. 259.) (Staff)
- EDCP 271. COUNSELING AND PERSONNEL SERVICES SEMINAR. (2) (formerly Ed. 269) (Staff)
- EDCP 272. SEMINAR IN STUDENT PERSONNEL. (2-6)
(formerly Ed. 310) (Staff)
- EDCP 273. SEMINAR IN REHABILITATION COUNSELING. (2) (formerly Ed. 286) (Staff)
- EDCP 287. INTERNSHIP IN COUNSELING AND PERSONNEL SERVICES. (3-16) (Staff)
- EDCP 288. SPECIAL PROBLEMS IN COUNSELING AND PERSONNEL SERVICES. (1-6) (Staff)
- EDCP 399. THESIS RESEARCH. (Master's Level) (Staff)
- EDCP 499. DISSERTATION RESEARCH. (Doctorate Level) (Staff)

SPECIAL SERVICES

The College provides several kinds of special services for faculty and students, and schools and teachers in the field:

BUREAU OF EDUCATIONAL RESEARCH AND FIELD SERVICES

The Bureau of Educational Research and Field Services has been established to (1) encourage and stimulate basic research bearing on different aspects of the educative process; (2) provide assistance in designing, implementing and evaluating research projects initiated by local school systems; (3) coordinate school systems' requests for consultants with the rich and varied professional competencies that are available on the University faculty. Additional information about the Bureau's services may be obtained from the Director, Bureau of Educational Research and Field Services.

CURRICULUM LABORATORY

The curriculum laboratory provides students, faculty and teachers in the field with materials and

assistance in the area of curriculum. An up-to-date collection of curriculum materials is maintained. This includes texts, courses of study, study guides, curriculum studies, and bibliographies. The laboratory is equipped to assist students and student teachers with preparation of teaching plans.

EDUCATIONAL TECHNOLOGY CENTER

The center is designed to serve as a service facility for faculty and students by providing teaching aids of all kinds, audio-visual equipment and service, instruction in all aspects of instructional materials, aids, and new media. This 12-room complex contains model, flexible-in-size classrooms for optimal use of instructional media, an independent learning laboratory with 40 student stations, production and distribution rooms for a closed-circuit television and video tape system, laboratories for graphic and photographic production, and space for faculty research and development in the use of instructional media. Supporting the professional faculty in the operation of the Center are such media specialists as a graphic artist and a television technician.

While the Educational Technology Center will function as a demonstration facility for on- and off-campus groups requiring model media facilities, it is also designed to serve an instructional program offering graduate degrees in educational technology.

MUSIC EDUCATORS NATIONAL CONFERENCE HISTORICAL CENTER

The University of Maryland and the Music Educators National Conference established the MENC Historical Center in 1965 for the purpose of building and maintaining a research collection which would reflect the development and current practices in music education. Located in McKeldin Library, the Center includes study space and is prepared to assist scholars in the field. Materials in the following categories are collected: archival documents of the MENC; instructional materials; professional publications; curricular, administrative, and philosophical materials; manuscripts, personal letters and other historical materials. Further information about the collection and uses of materials may be obtained by addressing the Center's Curator.

OFFICE OF LABORATORY EXPERIENCES

The Office of Laboratory Experiences is designed to arrange off-campus placement in laboratory experiences for students preparing to teach. In this capacity, it serves as a liaison between the University and the public schools. Applications for field placements, EDUC 110 students and student teachers are processed through this office. This office is also responsible for the Teacher Education Centers.

UNIVERSITY NURSERY-KINDERGARTEN LABORATORY SCHOOL

Housed in the College of Education, the Nursery-Kindergarten Laboratory School services the total University in the following ways: (1) acts as a center in which individual professors or students may conduct research; (2) serves as a unit for undergraduate students to have selected experiences with young children, such as student teaching, child study, and other forms of participation in a program for young children; (3) provides a setting in which educators from within and without the University can come for sources of ideas relative to the education of young children. Further information about the School's facilities or services can be obtained by contacting the Director.

READING CENTER

The reading center provides clinical diagnostic and corrective services to a limited number of children. These services are a part of the program in correction and remedial reading offered to teachers on the graduate level.

SCIENCE TEACHING CENTER

The Science Teaching Center has been designed to serve as a representative facility of its type to fulfill its functions of undergraduate and graduate science teacher education, science supervisor training, basic research in science education, aid to in-service teachers and supervisors, and consultative services, on all levels, kindergarten through community college. Its reference library features relevant periodicals, science and mathematics textbooks, new curriculum materials, and works on science subjects and their operational aspects. Its fully equipped research laboratory, in addition to its teaching laboratories for science methods courses, provides project space for both faculty and students.

Since 1962 the Science Teaching Center has served as the headquarters for the activities of the Science Teaching Materials Review Committee of the National Science Teachers Association. The Information Clearinghouse on Science and Mathematics Curricular Developments, located here that year also, is now the International Clearinghouse for A.A.A.S., N.S.F. and UNESCO. Within the Center, then, is gathered the "soft-ware" and "hardware" of science education in what is considered to be one of the most comprehensive collections of such materials in the world.

OFF-CAMPUS COURSES

Through the University College, a number of courses in education are offered in Baltimore, in other centers in Maryland, and overseas. These courses are chosen to meet the needs of groups of students in various centers. In these centers, on a part-time basis, a student may complete a part of the work required for an undergraduate or a graduate degree. Announcements of such courses may be obtained by addressing requests to the Dean, University College, College Park, Maryland.

STUDENT AND PROFESSIONAL ORGANIZATIONS

The College sponsors a chapter of the Student National Education Association, which is open to undergraduate students on the College Park campus. A student chapter of the Council for Exceptional Children is open to undergraduate and graduate students interested in working with exceptional children. A student chapter of the Music Educators National Conference (MENC) is sponsored by the Department of Music, and the Industrial Education Department has a chapter of the American Society of Tool and Manufacturing Engineers and a chapter of the American Industrial Arts Association.

In several departments there are informal organizations of students. All policy-recommending committees of the College include student representation.

UNIVERSITY CREDENTIAL SERVICE

The University provides placement assistance for graduating seniors, advanced degree candidates and those persons completing teacher certification requirements. All graduating seniors on the College Park campus (except Education for Industry majors) are required to file credentials with this office prior to graduation. A registration fee is charged.

Credentials are a permanent record of a student's academic preparation plus recommendations from academic and professional sources. Registrants are notified of positions for which they qualify. On-campus interviews are scheduled with educational administrators. The service is available to alumni as well. For further information contact the Assistant Director of Placement, Shoemaker Building.

Graduate Studies

For graduate study in education, requirements for admission vary with degree or diploma and special area for which the applicant is applying. Both the Department of Education and the Graduate School must be satisfied as to the ability of the student to do graduate work.

Graduate students in education are required to take a test battery either after admission to the Graduate School, or before, if results are needed as admission information.

Application for Admission

A graduate student in education must matriculate in the Graduate School. Application for admission to the Graduate School must be made by July 15 for the fall term; December 15 for the spring term; and May 15 for the summer school.

Master's Degrees

A graduate student in education may matriculate for a Master of Education or a Master of Arts degree. For requirements of these degrees, the student should consult both the Graduate School Announcements and material issued by the College of Education.

Advanced Graduate Specialist in Education

A student who wishes to enter this program must have completed a master's degree or its equivalent and be otherwise acceptable. The student is admitted to the Graduate School on a special non-degree basis. For requirements of this program, the student should consult the bulletin issued by the College of Education.

Doctoral Degrees

Programs leading to a Doctor of Philosophy in education or a Doctor of Education degree are administered for the Graduate School by the Department of Education. For requirements of these degrees, the student should consult both the Graduate School Announcements and the statement of policy relative to doctoral programs in education.

The four-year programs outlined in this catalog lead either to the degree of Bachelor of Science with curriculum designation in aerospace engineering, agricultural engineering, chemical engineering, civil engineering, electrical engineering, mechanical engineering, fire protection, or to the degree of Bachelor of Science in Engineering; in addition, each of the foregoing degree programs may be pursued through the five-year Maryland Plan for Co-operative Engineering Education. The engineering programs integrate these elements: (1) basic sciences including mathematics, physics, chemistry; (2) engineering sciences including mechanics of solids and fluids, engineering materials, thermodynamics, electricity and magnetism; (3) professional studies in major fields of engineering specialization; (4) liberal arts and social studies in the General Education Program; and (5) certain other required subjects including health and physical activities.

GENERAL INFORMATION

Increasingly, the boundary between engineers and applied scientists or applied mathematicians becomes less distinct. The various branches of engineering similarly interact with each other, as technical problems become more sophisticated, and require a combined attack from several disciplines. The engineer occupies an intermediate position between science and the public, because, in addition to understanding the scientific principles of a situation, he is concerned with the timing, economics, and values that define the useful application of those principles.

Each program lays a broad base for **continued learning** after college in professional practice, in business or industry, in public service, or in graduate study and research.

COLLEGE REGULATIONS

1. The responsibility for proper registration and for satisfying stated prerequisites for any course must rest with the student—as does the responsibility for proper achievement in courses in which he is enrolled. Each student should be familiar with the provisions of this catalog, including the **academic regulations**, contained in appendix—and other pertinent regulations.
2. A student who is enrolled for more than 8 semester-hours of work must register for physical education each semester until he has fully satisfied the University's requirement. He should schedule the required two credits of Health during his first thirty credits of registration in the University.
3. Required courses in mathematics, physics, and chemistry have highest priority; and every engineering student must register for mathematics and chemistry—or mathematics and physics—until he has fully satisfied requirements of the College of Engineering in these subjects. Courses in mathematics, chemistry and physics may not be dropped.
4. A student is advised to schedule a reduced load if his record of scholarship during the previous semester was unsatisfactory (a) because he failed courses, or (b) because his average during the previous semester was less than 2.0 ("C"). A student who is on probation may not schedule more than 16 semester-hours of work in any semester, **including** credit for physical education. However, he may not defer the top-priority subjects noted in Paragraphs 2 and 3 above without written approval of the Dean.

5. A student in the College of Engineering has attained junior standing when he has completed a minimum of 56 academic hours toward his degree, including 15 credits of mathematics and 11 credits of physics and possessing the minimum required grade point average to remain in the University.
6. As indicated in **academic regulations**, a student who has not attained Junior Standing may not register for upper division courses.
7. To be eligible for a bachelor's degree in the College of Engineering, a student must have an **average** of at least "C" — 2.0—(a) in all subjects applicable to his degree, and (b) in all junior-senior courses in his major department. Responsibility for knowing and meeting all degree requirements for graduation in any curriculum rests with the student.
8. A student in the College of Engineering may audit a course only with the understanding that the course may not be taken for credit subsequent to his registration as audit. He must also have the consent of the department offering the course. Forms requesting permission to audit courses are available in the Engineering Student Affairs Office, J 183.

STRUCTURE OF ENGINEERING CURRICULA

Courses in the normal curriculum or program and prescribed credit hours leading to the degree Bachelor of Science (with curriculum designation) are outlined on the following pages for each department in the College of Engineering. " . . . No student may modify the prescribed number of hours without special permission from the dean of his college." The courses in each curriculum may be classified in the following categories:

1. Certain courses required of all undergraduate students in the University. Students who are not specifically exempted are required to register in and successfully complete two prescribed courses in physical education for a total of two semester hours of credit. A health course (2 credits) is also required of all undergraduate men and women.
2. Courses in the General Education Program. These include: English (9 credits), Fine Arts or Philosophy (3 credits), History (6 credits), and Social Science (6 credits). A listing of specific courses which meet the requirements of the General Education Program are listed elsewhere in this catalog.
3. Courses in the physical sciences—Mathematics, Chemistry, Physics.
4. Collateral engineering courses—engineering sciences, and other courses approved for one curriculum but offered by another department.
5. Courses in the major department.

A student should obtain written approval for any substitution of courses from the department head and the dean of his college.

The courses in each engineering curriculum, as classified above, form a sequential and development pattern in subject matter. In this respect, curricula in engineering may differ from curricula in other colleges. Some regulations which are generally applicable to all students (see the **academic regulations**) may need clarification for purposes of orderly administration among engineering students. Moreover, the College of Engineering establishes policies which supplement the University regulations.

BASIC FORMAT OF THE FRESHMAN-SOPHOMORE YEARS IN ENGINEERING

The freshman and sophomore years in Engineering are designed to lay a strong foundation in mathematics, physical sciences and the engineering sciences upon which the student will later develop his professional program during the upper division (junior and senior) years. The College course requirements for the freshman year are the same for all students, regardless of their intended professional career, and about 75% of the sophomore year course requirements are common, thus affording the student a maximum flexibility in choosing his specific area of engineering specialization. Although the engineering student selects his major field at the start of his sophomore year, this intramural program commonality affords the student the maximum flexibility of choice or interdepartmental transfer up to the end of his sophomore year.

General College Requirements for the Freshman and Sophomore Years

A. Health and Physical Education	Credit Hrs.
Health (HLTH. 005)	2
Physical Education (two, one semester courses are required, these carry no academic credit)	2
B. General Education	12
C. Mathematics	16
Four courses in mathematics are required to be selected from MATH. 019, 020, 021, 022, and 066. If MATH. 066 is the last course in the sequence, only 15 credit hours (total) in Math will result and one (1) credit hour is added to the Engineering Sciences or Math and Physical Sciences Electives.	
D. Physical Sciences	19
A minimum of 19 credit hours in Physics and Chemistry must be completed, with not less than seven (7) in either field.	
E. Engineering Sciences	9
Nine (9) credit hours must be completed in the engineering sciences, to be selected from ENES 001, or ENES 002, ENES 010, ENES 020, and ENES 021. Each is a three (3) credit hour course.	
F. Engineering Sciences, Mathematics, Physical Sciences or Major Field Engineering	8
Eight (8) credit hours to complete the freshman-sophomore year requirements may be in any of the fields indicated, but no more than six (6) credit hours may have a major field designation.	
Total Minimum Academic Credits in Freshman-Sophomore (Plus 2 Semesters of Physical Education)	66

Basic and Alternate Curricula for Freshmen in Engineering

All freshmen in the College of Engineering are required to complete the following basic curriculum for freshmen regardless of whether the student plans to proceed through one of the major field designated baccalaureate degree programs or follow any of the multidisciplinary, non-designated degree programs that are sponsored by the College.

Basic Freshman Curriculum in Engineering

Course No. and Title	Semester	
	1	II
HLTH 005—Science and Theory of Health	2	
CHEM. 008, 009—General Chemistry	4	4
PHYS. 030—General Physics I	3	3
MATH. 019, 020—Analysis I, II	4	4
ENES. 001—Intro. Engr. Science	3	
ENES. 010—Mechanics		3
General Education Courses	3	3
Physical Activities	1	1
Total Academic Credits	17	18

Students who are not prepared to schedule MATH. 019 are advised to schedule MATH. 018 (3 cr.) and ENGL. 001 (3 cr.) in the Summer Session before the Fall (first) Semester. MATH. 018 does not count toward fulfilling the requirements of an engineering degree it is a preparatory course. Otherwise, students will schedule their freshman year as shown in the following:

Alternate Freshman Curriculum in Engineering*

Course No. and Title	Semester	
	I	Summer
HLTH 005 - Science and Theory of Health	2	
CHEM 008, 009 - General Chemistry**	4	4
PHYS 030 - General Physics I		3
MATH 018 - Intro. to Analysis I	3	
MATH 019, 020 - Analysis I, II	3	4
ENES 001 - Intro. Engr. Science	3	4
ENES 010 - Mechanics	3	3
General Education Courses	3	6
Physical Activities	1	1
Total Academic Credits	16	18

** Qualified students may elect to take CHEM 018 and 019 (3 cr hrs. each) instead of CHEM 008 and 009.

*** MATH 018 is an additional course for those students who do not qualify to begin with MATH 019.

The Sophomore Year in Engineering

With the beginning of his sophomore year the student selects his sponsoring academic department (Aerospace, Agricultural, Chemical, Civil, Electrical, Fire Protection, or Mechanical Engineering) and this department assumes the responsibility for the students academic guidance, counseling and program planning from that point until the completion of the degree requirements of that department as well as the College.

Sophomore Curriculum in Engineering

General Education	Semester	
	I	II
Math 021 - Analysis III	3	3
Math 022 or 066 - Analysis IV or Differential Equations	4	
Phy 031, 032 - General Physics	4	4
ENES 020 - Mechanics of Materials	3 ²	4
ENES 021 - Dynamics		3 ³
Major field or related courses	2 or 4	2 or 5 ⁴
Total Academic Credits	16 or 18	15 or 19

¹ Aerospace and Chemical engineering students should register for Math 066 - all others register for Math 022.

² May be taken either first or second semester. Electrical engineering students take ENES 080 and ENES 083 in place of ENES 020.

³ May be taken either first or second semester. Chemical engineering students take CHEM 035, CHEM 036, and CHEM 040 in place of ENES 021.

⁴ The major field or related courses recommended in the sophomore year are as follows: Aerospace: CMSC 020 - Elementary Algorithmic Methods (3) and ENME 060 - Thermodynamics (3)

Agricultural: ENES 030 - Materials Science (3) or ENCE 050 - Fundamentals of Engineering Materials (3); AGEN 001 - Introduction to Agricultural Engineering (4) and AGRI 001 - Introduction to Agriculture (1).

Chemical: ENCH 015 - Chemical Engineering Analysis I (2) and ENCH 050 - Chemical Engineering Analysis II (3).

Civil: ENCE 050 - Fundamentals of Engineering Materials (3) and ENCE 090 - Engineering Survey Measurements (3).

Electrical: ENEE 090 - Circuit Analysis I (4) and ENEE 091 - Circuits Laboratory I (1).

Fire Protection: ENFP 080 - Fire Protection Organization (3) and ENFP 090 - Essentials of Fire Protection (3).

Mechanical: ENME 015 - Introduction to Mechanical Engineering (2) and ENME 060 - Thermodynamics I (3).

BACHELOR OF SCIENCE DEGREE IN ENGINEERING

The undesignated degree program (BS-Engr.) is designed to serve three primary functions: (1) to prepare those students who wish to use the breadth

and depth of the engineering education as a preparatory vehicle for entry into post-baccalaureate study in such fields as medicine, law and/or business administration; (2) to develop a background for those who wish to continue their engineering training in the graduate area of some of the newer interdisciplinary fields of engineering such as environmental engineering, bio-medical engineering, systems engineering, and many others; and finally (3) to assist those students who do not plan the normal professional practice of a designated engineering field upon graduation, but wish to use a broader engineering training to serve in auxiliary and supporting, aspects 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.

The program in no sense represents a dilution of the rigor of the normal engineering educational program, but rather it builds a flexible program based upon the same course offerings and topical coverage used in the designated degree programs the only difference is that the student following the undesignated degree path will sacrifice some of the depth or breadth of the designated degree program to include coverage in a secondary engineering field (engineering minor) that might be of more significant value to his future career plans.

It should be emphasized that the program is NOT a general engineering or an engineering science program. It is a blending of two or possibly three (by suitable selection of engineering electives) fields of engineering to afford the student a multidisciplinary engineering background. In the BS Engineering program, the student is under the professional guidance and counseling direction of his major field department and they will plan his entire baccalaureate career. The student will graduate with a concentration in a specific field (Ch.E., E.E., etc.) and thus will have a professional base for his continuing growth and development.

The proposed program should be particularly attractive to those students contemplating graduate study in the interdisciplinary graduate engineering fields such as environmental engineering, bio-engineering, bio-medical engineering, and systems and control engineering, or for preparatory entry into graduate work, in materials engineering, or nuclear engineering which are currently not offered as designated baccalaureate fields at Maryland. For example, a student contemplating graduate work in environmental engineering might combine chemical and civil engineering for his total program; a student interested in systems and control engineering graduate work might combine electrical engineering with either chemical, mechanical, or aerospace engineering. Since the specific course requirements are flexible, there is increased opportunity for those students contemplating a career through law, medical, or business administration routes to begin preparation in this direction yet still complete a sound undergraduate engineering preparation.

TABLE I shows the minimum requirements for a BS degree in Engineering; the 66 semester credit hours required for the completion of the Junior and Senior years is superimposed upon the Freshman and Sophomore curriculum completed by the student. The student, need not make a decision whether to take the designated or the undesignated degree in an engineering field until the beginning

of his junior year. In fact, he can probably delay the decision until the Spring term of his junior year with little or no sacrifice, thus affording the student ample time for decision.

TABLE I
JUNIOR-SENIOR REQUIREMENTS
for a
BS DEGREE IN ENGINEERING (undesignated)
(BS-Engr.)

ACADEMIC FIELD	Minimum Credit Hour Requirements to Fulfill the Jr.-Sr. Year Requirements 12 credit hours
GENERAL EDUCATION	
MATHEMATICS, PHYSICAL & ENGINEERING SCIENCES (18 credit hours)*	
Math or Physical Science, required: Engineering Sciences,** required:	3 credit hours
Math, Physical or Engineering Science,** electives:	8 credit hours
ENGINEERING FIELDS of CONCENTRATION (36 credit hours)***	9 credit hours
Primary Engr. Field	24 credit hours
Secondary Engr. Field	12 credit hours

TOTAL JR.-SR. CREDIT HOUR REQUIREMENTS (Minimum) = 66

* Of the 18 required credits in the Mathematics, Physical, and Engineering Sciences, 9 must be at the 100 course level and above

** For the purposes of the BS-Engineering degree, an Engineering Science course, with the singular exception noted below, or those courses in the Engineering College prefixed by ENES designation or, are in an engineering field not his primary or secondary field of concentration. The singular exception to the above is that the student may use up to six credits of course work numbered below 100 in his primary or secondary engineering field of concentration as engineering sciences.

*** All of the courses used to fulfill the primary and secondary engineering field requirement of 36 semester credit hours must be at the 100 course level and above.

TABLE II lists the currently available primary and secondary fields of concentration that are possible under the format of TABLE I according to the presently available course offerings within the College.

TABLE II
POSSIBLE PRIMARY AND SECONDARY
ENGINEERING FIELDS OF CONCENTRATION
FOR THE BS-ENGINEERING DEGREE

Primary Engr. Field	24 credit hours	SECONDARY FIELDS
Secondary Engr. Field	12 credit hours	Aerospace Engineering
PRIMARY FIELDS		Agricultural Engineering
Aerospace Engineering		Chemical Engineering
Agricultural Engineering		Civil Engineering
Chemical Engineering		Electrical Engineering
Civil Engineering		Engineering Materials
Electrical Engineering		Fire Protection
Engineering Materials		Mechanical Engineering
Fire Protection		Nuclear Engineering
Mechanical Engineering		
Nuclear Engineering		

GENERAL ENGINEERING COLLEGE REQUIREMENTS FOR THE BS-ENGINEERING DEGREE

All undergraduate students in engineering will select their major field sponsoring department (i.e. Aero., Chemical, Civil, Electrical, Fire Protection, or Mechanical Engineering) 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 his sophomore year, or a minimum of 50 earned credits towards any engineering degree, and at least one semester prior to the time he expects to receive the baccalaureate degree in engineering. His curriculum planning, guidance and counseling will be the responsibility of the "Undesignated Degree Program Advisor" in his primary field department. At least one semester before the expected degree is to be granted the student must file an "Application for Admission to Candidacy for the Degree of Bachelor

of Science in Engineering" with the Dean's Office of the College of Engineering. The candidacy form must be approved by the Head of the primary field department, the primary engineering and secondary engineering field advisors and the college faculty committee on "Undesignated Degree Programs." This committee has the responsibility for implementing all approved policies pertaining to this program and reviewing and acting on the candidacy forms filed by the student.

Specific University and College academic regulations apply to this undesignated degree program in the same manner as they apply to the conventional designated degree programs. For example, the academic regulations of the University apply and the College requirement of 2.00 factor in his major field during the junior and senior years apply. For the purpose of implementation of such academic rules, the 24 credits in the primary engineering field and the 12 credits in the secondary engineering field are considered to count as a "36 credit major" for such academic purposes.

CO-OPERATIVE ENGINEERING EDUCATION PROGRAM

The Maryland Plan for co-operative engineering education at the University of Maryland, offered by the College of Engineering, presents a five year program leading to a Bachelor of Science degree. The academic requirements for students following the co-op plan of education are identical to the academic requirements for those students following the regular four-year program. In addition to the normal academic requirements, the co-op student has scheduled periods of professional internship which must be satisfactorily completed to qualify for the baccalaureate degree under the co-op plan.

The co-op plan begins after the student has completed the freshman and sophomore requirements of his major field. Thus co-op plan involves only the last half of the student's baccalaureate program, the junior and senior years. The alternating plan of study and professional internship lengthens this normal two year period to three years. Delaying entry into the co-op plan until the junior year offers considerable educational advantages to the student. The student retains the normal freshman-sophomore program years to afford time for the selection of his major field of engineering . . . or even whether he wishes to continue in engineering . . . without committing himself to either the regular four year or the co-op plan of education. A more mature and meaningful series of professional internship assignments are possible, to benefit both the student and his professional partner. Also, the plan is readily adaptable to the needs of the student transferring to the University from the pre-engineering programs of the Community Colleges or following the completion of the first two years of engineering at other colleges and universities.

The Maryland Plan for Co-operative Engineering Education is shown in the tabulation on the following page. Briefly, the co-op student spends three semesters and two summers in resident study and three semesters and one summer in professional internship to complete his baccalaureate degree requirements; all students complete the program with student-residence at the University. The study-residence periods are the normal semester or eight weeks summer sessions at the University; the internship periods are of twenty weeks

duration during the Fall or Spring semesters and ten weeks during the summer.

As shown in the tabulation, the basic plan (Group I and II) has students beginning their co-op program with the Fall semester following the completion of the freshman and sophomore requirements and graduating within three years after beginning the program. The Group III plan is a modification of the Group II, basic plan, for a limited number of students who wish to accelerate their co-op program. Similarly, Group IV is a delayed entry program for those students who did not complete their freshman-sophomore requirements in time for normal entry into the program; it is anticipated that this Group IV plan will be attractive to those transfer students having basic academic deficiencies to make up.

Students are selected for the co-op plan from applications filed with the Co-operative Education Office of the College of Engineering. While the student applies during his sophomore year, he must have completed the sophomore year requirements before formal entry into the program. A student must have a minimum 2.00 grade point average to qualify for the program. While the selection of applicants is based primarily on scholarship, dependability, ability to work well with others, and financial need. Students are placed in professional intern situations which will provide the best possible professional experiences consistent with career objectives. Extensive planning and coordination of college-industry-student liaison is necessary to insure the realization of the program objectives.

**CO-OPERATIVE PLAN OF EDUCATION, COLLEGE OF ENGINEERING
UNIVERSITY OF MARYLAND**

NOTE: The student must have completed all the Freshman and Sophomore requirements of his major field before entry into the co-op plan.

	THE BASIC PLAN		BASIC PLAN MODIFICATIONS	
	GROUP I	GROUP II	GROUP III*	GROUP IV**
SUMMER			Study	
FALL	Study	Intern (1,2)	Intern (1,2)	
SPRING	Intern (1,2)	Study	Study	Intern (1,2)
SUMMER	Study	Intern (3)	Intern (3)	Study
FALL	Intern (3,4)	Study	Study	Intern (3,4)
SPRING	Study	Intern (4,5)	Intern (4,5)	Study
SUMMER	Intern (5)	Study	Study	Intern (5)
FALL	Study	Intern (6,7)	Intern (6,7)	Study
SPRING	Intern (6,7)	Study	Study	Intern (6,7)
SUMMER	Study	Study		Study
FALL				Study

* Group III is a limited enrollment group for students wishing to accelerate their program. The Freshman-Sophomore years work must have been completed prior to enrollment in the Pre-Co-op Summer session.

**Group IV is a delayed entry, limited enrollment group, for students who did not complete their Freshman-Sophomore year requirements in time for a normal Fall semester entry into the Co-op plan.

Students make their own arrangements for board and lodging while on their periods of internship. Frequently the participating industrial company or governmental agency will assist the student in locating good, inexpensive lodging. The internship wages are paid directly to the student by his employer.

During the semesters or summer sessions in which the student attends school, he pays the regular tuition and fees assessed by the University. A thirty dollar fee is charged for each 10-week period of professional internship. There is one 10-week period when a student interns during the summer and three double periods (20 weeks each) when

he interns during the Fall or Spring semesters. The professional intern fee is payable at the beginning of each intern period and is not refundable. The co-op plan student usually completes seven 10-week periods of professional internship to complete all requirements for the Bachelor of Science degree under the co-op plan of the College of Engineering.

AEROSPACE ENGINEERING

PROFESSORS: Corning, Pai*, Rivello, Sherwood, and Thomas.
ASSOCIATE PROFESSORS: Melnik.
ASSISTANT PROFESSORS: Barlow, Donaldson, Filotas, Plotkin, Schaeffer, Shankar, and Weisssharr.
INSTRUCTOR: Greenwood.
LECTURERS: Anderson, Billig, Brandt, Fleig, and Wilson.

Aerospace engineering deals with the motion of a solid relative to a fluid or to other solids. Usually the solid is an aircraft or spacecraft and the fluid is air, but frequently the aerospace engineer is involved in the study of other items such as hydrofoils moving through water and wind or water loads on structures. Especially where weight constraints results in a structure which is comparatively flexible, the aerospace engineer is uniquely equipped to analyze the interaction of the structure with the fluid.

The undergraduate curriculum includes basic courses in all areas of aerospace engineering, aerodynamics, structures, propulsion, flight mechanics and design. Aerodynamics involves the application of the laws of fluid flows to determine the lift, drag, and other aerodynamic characteristics of the vehicle or solid. In flight at supersonic speeds the aerodynamicist must include the effects of shock waves, while at reentry speeds the influence of chemical reactions in the atmospheric gas must be considered. The topic of structures is mainly concerned with the ability of the vehicle to withstand the forces created by motion through the fluid. The effects of structural flexibility must be considered and, for flight at high speeds, the heating of the structure can substantially influence its behavior. Structural weight is always of great concern. Propulsion includes studies of reciprocating engine-propeller combinations, gas turbines and rockets with primary emphasis on the determination of the thrust and the fuel consumption rate. An appreciation for the properties of materials at elevated temperatures is essential for both propulsion and structural considerations. Flight mechanics deals with the ability of a vehicle to be flown along certain flight paths. The maneuverability of an aircraft and the handling qualities of a lunar module are both of concern in flight mechanics. Design encompasses all of the facets of aerospace engineering; the aerodynamic, structural and propulsion systems integrate to yield a vehicle with certain flight characteristics and with a capability to perform specific tasks.

The aerospace engineer may be involved in space exploration or research, general aviation, military weaponry, commercial air transportation, or many other related activities. His expertise allows him to make substantial contributions to the advancement of mankind.

AEROSPACE ENGINEERING CURRICULUM

	Semester	
JUNIOR YEAR		
General Education Courses	1	3
ENAE 101—Aerodynamics I	3	3
ENAE 102—Aerodynamics II	3	3
Technical Elective	3	3
ENAE 113—Flight Structures	3	3
ENES 030—Materials Science	3	3
ENME 106—Transfer Processes	3	3
MATH 022—Analysis IV	4	3
ENEE 060, 062—Principles of Electrical Engineering	3	3
ENEE 061, 063—Electrical Engr. Lab.	1	1
Total	17	19
SENIOR YEAR		
General Education Courses	3	3
ENAE 107—Aerospace Design	3	3
ENAE 109—Flight Propulsion	3	3
ENAE 111, 112—Elective Research	2	2
ENAE 114—Flight Structures	4	2
ENAE 115—Aerodynamics III	3	3
ENAE 117—Aircraft Vibrations	3	3
ENAE 118—Dynamics of Aerospace Vehicles	3	3
Technical Electives	6 or 7	6 or 7
Total	18	17 or 18

With the approval of the Department students may elect 9-10 hours from among the following courses: ENAE 108, ENAE 110, ENAE 180, ENAE 184, ENAE 190, MATH 162, MATH 163, MATH 164, MATH 100, PHYS 153.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

- ENAE 101 (03) AERODYNAMICS I**
First semester. Three lectures a week. Prerequisites, PHYS 32 and MATH 66. Basic fluid mechanics and aerodynamic theory.
- ENAE 102 (03) AERODYNAMICS II**
Second semester. Three lectures a week. Prerequisite, ENAE 101. Elements of compressible flow and application to engineering problems.
- ENAE 107 (03) DESIGN OF AEROSPACE VEHICLES**
ENAE 108 (03) DESIGN OF AEROSPACE VEHICLES
First and second semesters, one lecture and two lectures calculation periods a week. Prerequisites, ENAE 101, 102 and 113. First semester, theory, background, and methods of airplane design, subsonic, supersonic and VTOL. Second semester, theory, background and methods of space vehicle design manned orbiting vehicle, manned lunar and martian landing systems.
- ENAE 109 (03) FLIGHT PROPULSION**
ENAE 110 (03) FLIGHT PROPULSION
Two lectures and one laboratory period a week. Prerequisites, ENME 001 and concurrent registration in ENAE 102. Operating principles of piston, turbojet, turboprop, ramjet, and rocket engines. Thermodynamic processes and engine performance, aero-thermochemistry of combustion, fuels and propellants, energy for space flight.
- ENAE 111 (02) ELECTIVE RESEARCH**
ENAE 112 (02) ELECTIVE RESEARCH
One lecture and one laboratory period a week. Prerequisites, ENAE 102 and ENAE 113. Wind tunnel tests, structural tests. Written and oral reports on original research projects.
- ENAE 113 (04) FLIGHT STRUCTURES I**
ENAE 114 (04) FLIGHT STRUCTURES II
First semester, three lectures and one calculation period a week, second semester, three lectures a week. Prerequisites, ENES 20, MATH 22 and MATH 66. Principles and problems of stress analysis and structural design of flight structures.
- ENAE 115 (03) AERODYNAMICS III**
Prerequisite ENAE 101. Elementary theory of the flow of an incompressible fluid.
- ENAE 117 (03) AIRCRAFT VIBRATIONS**
Three lectures a week. Prerequisite MATH 66. Vibration and other dynamic problems occurring in structures. Specific topics of study include the free and forced vibrations, single degree of freedom system, multiple degrees of freedom, beams and bars.

- ENAE 118 (03) DYNAMICS OF AEROSPACE VEHICLES**
Second semester. Prerequisites, ENAE 101, 102, 115. Stability, control, and miscellaneous topics in dynamics.
- ENAE 180 (03) AERODYNAMICS OF HIGH SPEED FLIGHT**
Prerequisites, ENAE 102 and 115, or equivalents. An advanced course dealing with aerodynamic problems of flight at supersonic and hypersonic velocities. Topics will include unified hypersonic supersonic small disturbance theory, real gas effects, aerodynamic heating and mass transfer with applications to hypersonic flight and re-entry.
- ENAE 184 (03) FLIGHT STRUCTURES III**
An advanced undergraduate course dealing with the theory and analysis of the structures of flight vehicles. Topics will include, stresses due to shear, indeterminate structures, matrix methods, plane theory, buckling and failure of plates.
- ENAE 190 (1-4) TOPICS IN AEROSPACE ENGINEERING**
Prerequisite, permission of instructor. May be taken for repeated credit up to a total of 6 credits, with permission of the student's advisor and the instructor. Selected topics from literature of aerospace engineering.

FOR GRADUATES

- ENAE 220 (03) AERODYNAMICS OF INCOMPRESSIBLE FLUIDS**
- ENAE 221 (03) AERODYNAMICS OF INCOMPRESSIBLE FLUIDS**
- ENAE 224 (03) AERODYNAMICS OF COMPRESSIBLE FLUIDS**
- ENAE 225 (03) AERODYNAMICS OF COMPRESSIBLE FLUIDS**
- ENAE 230 (03) THE AERODYNAMICS OF HIGH ALTITUDE VEHICLES**
- ENAE 231 (03) THE AERODYNAMICS OF HIGH ALTITUDE VEHICLES**
- ENAE 232 (03) WAVE PROPAGATION IN GASES AND SOLIDS**
- ENAE 233 (03) WAVE PROPAGATION IN GASES AND SOLIDS**
- ENAE 234 (03) AEROSPACE FACILITIES AND TECHNIQUES**
- ENAE 235 (03) AEROSPACE FACILITIES AND TECHNIQUES**
- ENAE 236 (03) HEAT TRANSFER PROBLEMS ASSOCIATED WITH HIGH VELOCITY FLIGHT**
- ENAE 237 (03) HEAT TRANSFER PROBLEMS ASSOCIATED WITH VELOCITY FLIGHT**
- ENAE 250 (03) ADVANCED FLIGHT STRUCTURES**
- ENAE 251 (03) ADVANCED FLIGHT STRUCTURES**
- ENAE 260 (03) ADVANCED PROPULSION**
- ENAE 261 (03) ADVANCED PROPULSION**
- ENAE 270 (03) STRUCTURAL DYNAMICS AND AEROELASTICITY**
- ENAE 271 (03) STRUCTURAL DYNAMICS AND AEROELASTICITY**
- ENAE 280 (03) DYNAMICS OF VISCOUS FLUIDS**
- ENAE 281 (03) DYNAMICS OF VISCOUS FLUIDS**
- ENAE 290 (Var) SEMINAR**
- ENAE 291 (03) SELECTED TOPICS IN AEROSPACE ENGINEERING**
- ENAE 292 (03) SELECTED TOPICS IN AEROSPACE ENGINEERING**
- ENAE 399 (Var) THESIS RESEARCH—Master's Level**
- ENAE 499 (Var) RESEARCH—Doctoral Level**

AGRICULTURAL ENGINEERING *

PROFESSORS: Green, Harris and Winn.
ASSOCIATE PROFESSORS: Cowan, Felton, and Merrick.
ASSISTANT PROFESSORS: Hummel and Merkel.
INSTRUCTORS: Brodie, Rice Seibel and Stewart.
RESEARCH ASSOCIATES: Wheaton and Willson (visiting)

Agricultural engineering utilizes energy and materials to enhance agricultural and aquacultural pro-

*The agricultural engineering curriculum is open to students in Engineering or Agriculture. The Department is administered through the College of Agriculture.

duction. Virtually all efforts are oriented towards increased food production or preservation. An understanding of soil, plant, and animal science is the basis for applications of engineering in all phases of production, harvesting, processing and utilization of plant, avian or animal products. Interrelated applications of engineering disciplines are found in agriculture or even on a single, diversified farm necessitating a broad base of mathematical, physical and engineering sciences complemented by basic biological and soil science. Students may specialize in one of four major areas and, upon graduation, receive the degree of Bachelor of Science in Agricultural Engineering.

Power and machinery specialization is oriented towards energy conversion and related machines for tillage, harvesting, transporting and processing of biological products. Farmstead engineering is concerned with functional aspects of structures with particular attention to environmental requirements of birds, plants or animals and also with material handling systems to optimize labor efficiency. Electric power and processing is concerned with automation of the farmstead, and with the physical properties of biological materials as this knowledge is basic to design criteria for heating, cooling or change of state. The area of soil and water conservation engineering is oriented towards applications of hydraulics and soil physics in irrigation, drainage, erosion control, water resources management and abatement of pollution from agricultural operations. The above areas are well defined in agricultural engineering—a developing program is the relationship of these land based activities to the aquatic environment or aquacultural engineering.

Employment opportunities include farm operation or management, machinery design and development, structural design and construction, process and systems development, land development, and natural resource planning. These opportunities may be in education, research, development, or operations and can be found in private industry, or in local, state or federal agencies throughout the world.

	Semester	
	I	II
JUNIOR YEAR		
ENME 060—Thermodynamics	3	...
ENCE 105 or ENME 102—Fluid Mechanics	3	...
ENCE 102—Structural Analysis	3	...
ENCE 103—Structural Analysis .....	...	3
AGEN 121—Engr. Dynamics of Bio-Materials .....	...	3
AGEN 143—Design of Machinery & Equip.	3	...
General Education Courses	3	3
Technical Elective .....	...	5
Elective .....	...	3
ENEE 060—Principles of Electrical Engr.	3	...
Total	18	17

SENIOR YEAR		
AGEN 144—Power Systems	3	...
AGEN 142—Design of Ag. Structures .....	...	3
AGEN 145—Soil and Water Engr. ....	...	3
General Education Courses	3	3
General Education Course	3	...
Elective .....	...	3
Tech Electives	6	3
Total	15	15

*** Technical Electives:**

- Farm Power and Machinery specialization students take —
- ENEE 60, 61, 62, 63 and ENME 101, 103, 106 plus 3 hrs. undesignated
- Structures or Soil and Water specialization students take —
- ENEE 60, 61, 62, 63; ENCE 165, 166 and AGRO 117
- Electrification specialization students take —
- ENEE 90, 91, 120, 121, 122, 123 (adds 2 hours) plus 3 hrs. undesignated

AGEN 113. (04) MECHANICS OF FOOD PROCESSING.

First semester. Three lectures and one laboratory. Prerequisite: PHYS 1 or 10. Applications in the processing and preservation of foods of power transmission, hydraulics, electricity, thermodynamics, refrigeration, instruments and controls, materials handling and time and motion analysis.

AGEN 121 (03) ENGINEERING DYNAMICS OF BIOLOGICAL MATERIALS.

Second semester. Three lectures per week. Prerequisite ENME 102. Investigate the physical parameters (impact, temperature, humidity, light, etc.) governing the response of biological materials. Analyses of unit operations and their effect on the physical and quality characteristics of agricultural products.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

AGEN 142 (03) FUNCTIONAL AND ENVIRONMENTAL DESIGN OF AGRICULTURAL STRUCTURES

Second Semester. Two lectures and one two hour laboratory per week. Prerequisites ENME 102. An analytical approach to the design and planning of functional and environmental requirements of plants and animals in semi- or completely enclosed structures. (Merkel)

AGEN 143 (03) FUNCTIONAL DESIGN OF MACHINERY & EQUIPMENT

First Semester. Two lectures and one two hour laboratory per week. Prerequisite ENES 21. Theory and methods of agricultural machine design. Application of machine design principles and physical properties of soils and agricultural products in design of machines to perform specific tasks. (Hummel)

AGEN 144 (03) POWER SYSTEMS

First semester. Two lectures and one two hour laboratory per week. Prerequisites ENME 60 and ENME 102. Analysis of energy conversion devices including internal combustion engines, electrical and hydraulic motors. Fundamentals of power transmission and coordination of power sources with methods of power transmission. (Harris)

AGEN 145 (03) SOIL AND WATER CONSERVATION ENGINEERING

Second semester. Two lectures per week. Prerequisite ENME 102. Applications of engineering and soil sciences in erosion control, drainage, irrigation and watershed management. Principles of agricultural hydrology and design of water control and conveyance systems. (Staff)

AGEN 165 (03) GENERAL HYDROLOGY

Second semester. Three lectures per week. Qualitative aspects of basic hydrologic principles pertaining to the properties, distribution and circulation of water as related to public interest in water resources. (Staff)

AGEN 175 (03) ENGINEERING HYDROLOGY

First semester. Three lectures per week. Prerequisites, Math 66 ENCE 105 or ENME 102. Properties, distribution and circulation of water from the sea and in the atmosphere emphasizing movement overland, in channels and through the soil profile. Qualitative and quantitative factors are considered. (Staff)

AGEN 185 (03) AQUACULTURAL ENGINEERING

Second semester. Prerequisite, consent of Department. A study of the engineering aspects of development, utilization and conservation of aquatic systems. Emphasis will be on production, harvesting and processing aquatic animals or plants as related to other facets of water resources management. (Wheaton)

AGEN 189 (1-3) SPECIAL PROBLEMS IN AGRICULTURAL ENGINEERING

Prerequisite, approval of Department. Student will select an engineering problem and prepare a technical report. The problem may include design, experimentation, and/or data analysis. (Staff)

FOR GRADUATES

See graduate school catalog for descriptions.

AGEN 201. (03) INSTRUMENTATION SYSTEMS.

AGEN 202. (03) BIOLOGICAL PROCESS ENGINEERING.

AGEN 203. (03) MECHANICAL PROPERTIES OF BIOLOGICAL MATERIALS

AGEN 204. (03) LAND AND WATER RESOURCE DEVELOPMENT ENGINEERING.

AGEN 301. (Var) SPECIAL PROBLEMS IN AGRICULTURAL AND AQUACULTURAL ENGINEERING.

AGEN 302. (01) SEMINAR.
 AGEN 399. (Var) RESEARCH.
 AGEN 499. (Var) RESEARCH.

CHEMICAL ENGINEERING

PROFESSORS: Beckmann, Duffey, Gomezplata, Johnson*, Marchello, Schroeder, Silverman*, and Skolnick**
ASSOCIATE PROFESSORS: Arsenault**, Bolsaitis**, Cadman, Munno*, Regan, Smith, and Spain**
ASSISTANT PROFESSORS: Almenas* Blair*, Gentry and Sheaks*
PART-TIME PROFESSORS: Goldman*, Hoffman, and Kruger
LECTURERS: Belcher* and Dedrick

Chemical engineering involves the application of sound engineering and economic principles—and basic sciences of mathematics, physics, and chemistry—to process industries concerned with the chemical transformation of matter. The chemical engineer is primarily concerned with research and process development leading to new chemical process ventures or a better understanding of existing ones; with the efficient operation of the complete chemical plant or its component units; with the technical service engineering required for improving and understanding chemical plant operation and the products produced; with the chemical sales and economic distribution of the chemical plant product; and with the general management and executive direction of chemical process industry plants and industrial complexes.

Because of this wide range of ultimate application, the chemical engineer finds interesting and diverse career opportunities in such varied fields as chemical (inorganic and organic), food processing and manufacture, metallurgical, nuclear and energy conversion, petroleum (refining, production, or petrochemical), and pharmaceutical industries. Additional opportunities are presented by the research and development activities of many public and private research institutes and allied agencies.

The chemical engineering department offers a curriculum to prepare the undergraduate for a challenging career in any of the aforementioned fields of interest—a curriculum that will prepare him for continued graduate study or immediate industrial employment following the baccalaureate degree.

The program is developed around three areas: Chemical, Materials and Nuclear Engineering. In addition, the development of programs in Applied Polymer Science and Biological and Environmental Health Engineering has been initiated. These new programs are interdisciplinary with other departments of the University.

	Semester	
	I	II
JUNIOR YEAR		
General Education Courses	3	3
ENCH 145—Chemical Engr. Kinetics .....	...	3
ENCH 157—Chemical Engineering Systems Analysis and Dynamics .....	...	2
ENCH 159—Dynamics and Control Lab .....	...	1
CHEM 187, 189—Physical Chemistry	3	3
CHEM 188, 190—Physical Chemistry Lab	2	2
Technical Elective**	3	...
ENCH 109—Chemical Process Thermo	3	...
ENCH 127, 129—Transfer and Transport Processes I, II	4	3
Total	18	17

* Member of Nuclear Engineering Faculty group.
 ** Member of Engineering Materials Faculty group.

SENIOR YEAR		
General Education Courses*	3	3
ENEE Electives	3	1
ENCH 133—Seminar .....	...	3
ENCH 137—Chemical Engineering Lab*	3	2
ENCH 147—Process Engr. and Design* .....	...	3
ENCH 149—Chem. Engineering Econ	4	3
ENCH—Electives	2	3
Technical Electives**	2	3
Total	15	15

* Courses which may be scheduled either semester.
 ** Technical electives must be on the 100 level, unless specific approval is granted by department head. At least 3 hours must be in chemistry.

- ENCH 015 (02) CHEMICAL ENGINEERING ANALYSIS I**
 Prerequisite, CHEM. 009 or equivalent. Introduction to methods of chemical engineering analysis. Stoichiometric relations, use of computers, stagewise computations, and application of material and energy balances to chemical engineering operations and processes.
- ENCH 050 (03) CHEMICAL ENGINEERING ANALYSIS II**
 Prerequisite ENCH 15. Methods of chemical engineering analysis. Computational methods, optimization and control techniques, and other numerical tools applied to chemical processing systems. Analytical and computer methods are presented.
- ENCH 099 (03) CHEMICAL PROCESS THERMODYNAMICS**
 Prerequisite: CHEM 3, principles of thermodynamics and their application to engineering problems. First and second laws of thermodynamics, properties of gases, liquids and solids, phase equilibrium, flow and non-flow systems, energy conversion, production of work from heat, thermodynamic analysis of processes, equilibrium stage operations and the thermodynamics of chemically reacting systems.
- ENCH 116 (03) APPLIED MATHEMATICS IN CHEMICAL ENGINEERING**
 Prerequisites, MATH 021. Mathematical techniques applied to the analysis and solution of chemical engineering problems. Use of differentiation, integration, differential equations, partial differential equations and integral transforms. Application of infinite series, numerical and statistical methods.
- ENCH 127 (04) TRANSFER AND TRANSPORT PROCESSES I**
 Prerequisite ENCH 50. Theory and applications of molecular and turbulent transport phenomena. Principles of fluid mechanics, mass transfer and heat transfer. Dimensional analysis, analogy between heat, mass and momentum transfer, Newtonian and non-Newtonian flow, convective heat and mass transfer.
- ENCH 129 (03) TRANSFER AND TRANSPORT PROCESS II**
 Prerequisite ENCH 127. Steady and unsteady state diffusion and conduction, simultaneous heat and mass transfer, interphase transfer, boundary layer theory. Application to absorption, adsorption, extraction and distillation. Principles of radiant heat transfer, evaporation, filtration, crystallization, drying, condensation, boiling, humidification, ion exchange, and phase separations.
- ENCH 133 (01) CHEMICAL ENGINEERING SEMINAR**
ENCH 134 (01) CHEMICAL ENGINEERING SEMINAR
 Prerequisite, senior standing. Oral and written reports on recent developments in chemical engineering and the process industries. Fall and spring semesters.
- ENCH 137 (03) CHEMICAL ENGINEERING LABORATORY**
 First or second semester. Prerequisite, ENCH 129. Application of chemical engineering process and unit operation principles in small scale semi-commercial equipment. Data from experimental observations are used to evaluate performance and efficiency of operations. Emphasis is placed on correct presentation of results in report form.
- ENCH 145 (03) CHEMICAL ENGINEERING KINETICS**
 Second semester. Prerequisite, ENCH 050. Fundamentals of chemical reaction kinetics and their application to the design and operation of chemical reactors. Reaction rate theory, homogeneous reactions in batch and flow systems, adsorption, heterogeneous reactions and catalysis, electrochemical reactions. Catalytic reactor design.
- ENCH 147 (03) PROCESS ENGINEERING AND DESIGN**
 Second or first semester. Prerequisite, ENCH 129. Utilization of chemical engineering principles for the design of process equipment. Typical problems in the design of process equipment. Typical problems in the design of chemical plants. Comprehensive reports are required.
- ENCH 149 (02) CHEMICAL ENGINEERING ECONOMICS**
 Second semester. Prerequisite, ENCH 129. Principles of engineering economics applied to chemical processes. Determination of investment and operating costs for chemical processes. Determination of investment and operating costs for chemical plants.

ENCH 150 (03) CHEMICAL PROCESS DEVELOPMENT
First semester. Prerequisite, ENCH 129. Chemical process industries from the standpoint of technology, raw materials, products and processing equipment. Operations of the major chemical processes and industries combined with quantitative analysis of process requirements and yields.

ENCH 152 (03) ADVANCED CHEMICAL ENGINEERING ANALYSIS
Second semester. Prerequisite, ENCH 127. Application of digital and analog computers to chemical engineering problems. Numerical methods, programming, differential equations, curve fitting, amplifiers and analog circuits.

ENCH 154 (03) CHEMICAL PROCESS ANALYSIS
First semester. Prerequisite ENCH 129, 145. Applications of mathematical models of chemical processes based on transport phenomena, chemical kinetics and other chemical engineering methods. Emphasis on principles and results of modelling.

ENCH 155 (02) CHEMICAL PROCESS LABORATORY
First semester. Prerequisite, ENCH 129, and 145. Experimental study of various chemical processes through laboratory and small semi-commercial scale equipment. Reaction kinetics, fluid mechanics, heat and mass transfer.

ENCH 157 (02) CHEMICAL ENGINEERING SYSTEMS ANALYSIS
Differential equations or ENCH 116. Dynamic response applied to process systems. Goals and modes of control, laplace transformations, analysis and synthesis of simple control systems, closed loop response, dynamic testing.

ENCH 159 (01) DYNAMICS AND CONTROL LABORATORY
Prerequisite, ENCH 157 concurrently. Methods of process control. Use of experimental analog and mathematical models of control systems.

ENCH 161 (03) CONTROL OF AIR POLLUTION SOURCES
Prerequisite, senior standing in the engineering or consent of instructor. Theory and application of methods for the control and removal of airborne materials. Principles of design and performance of air quality control equipment.

ENCH 165 (2-3) RESEARCH
First and second semesters. Prerequisite, permission of the staff. Investigation of a research project under the direction of one of the staff members. Comprehensive reports are required.

ENCH 180 (03) PHYSIOLOGICAL SYSTEMS ANALYSIS
Engineering description and analysis of physiological systems. Survey of bioengineering literature and an introduction to mathematical modeling of physiological systems.

ENCH 190 (03) INTRODUCTION TO POLYMER SCIENCE
Prerequisite, consent of instructor. The elements of the chemistry, physics, processing methods, and engineering applications of polymers.

ENCH 192 (03) APPLIED PHYSICAL CHEMISTRY OF POLYMERS
Prerequisite, CHEM 187. Corequisite, chemistry 189 or consent of instructor. Kinetic's of formation of high polymers, determination of molecular weight and structure, and applied thermodynamics and phase equilibria of polymer solutions.

ENCH 198 (03) POLYMER TECHNOLOGY LABORATORY
One lecture and two lab periods per week. Prerequisite ENCH 192 or consent of instructor. Measurement of mechanical, electrical, optical, thermal properties of polymers. Measurement of molecular weight by viscosimetry, osometric and light scattering methods. Application of x-ray, NMR, ESR, spectroscopy, molecular relation, microscopy and electron microscopy to the determination of polymer structure. Effects of ultraviolet light and high energy radiation.

FOR GRADUATES

See Graduate School Catalog for descriptions.

ENCH 201 (01) GRADUATE SEMINAR
ENCH 203 (03) CHEMICAL ENGINEERING THERMODYNAMICS
ENCH 205 (03) TRANSPORT PHENOMENA
ENCH 207 (03) PROCESS ANALYSIS AND SIMULATION
ENCH 209 (03) COMPLEX EQUILIBRIUM STAGE PROCESSES
ENCH 211 (03) ADVANCED CHEMICAL REACTION KINETICS

ENCH 223 (03) CHEMICAL PROCESS DYNAMICS
ENCH 235 (03) CHEMICAL PROCESS DYNAMICS
ENCH 237 (03) CHEMICAL PROCESS OPTIMIZATION
ENCH 247 (Var.) SPECIAL PROBLEMS IN CHEMICAL ENGINEERING
ENCH 250 (03) METHODS OF ENGINEERING ANALYSIS
ENCH 253 (03) ADVANCED TOPICS IN THERMODYNAMICS
ENCH 255 (03) ADVANCED TOPICS IN CHEMICAL REACTION SYSTEMS
ENCH 257 (03) ADVANCED TOPICS IN TRANSFER THEORY
ENCH 261 (03) ENGINEERING ANALYSIS OF CIRCULATORY SYSTEM TRANSPORT
ENCH 262 (03) BIOENGINEERING TRANSPORT PHENOMENA
ENCH 263 (03) ENGINEERING OF ARTIFICIAL ORGANS
ENCH 284 (03) POLYMER PHYSICS
ENCH 286 (03) POLYMER PROCESSING AND APPLICATIONS
ENCH 399 MASTERS RESEARCH IN CH.E. (Var.)
ENCH 499 DOCTORAL DISSERTATION—Ph.D. (Var.)

CIVIL ENGINEERING

PROFESSORS Langbein, Looney, Lepper, Otts, Ragan.
ASSOCIATE PROFESSORS: Birkner, Carter, Cookson, Courryn, Garber, Gohr, Heins, Israel, Kondner, Piper, Sternberg, and Wedding.
ASSISTANT PROFESSORS: Colville, Hall, Reilly, and Witzcak.
LECTURERS: Bloem, Byington, Desrosiers, Rajan, and Walker.

CIVIL ENGINEERING CURRICULUM

Civil Engineering is concerned with the planning, design, construction and operation of large facilities associated with man's environment. Civil engineers specialize in such areas as transportation systems, structures, water resource development, water supply and pollution control, urban and regional planning, construction management, and air pollution control. Many civil engineers enter private practice as a consulting engineer or start their own business in the construction industry. Others pursue careers with local, state, and federal agencies or with large corporations.

The undergraduate program is founded on the basic sciences and emphasizes the development of a high degree of technical competence. The program orients the student toward computer aided design techniques and prepares him to incorporate new concepts that will develop during his professional career. Further, the program stresses the balance between technical efficiency and the needs of society. The graduate is prepared to enter one of the areas mentioned above, or he can move into new areas of specialization such as oceanographic engineering or the development of facilities for extraterrestrial environments.

At no time has man been more concerned with the quality of his environment. Man is concerned with broad environmental problems such as pollution and the operation of his transportation systems. Man is also concerned with problems such as a need for new approaches in the design and construction of buildings. The civil engineering profession faces the greatest challenge in its history as it assumes a central role in the solution of the physical problems facing the urban-regional complex.

	Semester	
JUNIOR YEAR		
General Education Course	3	3
ECON 037 - Fundamentals of Economics	3	
ENCE 100 - Numerical Analysis and Computer Programming		3
ENCE 112 - Applied Math in Engr.	3	
ENME 105 - Principles of Mech. Engr.	3	
ENCE 102 - Fundamentals of Structural Analysis	3	
ENCE 103 - Basic Structural Design		3
ENCE 105 - Basic Fluid Mechanics	3	
ENCE 106 - Fundamentals of Sanitary Engineering		3
ENCE 107 - Basic Soil Mechanics		3
ENCE 108 - Fundamentals of Transportation Engineering	3	
ENCE 060 - Fundamentals of Elec. Engr.		3
Total	18	18
SENIOR YEAR		
General Education Courses	3	3
ENCE 104 - Computer Analysis	3	
ENCE 109, 110 - Basic Civil Engineering Planning	2	1
Technical Electives (See Note B)	6*	9*
Extra-Departmental Electives (See Note A)	3	3
Total	17	16

NOTES CONCERNING ELECTIVES:

The student shall, with the assistance of his advisor, select a coherent program of electives in accordance with the following

- A. Six (6) elective credits (two courses) must be taken outside the Department. Three credits must be in a field related to economics management or business law. The other three are at the choice of the student.
- B. Five technical elective courses (15-17 credits) must be taken as specified below:

*These numbers represent five three-semester credit courses. Additional semester credits will be involved to the extent that courses carrying more than three credits or selected.

- (1) A two course sequence, in the order shown, must be taken from one of the following five.
 - (a) ENCE 125, 126
 - (b) ENCE 165, 166
 - (c) ENCE 175, 176
 - (d) ENCE 185, 186
 - (e) ENCE 135, 155
 - (f) ENCE 146, 147
- (2) Three courses may be selected from any listed in part B (1) above or from the following:
 - (a) ENCE 136
 - (b) ENCE 145
 - (c) ENCE 187
 - (d) ENCE 188
 - (e) ENCE 195
 - (f) ENCE 199
 - (g) ENCE 127
 - (h) or, with departmental approval, one of the three may be a suitable technical elective outside the department.

ENCE 50. (03) FUNDAMENTALS OF ENGINEERING MATERIALS.

First and second semester. Two lectures and one laboratory per week. Prerequisite, ENES 020 or concurrent registration. Properties and constitution of the principal materials used in civil engineering. Laboratory tests for these properties, interpretation of test results and of specifications.

ENCE 90. (03) ENGINEERING SURVEY MEASUREMENTS.

First and second semester. Two lectures and one laboratory per week. Prerequisite, MATH 020 or concurrent registration. Standards, units, calibration, measurement of distance, elevation, angles, systematic and random error analysis in measurements, fundamentals of mapping, instrumentation.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

ENCE 100. (03) ENGINEERING ANALYSIS AND COMPUTER PROGRAMMING.

Second semester. Three lectures per week. Prerequisite, ENCE 112 or concurrent registration. Elements of

operational calculus, vector analysis, numerical methods and programming for computers. Errors, interpolation, series, integration, iteration and solution of equations.

ENCE 102. (03) FUNDAMENTALS OF STRUCTURAL ANALYSIS.

First semester. Three lectures per week. Prerequisites, ENES 020 and ENCE 050. Basic statics and mechanics of structural systems. Introduction to indeterminate analysis.

ENCE 103. (03) BASIC STRUCTURAL DESIGN.

Second semester. Three lectures per week. Prerequisite, ENCE 102. Basic elements of structural design of wood, and concrete without dependence on individual specifications. Classical design of beams, trusses, columns, connections and foundations.

ENCE 104. (03) COMPUTER ANALYSIS.

First semester. Two lectures and one laboratory per week. Prerequisites, ENCE 100 and ENCE 102. Computer methods and techniques applied to civil engineering problems with emphasis on structural systems.

ENCE 105. (03) BASIC FLUID MECHANICS.

First semester. Three lectures per week. Prerequisite, ENES 20, 021, PHYSICS 20. Prerequisite, M.E. 105 or concurrent registration. The study of fluids at rest and in motion. Principles of viscous turbulent flow. Impulse and momentum concepts. Pumps, turbines and meters. Dimensional analysis and laws of similarity.

ENCE 106. (03) FUNDAMENTALS OF SANITARY ENGINEERING.

Second semester. Three lectures per week. Prerequisite, ENCE 105. An introduction to the basic principles for the development of water supplies, control of pollution and design and operation of water purification and waste water disposal facilities.

ENCE 107. (03) FUNDAMENTALS OF SOIL MECHANICS

Second semester. Three lectures per week. Prerequisites, ENES 020 and ENCE 50. Introductory study of the mechanics of aggregations and its application to earthworks and foundations. Engineering geology relative to civil engineering and soil mechanics.

ENCE 108. (03) FUNDAMENTALS OF TRANSPORTATION ENGINEERING.

First semester. Prerequisite, ENCE 050 and ENCE 090. Engineering problems of transportation by airways, highways, pipe-lines, railways and waterways. Elementary dynamics of traffic and functional consideration of routes and terminals.

ENCE 109. (02) BASIC CIVIL ENGINEERING PLANNING I.

First semester. Two lectures per week. Prerequisites, ENCE 103, 106, 107, and 108. Lectures in the methodology used in the application of the basic civil engineering courses to the general practice of civil engineering but with special emphasis on planning of extensive civil engineering works. In addition, preparation of engineering reports, specifications and projects presentation, economics, functional aspects.

ENCE 110. (01) BASIC CIVIL ENGINEERING PLANNING II.

Second semester. One laboratory of three hours per week. Prerequisites, ENCE 109. Laboratory for application of the program and principles developed in Basic Civil Engineering Planning I.

ENCE 112. (03) APPLIED MATHEMATICS IN ENGINEERING.

First semester. Three lectures per week. Prerequisite, MATH 022. Mathematical technique applied to the analysis and solution of engineering problems. Use of differentiation, integration, differential equations, and integral transforms. Application of infinite series, numerical and statistical methods.

ENCE 125. (03) ADVANCED STRENGTH OF MATERIALS.

First semester. Three lectures per week. Prerequisite, ENES 020. Strength and deformation of deformable bodies, plane stress and strain. Torsion theory, unsymmetrical bending, curved beams. Behavior of beams, columns, slabs, plates and composite members under load. Elastic and inelastic stability.

ENCE 126. (04) EXPERIMENTAL STRESS ANALYSIS.

Second semester. Three lectures and one laboratory per week. Application of experimental data on materials to design problems. Correlation of analytical and experimental methods of analysis with design. Electric strain gages, photoelasticity, brittle lacquer methods and various analogies.

ENCE 127. (03) THEORY OF ELASTICITY AND PLASTICITY.

Three lectures per week. Prerequisites, ENES 020 and ENCE 112. General formulation of the theory of mechanics of deformable media in terms of cartesian

tensors. Plane state of stress, torsion of various shaped bars and thin walled sections. Bending and buckling of bars and thin plates. Introduction to the theory of plates and shells.

ENCE 135. (04) ADVANCED SOIL MECHANICS.

Three lectures and one laboratory per week. Prerequisite, ENCE 107. Theories of strength, compressibility capillarity and permeability. Critical review of theories and methods of measuring essential properties. Planning, execution and interpretation of soil testing programs.

ENCE 136. (03) SOIL-FOUNDATION SYSTEMS.

Three lectures per week. Soil mechanics and foundation analysis are integrated in a systems approach to the design, synthesis, and interaction response of soil foundation-structural systems. Interaction of bearing capacity, settlements, lateral pressures, drainage, vibrations, stress distributions, etc. Are included for a variety of structural systems.

ENCE 145. (04) ADVANCED FLUID MECHANICS.

Three lectures and one laboratory per week. Prerequisite, ENCE 105. The study of the properties and flow of an ideal fluid. Viscosity, laminar and turbulent flow, flow nets, uniform flow, source, irrotational motion and circulation. Turbulence and boundary layers.

ENCE 146. (03) HYDROLOGIC ANALYSIS AND DESIGN.

Prerequisites ENCE 100, ENCE 105. Concurrent registration in ENCE 104 or permission of instructor. Study of the physical processes of the hydrologic cycle, hydro-meteorology, concepts of weather modification, evaporation and transpiration infiltration studies, run off computations, flood routing, reservoir requirements, emphasis on process simulation as a tool in water resource development.

ENCE 147. (03) GROUND WATER HYDROLOGY.

Prerequisites, ENCE 104, ENCE 105, or permission of instructor. Concepts related to the development of the ground water resource, hydrogeology, hydrodynamics of flow through porous media, hydraulics of wells, artificial recharge, sea water intrusion, basin-wide ground water development.

ENCE 155. (03) ADVANCED MATERIALS OF ENGINEERING.

Three lectures per week. Prerequisite ENCE 050. Mechanisms of the behavior of materials under repeated, sustained and impact loads in relation to their environment. Influence of microstructure on mechanical properties. Fracture theory rheological aspects of the characteristics of selected materials.

ENCE 165. (03) STRUCTURAL ANALYSIS.

First semester. Three lectures per week. Prerequisite, ENCE 103. Advanced indeterminate structures, members of variable section, laterally loaded frames, continuous stresses and secondary stresses.

ENCE 166. (04) STRUCTURAL DESIGN.

Second semester. Three lectures and one laboratory per week. Prerequisite, ENCE 103. Steel and reinforced concrete design of bridges and buildings using appropriate controlling specifications. Advanced problems of modern steel and reinforced concrete.

ENCE 175. (04) SANITARY ENGINEERING ANALYSIS AND DESIGN

First semester. Three lectures and one laboratory per week. Prerequisite, ENCE 106. The application of sanitary analysis and fundamental principles to the design and operation of water and waste water treatment plants and the control of stream pollution.

ENCE 176. (03) ENVIRONMENTAL HEALTH ENGINEERING ANALYSIS.

First semester. Two lectures and one laboratory per week. The theory and analytical techniques used in evaluating man's environment. Emphasis are given to the areas of quantitative, physical, electroanalytical and organic chemistry as applied to chemical analysis of water.

ENCE 177. (03) AIR POLLUTION.

Three lectures per week. Classification of atmospheric pollutants and their effects on visibility, inanimate and animate receptors. Evaluation of source emissions and principles of air pollution control; meteorological factors governing the distribution and removal of air pollutants; air quality measurements and air pollution control legislation.

ENCE 185. (03) HIGHWAY ENGINEERING.

First semester. Three lectures per week. Prerequisite, ENCE 107. Location, design, construction and maintenance of roads and pavements. Introduction to traffic engineering.

ENCE 186. (03) TRANSPORTATION ENGINEERING.

Second semester. Three lectures per week. Prerequisite,

ENCE 108. A study of the principles of transportation engineering as applied to the various modes of transport. Consideration is given to cost analysis, economic aspects of route and site selection and layout. The organization and administration of engineering functions.

ENCE 187. (03) ANALYSIS OF CIVIL ENGINEERING SYSTEMS. I

Prerequisite, senior standing or consent of instructor. Application of the principles of engineering economy and statistics to the solution of civil engineering problems. Economic comparison of alternatives using present worth, annual cost, rate of return and cost benefit analysis. Development and use of simple and multiple regression models, and statistical decision theory.

ENCE 188. (03) ANALYSIS OF CIVIL ENGINEERING SYSTEMS. II

Prerequisite, ENCE 187 or equivalent. Application of iconic, analytic, numeric, and probabilistic models to the solution of civil engineering problems. Existing inventory, allocation, replacement, and competitive models are examined. Emphasis is on model construction and solution, and implementation of the obtained solutions.

ENCE 195. (03) ADVANCED SURVEYING.

Two lectures and one laboratory per week. Prerequisite, ENCE 90. Advanced surveying theory and practice including triangulation, topographic surveying, astronomical observations, map systems, state plane coordinates, map interpretation, vertical and horizontal alignment. Computer applications.

ENCE 199. (03) SPECIAL PROBLEMS.

Prerequisite, senior standing. A course arranged to meet the needs of exceptionally well prepared students for study in a particular field of civil engineering.

FOR GRADUATES

See Graduate School Catalog for descriptions.

ENCE 221. (03) ADVANCED STRENGTH OF MATERIALS

ENCE 222. (03) ADVANCED STRENGTH OF MATERIALS

ENCE 223. (03) EXPERIMENTAL STRESS ANALYSIS

ENCE 224. (03) ADVANCED ENGINEERING MATERIALS LABORATORY

ENCE 225. (03) ADVANCED PROPERTIES OF MATERIALS

ENCE 226. (03) ADVANCED PROPERTIES OF MATERIALS

ENCE 227. (03) THEORIES OF CONCRETE AND GRANULAR MATERIALS

ENCE 228. (03) THEORIES OF CONCRETE AND GRANULAR MATERIALS

ENCE 241. (03) HYDRAULIC ENGINEERING

ENCE 242. (03) ADVANCED HYDROLOGIC ANALYSIS

ENCE 243. (03) FREE SURFACE FLOW

ENCE 251. (03) SOIL MECHANICS

ENCE 252. (03) ADVANCED FOUNDATIONS

ENCE 255. (03) DYNAMICS OF STRUCTURES

ENCE 256. (03) MATRIX METHODS OF STRUCTURAL ANALYSIS

ENCE 257. (03) ANALYSIS OF PLATE AND SHELL STRUCTURES

ENCE 258. (03) ADVANCED ELASTICITY

ENCE 259. (03) NONLINEAR THEORY OF SHELL STRUCTURES

ENCE 260. (03) PLASTIC ANALYSIS AND DESIGN OF STRUCTURES

ENCE 261. (03) URBAN-REGIONAL CIVIL ENGINEERING PLANNING

ENCE 262. (03) CIVIL ENGINEERING PLANNING

ENCE 263. (03) THEORY OF STRUCTURAL DESIGN

ENCE 264. (03) THEORY OF STRUCTURAL DESIGN

ENCE 265. (03) BEHAVIOR OF STRUCTURES

ENCE 266. (03) BEHAVIOR OF STRUCTURES

ENCE 271. (03) UNIT OPERATIONS OF ENVIRONMENTAL HEALTH ENGINEERING

ENCE 272. (03) THEORY OF AQUEOUS AND SOLID WASTE TREATMENT AND DISPOSAL

ENCE 273. (03) DESIGN OF WATER PURIFICATION FACILITIES

ENCE 274. (03) DESIGN OF MUNICIPAL AND INDUSTRIAL WASTES TREATMENT FACILITIES

ENCE 275. (04) BIOLOGICAL PRINCIPLES OF ENVIRONMENTAL HEALTH ENGINEERING

ENCE 276. (03) INDUSTRIAL WASTES

ENCE 277. (04) THE CHEMISTRY OF NATURAL WATERS

- ENCE 178. (04) APPLIED WATER CHEMISTRY
- ENCE 279. (03) AEROSOL SCIENCE AND TECHNOLOGY
- ENCE 280. (03) AIR SAMPLING AND ANALYSIS
- ENCE 281. (03) HIGHWAY TRAFFIC CHARACTERISTICS AND MEASUREMENTS
- ENCE 282. (03) HIGHWAY TRAFFIC OPERATIONS
- ENCE 283. (03) TRANSPORTATION ENGINEERING PLANNING I
- ENCE 284. (03) TRANSPORTATION ENGINEERING PLANNING II
- ENCE 285. (03) RAIL TRANSPORTATION ENGINEERING
- ENCE 286. (03) AIRPORT PLANNING AND DESIGN
- ENCE 287. (03) HIGHWAY TRAFFIC FLOW THEORY
- ENCE 290. (03) ADVANCED TOPIC IN CIVIL ENGINEERING
- ENCE 296. (03) ENGINEERING ANALYSIS AND COMPUTER PROGRAMMING
- ENCE 297. (03) ENGINEERING ANALYSIS AND COMPUTER PROGRAMMING
- ENCE 298. SEMINAR
- ENCE 399. RESEARCH
- ENCE 499. THESIS RESEARCH

ELECTRICAL ENGINEERING

PROFESSORS: DeClaris, Chu, Lin, Newcomb, Popov, Price, Reiser, Rutelli, Shekel, Taylor, Wagner, and Weiss.

ASSOCIATE PROFESSOR: Abrams, Basham, Emad, Harger, Harmuth, Hochuli, Kim, Moore, Pugsley, Rao, Simons, Torres and Tretter.

ASSISTANT PROFESSORS: Dooley, Friedman, Larson, Lee, Levine, Levine, Lieberman, Morakis, Opacic, Pinkston, Pryor, Rhee, Robinson, Rumbaugh, Siahatgar, Zajac and Zaki.

LECTURERS: Colburn, Fordham, Schulman, Whicker.

INSTRUCTORS: Glock and Littlepage.

Electrical engineering education is a good preparation for any of several careers—in research, development, design, production, sales, technical management, or teaching—within the broad area of the useful application of electrical and electronic phenomena. An increasing number of electrical engineering graduates have in recent years specialized in such fields as electronic computers, cybernetics and system engineering, automatic control, telemetry and space navigation, communications, radar, and solid state device technology and biomedical engineering and bioelectronics. A smaller number of graduates with particular interests and abilities have been attracted to such pioneering areas as biomedical electronics, electromechanical transducer design, design of particle accelerators, and other machines and instrumentation for use in research in physics, microminiaturization of electronic component assemblies, or antenna design. The traditional fields of electric power generation and transmission, radio, and television continue to offer satisfying careers to the electrical engineering graduate.

Increasingly, the boundary between electrical engineers and applied physicists or applied mathematicians becomes less distinct, particularly at the research level. The various branches of engineering similarly interact with each other, as technical problems become more sophisticated, and require a combined attack from several disciplines. The engineer occupies an intermediate position between science and the public, because, in addition to understanding the scientific principles of a situation, he is concerned with the timing, economics, and values that define the useful application of those principles.

In many cases, engineers have as a major duty the supervision of other engineers and of techni-

cians. Hence, electrical engineering involves not only scientific knowledge, but also the ability and judgment to work effectively and communicate easily with many other people. Clearly, the desirable attributes for success vary from one career choice to another within electrical engineering. The specialist in creative research and advanced development needs graduate work to the M.S. or Ph.D. degree. An engineering sales representative, however, would in most cases begin to acquire the needed detailed awareness of current practice by taking a job immediately after the B.S. degree.

In this context of electrical engineering as a broad and diverse field, the goal of the Department is to provide an educational program and environment of challenge, so that the graduate will be well prepared to enter any of the areas of electrical engineering for which he is suited. To this end, the B.S. program makes provision for several technical electives, and the M.S. and Ph.D. graduate programs foster specialization through intensive research.

ELECTRICAL ENGINEERING CURRICULUM

	Semester	
JUNIOR YEAR		
MATH 066—Differential Equations	1	II
ENAE 100—Thermodynamics	3	...
PHYS 153—Modern Physics for Engrs.	1	3
ENEE 130, 132—Engineering Electromagnetics I, II	3	3
ENEE 120—Circuit Analysis III	4	...
ENEE 121—Circuits Laboratory II	1	...
ENEE 122—Electronic Circuits I	4	...
ENEE 123—Electronics Laboratory I	1	...
Technical Electives*	3	...
General Education Courses	3	3
Total	17	17
SENIOR YEAR		
ENEE 142—Engineering Probability	2	...
ENEE 134—Engineering Electromagnetics III	3	...
ENEE 140—Transducers and Electrical Machinery	3	...
ENEE 141—Transducers and Electrical Machinery Laboratory	1	...
ENEE 124—Electronic Circuits II	4	...
ENEE 125—Electronics Laboratory II	1	...
ENAE 107—Energy Conversion	5	3
Technical Electives*	5	7
General Education Courses	3	3
Total	18	17

*Of the 15 technical elective credits, all of which must be of 100 level, at least 3 credits must be in electrical engineering and at least 3 credits must be either from other fields of engineering, mathematics, physics, or other suitable scientific discipline. The student's elective program must be approved by his advisor. More than 15 credits may be taken.

Technical electives available in Electrical Engineering are described in the course listings later in this catalog. Any course numbered between ENEE 150 and ENEE 199 (also ENEE 102) that is not specifically excluded in its description may be used as part of a technical elective program. Approval by the student's faculty advisor of an in depth technical elective program is required.

For students planning to continue in graduate work, technical electives should be selected to provide the best possible preparation for the probable areas of graduate specialization.

The Department of Electrical Engineering offers graduate programs leading to specialization in five areas: Circuits, Computers, Communication and

Control, and Electrophysics. Every Graduate student is required to choose one of the four areas and indicate his choice on the registration questionnaire. He will then be assigned to a faculty advisor whose interests lie in his area of choice. The areas of specialization are:

BIOMEDICAL STUDIES concentrating on bioelectrical processes involved in living organism, and the generation and processing of electrical signal for biological and medical purposes. In the Electrical Engineering Department current research includes electrophysiology, modeling of neurons and neural nets, automated diagnostics and medical electronics.

CIRCUIT THEORY is a basic area of Electrical Engineering. The analysis and synthesis of passive and active, linear and non-linear networks is a fundamental problem of applied science. In the Electrical Engineering Department the principal areas of theoretical interest include network synthesis of passive circuits and circuits involving electronic devices, graph theory, matrix methods and applied complex function theory. Research and design programs in this area have involved diverse applications, as for example: Design of digital data acquisition systems, active circuit synthesis, optimized fm signal detectors, mass spectrometer circuit design, special purpose active filter design, and digital computer circuit design.

COMPUTER STUDIES include both the fundamental mathematical theory for the design of digital systems, as well as the design and application of digital computer systems. The Electrical Engineering Department faculty are involved in the advancement of basic switching theory, theory and application of arithmetic coding and self-checking processes, automation theory, and the design of digital, analog, and hybrid systems for both general and special purposes, as well as graphics and software engineering.

COMMUNICATION AND CONTROL apply the basic mathematical theories of random process, statistical inference, and optimization to the synthesis, analysis, and design of communication and control systems. In the Electrical Engineering Department the faculty are involved in investigations of theory and applications in coding theory, optimal control, optical communications, digital communications and radar systems.

ELECTROPHYSICS is the branch of Electrical Science which applies the discoveries of Physics to the purposes of Electrical Engineering. Within the Electrical Engineering Department active research programs are being carried out in the following areas: Electromagnetic theory and applications (microwaves and optics, stochastic media, plasma propagation); charged particle dynamics and accelerator design (cyclotron design); quantum electronics (laser technology and non-linear optics); integrated circuits; and solid state devices (semiconductor devices and technology).

FOR UNDERGRADUATE CREDIT

ENEE 60. (03) PRINCIPLES OF ELECTRICAL ENGINEERING.
ENEE 61. (01) ELECTRICAL ENGINEERING LABORATORY
ENEE 62. (03) PRINCIPLES OF ELECTRICAL ENGINEERING.
Prerequisites, MATH 22, PHYSICS 32. Corequisites, ENEE 61, 63. Required of aerospace, mechanical, (ENEE 60 only) chemical and civil engineers. Not applicable in

the electrical engineering major program. These courses are acceptable as prerequisites for some advanced ENEE courses. ENEE 60 includes analysis of linear systems, introduction to LaPlace transforms, steady-state A-C transforms, introduction to the concepts of electromagnetic fields and electric machines. ENEE 62 includes principles and circuit applications of semiconductor devices and electron tubes.

ENEE 63. (01) ELECTRICAL ENGINEERING LABORATORY
Two hours of laboratory per week. Corequisites, ENEE 60 (for ENEE 61) and ENEE 62 (for ENEE 63). Required of aerospace, mechanical, and (ENEE 61 only) chemical engineers. Experiments on the transient and steady-state response of linear circuits, electric machines, and electron and semiconductor devices.

ENEE 90. (04) CIRCUIT ANALYSIS. I
(See ENEE 091 for related laboratory course). Corequisites, MATH 022, PHYS. 32, ENEE 091. Required of sophomores in electrical engineering. Introduction to circuit theory, Ohm's law, Kirchhoff's laws, basic circuit analysis techniques, energy storage, power, elementary transients by classical and transform methods, sinusoidal analysis, introduction to complex frequency. ENEE 120 continues where ENEE 090 ends.

ENEE 91. (01) CIRCUITS LABORATORY. I
Two hours of laboratory per week. Corequisite, ENEE 90. Required of sophomores in electrical engineering. Laboratory to be taken in association with ENEE 90. Electrical components and basic test equipment, principles of measurement and data handling, circuit behavior with variation in component values.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

CIRCUITS

ENEE 120.(04)CIRCUIT ANALYSIS. II
(See ENEE 121 for related laboratory course). Prerequisite, ENEE 90. Corequisites, ENEE 121, MATH 66. Required of juniors in electrical engineering. Continuation of ENEE 90. Complex frequency and frequency response, application of both frequency-domain and time-domain concepts, mutual inductance and transformers, polyphase and time Fourier and LaPlace transform methods, driving point and transfer functions, controlled sources.

ENEE 121.(01)CIRCUIT LABORATORY. II
Two hours of laboratory per week. Corequisite, ENEE 120. Required of juniors in electrical engineering. Laboratory to be taken in association with ENEE 120. Steady-state and transient circuit measurements, frequency response.

ENEE 122. (04)ELECTRONIC CIRCUITS. I
(See ENEE 123 for related laboratory course). Prerequisite, ENEE 120. Corequisites, ENEE 123, and ENEE 130. Required of juniors in electrical engineering transistors and electron tubes, in DC, pulse, and small-signal situations, analysis of basic amplifiers, biasing, basic electronic switches, tuned and wideband amplifiers, feedback. ENEE 124 continues where ENEE 122 ends.

ENEE 123(01)ELECTRONICS LABORATORY. I
Two hours of laboratory per week. Corequisite, ENEE 122. Required of juniors in electrical engineering. Laboratory to be taken in association with ENEE 122. Transistor and vacuum-tube characteristics, basic electronic switches, amplifiers, design practice. To the extent possible, work will be individual or into-man squads.

ENEE 124. (04) ELECTRONIC CIRCUITS. II
(See ENEE 125 for related laboratory course). Prerequisite, ENEE 122. Corequisites, ENEE 132, ENEE 123, and ENEE 125. Required of seniors in electrical engineering. Continuation of ENEE 122. Electron tubes and transistors in continuous-wave and public applications. Class C circuits, modulation and detection, pulse generation, delay, and storage, feedback amplifiers.

ENEE 125. (01) ELECTRONICS LABORATORY. II
Two hours of laboratory per week. Corequisite, ENEE 124. Required of seniors in electrical engineering. Laboratory to be taken in association with ENEE 124. Specification and design of electronic circuits. Students work as individuals or as responsible members of a project team.

ENEE 150. (03) NETWORK SYNTHESIS.
Prerequisite, ENEE 120. Positive real functions, synthesis of driving-point impedances, network functions, approximation methods, Chebyshev and Butterworth filters.

ENEE 172. (03) ADVANCED PULSE TECHNIQUES.

(See ENEE 173 for related laboratory course). Prerequisite, ENEE 124 or ENEE 144 or equivalent. Bistable, monostable, and astable circuits, sweep circuits, synchronization, counting, gates, comparators (magnetic core circuits, semiconductor and vacuum-tube circuits).

ENEE 173. (01) PULSE TECHNIQUES LABORATORY.
Two hours of laboratory per week. Corequisite ENEE 172, or ENEE 164 and permission of the instructor. Experiments on switching circuits, bistable, monostable, and astable circuits, sweep circuits, gates, comparators.

ENEE 174. (03) ADVANCED RADIO ENGINEERING.
Corequisite, ENEE 124. (see ENEE 175 for related laboratory course). The coupling coefficient concept, high-frequency effects, design and optimization of amplifiers, stability considerations, gain limitations, noise figure, design of harmonic generators, design of stable oscillators.

ENEE 175. (01) ADVANCED RADIO ENGINEERING LABORATORY.
Two hours of laboratory per week. Corequisite, ENEE 174. Experiments on multiple tuned amplifiers, noise figure measurements, class-C amplifiers, varactors, modulators, projects.

ENEE 190. (03) MATHEMATICAL FOUNDATIONS OF CIRCUIT THEORY.
Prerequisites, ENEE 120. and MATH 22, or equivalent. Review of determinants, linear equations, matrix theory, eigenvalues, theory of complex variables, inverse Laplace transforms. Applications are drawn primarily from circuit analysis.

COMPUTERS

ENEE 100. (03) INTRODUCTION TO COMPUTERS AND COMPUTATION.
Prerequisite, ENES 83 or equivalent. Basic structure and organization of digital systems; representation of data, introduction to software systems; assembly language; application of computers in engineering and physical systems.

ENEE 102. (03) INTRODUCTION TO DISCRETE STRUCTURES.
Prerequisite, ENES 83 or equivalent. This is the same course as CMSC 102. Review of set algebra including relations, partial ordering and mappings. Algebraic structures including semigroups and groups. Graph theory including trees and weighted graphs. Boolean algebra and propositional logic. Applications of these structures to various areas of computer science and computer engineering.

ENEE 104. (03) INTRODUCTION TO SWITCHING SYSTEM DESIGN.
Prerequisite, ENEE 100. Symbolic logic and Boolean algebra; switching circuits; minimization algorithms; basic sequential circuits; design of digital systems.

ENEE 106. (03) FUNDAMENTALS OF COMPUTER SYSTEMS.
Prerequisite, ENEE 104. Digital Computer organization; arithmetic elements; primary and secondary storage; applications of integrated circuits; operating systems; interaction of hardware and software.

ENEE 108. (03) INTRODUCTION TO AUTOMATA THEORY.
Prerequisite, ENEE 102 or permission of the instructor. An introduction to finite state machines and their properties; properties of regular sets; elementary decomposition results; introduction to Turing machines and computability theory; undecidability propositions; introduction to finite semigroups with application to the decomposition of finite state machines.

ENEE 112. (03) INTRODUCTION TO COMPUTER-AIDED ANALYSIS AND DESIGN.
Prerequisite, ENES 83, 122. Application of digital computers to solutions of lumped parameter system problems; use of simulators; economic and reliability considerations; investigation and applications of problem oriented programs such as those for circuit analysis, (e.g.) CORNAP, JOBSHOP, ECAP, and NASAP). The use of the computer will be an integral part of the course.

ENEE 160. (03) ANALOG AND HYBRID COMPUTERS.
Prerequisite, ENEE 122. Programming the analog computer; analog computing components; error analysis, repetitive operation; synthesis of systems using the computer; hybrid computer systems.

ENEE 163. (01) DIGITAL LOGIC LABORATORY.
Prerequisite, ENEE 162 or equivalent. Design, bread-board construction and checkout of simple digital systems such as counters, shift registers, arithmetic and control units.

ENEE 166. (03) DIGITAL LOGIC ORGANIZATION.
Prerequisite, ENES 83 or CMSC 100 or equivalent. Same as CMSC 160. Introduction; computer elements; parallel adders and subtracters; micro-operations; sequences; computer simulation; organization of a commercially available stored program computer; microprogrammed computers; a large-scale batch-processing system (optional). (Intended for those minor in computers and for those majoring in Computer Science.)

COMMUNICATION AND CONTROL

ENEE 142. (02) ENGINEERING PROBABILITY.
Prerequisites, MATH 22 and ENEE 90. Required of electrical engineering majors. Probability theory, discrete and continuous, statistical distribution functions and their parameters, applications to electrical engineering.

ENEE 154. (03) FEEDBACK CONTROL SYSTEMS.
Prerequisites, MATH 66 and ENEE 122. (see ENEE 155 for related laboratory course). Feedback system operation and design, stability criteria, basic design techniques, correlation of time and frequency-domain concepts, flow-graph algebra, system synthesis to a variety of specifications.

ENEE 155. (01) FEEDBACK CONTROL SYSTEMS LABORATORY.
Two hours of laboratory per week. Corequisite, ENEE 154. Projects to enhance the student's understanding of feedback control systems and familiarize him with some of the devices used in the control field.

ENEE 156. (03) COMMUNICATION THEORY.
Prerequisite ENEE 142. Random signals: elements of random processes, noise, Gaussian process, correlation function and power spectra, linear operations; optimum receiver implementation, probability of error performance; efficient signaling; sources, encoding, dimensionality, channel capacity; waveform communication: linear, angle, and pulse modulation.

ENEE 157. (03) INTRODUCTION TO INFORMATION THEORY.
Prerequisite ENEE 142. Definition of information and entropy; characterization of sources; Kraft and MacMillan inequalities; coding information sources; noiseless coding theorem; channels and mutual information; Shannon's coding theorem for noisy channels.

ENEE 158. (03) SIGNAL ANALYSIS, MODULATION AND NOISE.
Prerequisites, ENEE 122 and ENEE 142. Signal transmission through networks, transmission in the presence of noise, statistical methods of determining error and transmission effects, modulation schemes.

ELECTRO PHYSICS

ENEE 130. (03) ELECTROMAGNETIC THEORY.
Three hours of lecture per week. Prerequisites, MATH 22, PHYS 31, ENEE 90 with an average grade of C or better in MATH 21, 22, PHYS 20, 21, and ENEE 90. Required of Juniors in Electrical Engineering. Introduction to electromagnetic fields. Electrostatics; Coulomb's law, Gauss' law, electrical potential, capacitance, Laplace's equation and boundary value problems. Magnetostatics; Biot-Savart law, Ampere's law, Lorentz force equation, magnetic materials, inductance. Time varying fields and Maxwell's equations.

ENEE 132. (03) ELECTROMAGNETIC PROPERTIES OF MATERIALS.
Three hours of lecture per week. Prerequisite, ENEE 130. Required of Seniors in electrical engineering. Review of Maxwell's equations; the wave equation; electron dynamics with applications to accelerators; dielectrics; the dielectric model for plasmas; plane waves in magneto-plasmas. Introduction to quantum mechanics and quantum statistics; theory of semi-conductors. Ferromagnetism and selected topics.

ENEE 134. (03) ELECTROMAGNETIC WAVE PROPAGATION.
Three hours of lecture per week. Prerequisite, ENEE 130. Required of seniors in electrical engineering. The wave equation and the impedance concept; plane waves; reflection and refraction; wave guides and transmission lines; Smith charts; lumped models.

ENEE 135. (01) ELECTROMAGNETIC MEASUREMENTS LABORATORY.
Two hours of laboratory per week. Corequisite, ENEE 134. Laboratory to be taken in association with ENEE 134. Experiments on field mapping, transmission line matching, impedance measurement, microwave measurements

of standing wave ratio, power, frequency, Q, and coupling.

ENEE 140. (03) TRANSDUCERS AND ELECTRICAL MACHINERY.

(See ENEE 141 for related laboratory course). Prerequisites, ENEE 120, ENEE 130. Corequisite, ENEE 141. Required of seniors in electrical engineering. Electro-mechanical transducers, theory of electromechanical systems, power and wideband transformers, rotating electrical machinery from the theoretical and performance points of view.

ENEE 141. (01) TRANSDUCERS AND ELECTRICAL MACHINERY LABORATORY

Two hours of laboratory per week. Corequisite, ENEE 140. Required of seniors in electrical engineering. Laboratory to be taken in association with ENEE 140. Experiments on transformers, synchronous machines, induction motors, synchros, loudspeakers, other transducers.

ENEE 170. (03) ANTENNAS AND WAVE PROPAGATION.

Corequisite, ENEE 134. Review of Maxwell's Equations, equations, radiation, antenna fundamentals, antenna arrays, aperture antennas, impedance concepts and propagation.

ENEE 186. (03) PARTICLE ACCELERATORS, PHYSICAL AND ENGINEERING PRINCIPLES.

Three hours of lecture per week. Prerequisites, ENEE 130 and Physics 153, or consent of the instructor. Sources of charged particles; methods of acceleration and focusing of ion beams in electromagnetic fields; basic theory, design, and engineering principles of particle accelerators.

ENEE 188. (03) PHYSICAL ELECTRONICS OF DEVICES.

Three hours of lecture per week. Prerequisite, Physics 153 and ENEE 132. Introduction to electron and ion optics. Principles of vacuum tubes, klystrons and magnetrons. Conductivity of metals and semiconductors. P-n junction and transistors.

BIOMEDICAL

ENEE 144. (03) ELECTRONIC CIRCUITS.

Prerequisite, ENEE 060 or equivalent knowledge of circuit theory or consent of the instructor. This course is intended for students in the physical sciences, and for engineering students requiring additional study of electron circuits. Credit not normally given for this course in an electrical engineering major program. (ENEE 123 or 125 may optionally be taken as an associated laboratory, as is appropriate). P-n junctions, transistors, vacuum tubes, biasing and operating point stability, switches, large-signal analysis, models, small-signal analysis, frequency response, feedback and multistage amplifiers, pulse and digital circuits.

ENEE 146. (04) ELECTRONICS FOR LIFE SCIENTISTS.

Three hours of lecture and two hours of laboratory per week. Prerequisites, college algebra and a physics course, including basic electricity and magnetism. Not accepted for credit in an electrical engineering major program. The concept of an instrumentation system with emphasis upon requirements for transducers, amplifiers, and recording devices, design criteria and circuitry of power supplies, amplifiers, and pulse equipment, specific instruments used for biological research, problems of shielding against hum and noise pickup and other interference problems characteristic of biological systems.

ENEE 148. (03) ELECTRONIC INSTRUMENTATION FOR PHYSICAL SCIENCE.

Two hours of lecture and two hours of laboratory per week. Prerequisites, ENEE 60 or 120, PHYSICS 104 or equivalent, or consent of the instructor. The concept of instrumentation systems from sensor to readout, discussions of transducers, system dynamics, precision, and accuracy, measurement of electrical parameters, direct, differential, and potentiometric measurements, bridge measurements, time and frequency measurements, waveform generation and display.

SPECIAL TOPICS

ENEE 180. (03) TOPICS IN ELECTRICAL ENGINEERING.

Prerequisite, permission of the instructor. May be taken for repeated credit up to a total of 6 credits, with the permission of the student's advisor and the instructor. Selected topics from the literature of modern electrical engineering.

ENEE 181. (1-3) PROJECTS IN ELECTRICAL ENGINEERING Hours to be arranged. Prerequisites, senior standing and permission of the instructor. May be taken for repeated credit up to a total of 4 credits, with the permission of the student's advisor and the instructor. Theoretical and experimental projects.

FOR GRADUATES

CIRCUITS

- ENEE 202. (03) TRANSIENTS IN LINEAR SYSTEMS.
- ENEE 203. (03) TRANSIENTS IN LINEAR SYSTEMS.
- ENEE 204. (03) ADVANCED ELECTRONIC CIRCUIT DESIGN.
- ENEE 230. (03) MATHEMATICS OF CIRCUIT ANALYSIS.
- ENEE 231. (03) ACTIVE NETWORK ANALYSIS.
- ENEE 232, 233. (03) NETWORK SYNTHESIS.
- ENEE 234. (03) GRAPH THEORY IN NETWORK ANALYSIS.
- ENEE 235. (03) APPLICATIONS OF TENSOR ANALYSIS.
- ENEE 245. (03) ELECTRICAL TECHNIQUES IN MEDICINE AND BIOLOGY.

COMPUTERS

- ENEE 260. (03) ARITHMETIC AND CODING ASPECTS OF DIGITAL COMPUTERS.
- ENEE 261. (03) CODING THEORY AND APPLICATIONS.
- ENEE 262. (03) COMBINATORIAL SWITCHING THEORY.
- ENEE 263. (03) STRUCTURE THEORY OF MACHINES.
- ENEE 265. (03) AUTOMATA THEORY.
- ENEE 270. (Var.) TOPICS IN COMPUTER DESIGN.
- ENEE 272. (Var.) TOPICS IN COMPUTER DESIGN.
- ENEE 274. (03) DIGITAL SYSTEMS ENGINEERING.
- ENEE 276. (03) SIMULATION OF DYNAMIC SYSTEMS.

COMMUNICATIONS AND CONTROLS

- ENEE 212 (03) CONTROL SYSTEMS ANALYSIS AND SYNTHESIS.
- ENEE 213. (03) NONLINEAR AND ADAPTIVE CONTROL SYSTEMS.
- ENEE 218. (03) SIGNAL ANALYSIS AND NOISE.
- ENEE 219. (03) SIGNAL ANALYSIS AND NOISE.
- ENEE 220. (03) STATISTICAL COMMUNICATION THEORY.
- ENEE 221. (03) INFORMATION THEORY.
- ENEE 238. (03) SAMPLED-DATA CONTROL SYSTEMS.

ELECTRO PHYSICS

- ENEE 200, 201. (03) ELECTROMAGNETIC THEORY.
- ENEE 206. (03) MICROWAVE ENGINEERING.
- ENEE 207. (03) OPTICAL ENGINEERING.
- ENEE 209. (03) QUANTUM ELECTRONICS.
- ENEE 210. (03) SOLID STATE ELECTRONICS.
- ENEE 215, 216. (03) RADIO WAVE PROPAGATION.
- ENEE 250. (03) MATHEMATICS FOR ELECTROMAGNETISM.
- ENEE 251. (03) ANTENNA THEORY.
- ENEE 282. (03) INTEGRATED ELECTRONICS.
- ENEE 283. (03) SEMICONDUCTOR DEVICES AND TECHNOLOGY.
- ENEE 290. (03) CHARGED PARTICLE DYNAMICS, ELECTRON AND ION BEAMS.

SPECIAL TOPICS AND RESEARCH

- ENEE 222. (1-3) GRADUATE SEMINAR.
- ENEE 223. (03) ADVANCED TOPICS IN ELECTRICAL ENGINEERING.

ENGINEERING MATERIALS

PROFESSORS: Armstrong*, Asimow*, Marcinkowski*, and Skolnick**.

ASSOCIATE PROFESSORS: Arsenault**, Bolsaitis**, and Spain**.

*Member of Mechanical Engineering Department

**Member of Chemical Engineering Department

Engineering materials involves the relation between structure and properties of materials. The principles of physics, chemistry and mathematics are applied to metals, ceramics, polymers and composite materials used in manufacturing and research. In addition to the traditional area of metallurgy, engineering materials includes the fields of solid state physics and polymer and materials science and their application to modern industrial problems. Because of the extensive use of materials, the engineer finds a wide variety of interesting career opportunities in many companies and laboratories.

Programs of study in engineering materials at the undergraduate and graduate level are offered through the Chemical and Mechanical Engineering Departments. Students may use Engineering Materials as a field of concentration in the Bachelor of Science in Engineering Program.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

ENMA 162. (03) DEFORMATION OF ENGINEERING MATERIALS.

Prerequisites: ES 30 or consent of instructor. Relationship of structure to the mechanical properties of materials. Elastic and plastic deformation, microscopic yield criteria, state of stress and ductility. Elements of dislocation theory, work hardening, alloy strengthening, creep, and fracture in terms of dislocation theory.

ENMA 163. (03) CHEMICAL, LIQUID AND POWDER PROCESSING OF ENGINEERING MATERIALS.

Prerequisites: ENES 030 or consent of instructor. Methods and processes used in the production of primary metals. Basic principles of beneficiation processes, pyrometallurgy, hydrometallurgy, electrometallurgy, vapor phase processing and electroplating. Liquid metal processing including casting, welding, brazing and soldering. Powder processing and sintering. Shapes and structures produced in the above processes.

ENMA 164. (03) ENVIRONMENTAL EFFECTS ON ENGINEERING.

Prerequisites: ENES 030 or consent of instructor. Introduction to the phenomena associated with the resistance of materials to damage under severe environmental conditions. Oxidation, corrosion, stress corrosion, corrosion fatigue and radiation damage are examined from the point of view of mechanism and influence on the properties of materials. Methods of corrosion protection and criteria for selection of materials for use in radiation environments.

ENMA 170. (03) STRUCTURE AND PROPERTIES OF ENGINEERING MATERIALS.

A comprehensive survey of the atomic and electronic structure of solids with emphasis on the relationship of structure to the physical and mechanical properties.

ENMA 171. (03) PHYSICAL CHEMISTRY OF ENGINEERING MATERIALS.

Equilibrium multicomponent systems and relationship to the phase diagram. Thermodynamics of polycrystalline and polyphase materials. Diffusion in solids, kinetics of reactions in solids.

ENMA 172. (03) TECHNOLOGY OF ENGINEERING MATERIALS.

Relationship of properties of solids to their engineering applications. Criteria for the choice of materials for electronic, mechanical and chemical properties. Particular emphasis on the relationships between structure of the solid and its potential engineering application.

ENMA 173. (03) PROCESSING OF ENGINEERING MATERIALS.

The effect of processing on the structure of engineering materials. Processes considered include refining, melting and solidification, purification by zone refining, vapor phase processing, mechanical working and heat treatments.

FOR GRADUATES

See Graduate School Catalog for descriptions

ENMA 250. (03) STRUCTURE OF ENGINEERING MATERIALS.

ENMA 251. (03) ELECTRONIC STRUCTURE OF ENGINEERING SOLIDS.

ENMA 259. (03) SPECIAL TOPICS IN STRUCTURE OF ENGINEERING MATERIALS.

ENMA 260. (03) CHEMICAL PHYSICS OF ENGINEERING MATERIALS.

ENMA 261. (03) KINETICS OF REACTIONS IN MATERIALS.

ENMA 269. (03) SPECIAL TOPICS IN THE CHEMICAL PHYSICS OF MATERIALS.

ENMA 270. (03) RHEOLOGY OF ENGINEERING MATERIALS.

ENMA 271. (03) DISLOCATIONS IN CRYSTALLINE MATERIALS.

ENMA 272. (03) MECHANICAL PROPERTIES OF ENGINEERING MATERIALS.

ENMA 279. (03) SPECIAL TOPICS IN THE MECHANICAL BEHAVIOR OF ENGINEERING SOLIDS.

ENMA 280. (03) EXPERIMENTAL METHODS IN MATERIALS SCIENCE.

ENMA 281. (03) DIFFRACTION TECHNIQUES IN MATERIALS SCIENCE.

ENMA 289. (03) SPECIAL TOPICS IN EXPERIMENTAL TECHNIQUES IN MATERIALS SCIENCE.

ENMA 290. (03) POLYMERIC ENGINEERING MATERIALS.

ENMA 291. (03) SPECIAL TOPICS IN MATERIALS TECHNOLOGY.

ENMA 297. (01) SEMINAR IN ENGINEERING MATERIALS.

ENMA 298. SPECIAL PROBLEMS IN ENGINEERING MATERIALS.

ENMA 399. THESIS RESEARCH IN ENGINEERING MATERIALS. (Master's Level) (Var.)

ENMA 499. DISSERTATION—RESEARCH IN ENGINEERING MATERIALS (Doctoral Level) (Var.)

ENGINEERING SCIENCES

ENES 001. (03) INTRODUCTORY ENGINEERING SCIENCE.

One lecture and two laboratory periods a week. Basic languages of the engineer. Elements of graphic communication and analysis. Orthographic projection and descriptive geometry, conventions, graphs and curve-fitting. Vectors as tools of communication and analysis. Applications of geometry to engineering problems.

ENES 010. (03) MECHANICS.

Two lectures and two drill periods a week. Prerequisites: ENES 001 and concurrent registration in MATH 019 or approval of department head. Systems of rigid bodies in equilibrium under action of forces and couples. Numerical, graphical, and vectorial computation applied to problems in statics and elementary dynamics.

ENES 020. (03) MECHANICS OF MATERIALS.

Three lectures a week. Prerequisites: MATH 020, PHYS 030, and ENES 010. Distortion of engineering materials in relation to changes in stress or temperature. Geometry of internal strain and external displacement. Application to beams, columns, shafts, tanks, and other structural, machine and vehicle members.

ENES 021. (03) DYNAMICS.

Three lectures a week. Prerequisites: ENES 010, PHYS 030, and ENNU 101, concurrent registration in MATH 021. Systems of particles and rigid bodies at rest and in motion. Force-acceleration, work-energy, and impulse-momentum relationships. Motion of one body relative to another in a plane and in space.

ENES 030. (03) MATERIALS SCIENCE.

Three lectures a week. Prerequisite: ENES 020. Basic principles, nature, and properties of engineering materials. Structure of matter, phase transformations and mechanical properties of metals, ceramics, polymers and related materials, electrical, thermal and magnetic prop-

erties, corrosion and radiation damage, friction and wear, diffusion.

ENES 80. (02) ALGORITHMIC ANALYSIS AND COMPUTER PROGRAMMING.

One hour of lecture and two hours of laboratory per week. Corequisite, MATH 021. Required of sophomores in electrical engineering. Concept and properties of algorithms (fully defined procedures for solving problems), problems from numerical mathematics, use of specific algorithmic language (MAD), completion of several projects using a digital computer.

ENES 83. (01) DIGITAL COMPUTER LABORATORY.

Two hours of laboratory per week. Prerequisite, ENES 080. Required of sophomores in electrical engineering. Completion of several projects in numerical mathematics on a digital computer, with emphasis of efficiency of computation accuracy of approximations, and control of errors.

FIRE PROTECTION ENGINEERING

PROFESSOR: Bryan.
ASSISTANT PROFESSOR: Hickey.
LECTURER: Custer.

Fire protection is concerned with the scientific and technical problems of preventing loss of life and property from fire, explosion and related hazards, and of evaluating and eliminating hazardous conditions.

The fundamental principles of fire protection are relatively well defined and the application of these principles to a modern industrialized society has become a specialized activity. Control of the hazards in manufacturing processes calls for an understanding not only of measures for fire protection but of the processes themselves. Often the most effective solution to the problem of safe-guarding a hazardous operation lies in the modification of the process rather than in the installation of special extinguishing equipment. The expert in fire protection must be prepared to decide in any given case what is the best and most economical solution of the fire prevention problem. His recommendations are often based not only on sound principles of fire protection, but on a thorough understanding of the special problems of the individual property.

Modern fire protection utilizes a wide variety of mechanical and electrical equipment which the student must understand in principle before he can apply them to special problems. The fire protection curriculum emphasizes the scientific, technical and humanitarian aspects of fire protection, and the development of the individual student.

The problems and challenges which confront the specialist in fire protection include the reduction and control of fire hazards due to processes subject to fire or explosion in respect to design, installation and handling, involving both physical and human factors; the use of buildings and transportation facilities to restrict the spread of fire and to facilitate the escape of occupants in case of fire; the design, installation and maintenance of fire detection and extinguishing devices and systems; and the organization and education of persons for fire prevention and fire protection.

Fire Protection curriculum

	Semester	
JUNIOR YEAR	I	II
General Education Courses.....	3	3
ENEE 060—Principles of Elec. Engr.....	3	3
ENES 030—Materials Science or		
ENES 050—Fundamentals of Engineering		
Materials.....	3	..
ENCE 112—Applied Math in Engr. or		
MATH 066—Differential Equations.....	3	..
ENCE 105—Fluid Mechanics.....		3

ENFP 110—Installations and Equipment		3	
ENFP 112—Fire Prot. Fluids and Systems			3
ENFP 115—Water Suppression Systems			3
ENFP 120—Construction Fundamentals and			
Ins. Schedules		3	
Approved Electives	2 or 3		2 or 3
Total		17 or 18	17 or 18
SENIOR YEAR			
General Education Courses		3	3
ENME 100—Thermodynamics		3	
ENCE 100—Engineering Analysis and			
Computer Programming		3	
ENME 167—Operations Research I or			
BSAD 136—Operations Research I			3
ENNU 101—Environmental Consideration of			
Nuclear Engineering			3
ENFP 111—Process and Transportation			
Hazards			3
ENFP 114—Fire Analysis		3	
ENFP 116—Problem Synthesis and Design		3	
ENFP 117—Technical Projects			3
Approved Technical Electives.		3	3
Total		18	18

ENFP 80. (03) FIRE PROTECTION ORGANIZATION.

First semester. Two lectures and one laboratory period a week. Fire loss records, and the economic aspects of fire costs. Organization and administration of municipal and industrial fire protection.

ENFP 90. (03) ESSENTIALS OF FIRE PROTECTION.

Second semester. Two lectures and one laboratory period a week. Prerequisites, ENFP 080. Chemistry of combustion and an analysis of the properties of materials affecting fire behavior. Detailed examination of the basic fire phenomenon.

ENFP 110. (03) INSTALLATIONS AND EQUIPMENT.

First semester. Two lectures and one laboratory period a week. Prerequisites, ENFP 090 and junior standing. The design and installation of gaseous and solid particle suppression systems. Design standards and specifications for installation of detection, signaling and communication systems. The principles of suppression theory applied to laboratory problems.

ENFP 111. (03) PROCESS AND TRANSPORTATION HAZARDS

Second semester. Two lectures and one laboratory period a week. Prerequisite ENFP 110. Special hazards of industrial processing and manufacturing, the transportation of personnel and products. Analytical approach to hazard evaluation and control. Variables affecting control design in relation to probability, reliability, economic, legal, and psychological factors.

ENFP 112. (03) FIRE PROTECTION FLUIDS AND SYSTEMS

Second semester. Two lectures and one laboratory period a week. Corequisite ENFP 115. Fluids utilized in fire suppression systems and operations. Laboratory study of operational and hydraulics problems. Design of water supply and distribution for fire protection.

ENFP 114. (03) FIRE ANALYSIS

First semester. Two lectures and one laboratory period a week. Prerequisite, ENFP 112. The mass fire problem, with consideration of conflagrations and fire storms, thermal, structural, environmental, and meteorological factors, techniques of prediction and continuity analysis.

ENFP 115. (03) WATER SUPPRESSION SYSTEMS.

Second semester. Two lectures and one laboratory period a week. Prerequisite, ENFP 110. Corequisite, ENFP 112. The design and installation of automatic sprinkler, water spray systems. Computation of water flow, pressure, and system loss characteristics. Development of hydraulically balanced flow characteristics. Laboratory sessions on design and evaluation procedures.

ENFP 116. (03) PROBLEM SYNTHESIS AND DESIGN.

First semester. Two lectures and one laboratory period a week. Prerequisite senior standing. Techniques and procedures of problem orientation and solution design utilizing logical and numerical procedures. Fundamentals of a systems approach. Study of historical, current and future problems. Probability statistics as applied to fire protection problems.

ENFP 117. (03) TECHNICAL PROJECTS.

Second semester. Two lectures and one laboratory period a week. Prerequisite ENFP 116. An examination of the specialized areas of fire protection and the state of the research in these areas. Student development and discussion of research projects in a selected area.

ENFP 120. (03) CONSTRUCTION FUNDAMENTALS AND INSURANCE SCHEDULES.

First semester. Two lectures and one laboratory period a week. Prerequisite, ENFP 080. A study of the insurance

rating schedules and their principles of application. Functional and structural aspects of construction affected by the variables of the fire environment. The examination of specific laws, codes, and ordinances. Laboratory examination of fire test procedures.

ENME 103—Materials Engineering	3	3
ENME 104—Gas Dynamics	3	3
ENME 106—Transfer Processes	3	3
ENME 120—Measurements Laboratory	2	2
ENME 116—Applied Mathematics in Engineering	3	3
Total	18	18

MECHANICAL ENGINEERING

PROFESSORS: Shreeve, Jackson, R.W. Allen, Armstrong, Asimow, Berger, Cunniff, John, Marcinkowski, Sayre, Talaat, Weske.

ASSOCIATE PROFESSORS: Anand, Hayleck, Wockenfuss, Fourney, Marks, Sallet, Walston, Yang.

ASSISTANT PROFESSORS: Buckley, Elkins, Forsnes, Hill, Morse, Owens, Tsui.

INSTRUCTORS: Auluck, Becker, Browne, Kraft, Morin, Owens, Puckett, Alic, Hagner, Hasson, Hawks, Kauffmann, Krauss, Mahajan, Root, Whitbeck.

LECTURERS: Dawson, Haberman, Seigel.

SENIOR YEAR

General Education Courses	3	3
ENME 150, 151—Energy Conversion	4	3
ENME 152—Machine Design	3	3
ENME 154, 155—Engineering Experimentation	2	2
ENME 156, 157—Mechanical Engineering Analysis and Design	3	4
Technical Elective	3	6
Total	18	18

TECHNICAL ELECTIVES

ENME 140—Engineering Analysis	3	3
ENME 153—Elasticity and Plasticity I	3	3
ENME 162—Dynamics I	3	3
ENME 164—Thermodynamics II	3	3
ENME 166—Special Problems	3	3
ENME 161—Environmental Engineering	3	3
ENME 163—Fluid Mechanics II	3	3
ENME 165—Automatic Controls	3	3
ENME 167—Introduction to Operations Research I	3	3
ENME 168—Introduction to Industrial Engineering	3	3
ENME 180—Mechanical Engineering Analysis for Oceanic Environment	3	3
ENME 181—Mechanical Engineering Systems for Underwater Operations	3	3
ENME 190—Introduction to Engineering Acoustics	3	3

The principal function of the mechanical engineer is to apply science and technology creatively to the design and manufacture of machines for the practical use of mankind. Any machine or manufactured product requires, basically, (1) the art and science of generating, transmitting, and utilizing mechanical power, and (2) research, development, designing, and the coordination of materials, personnel, and management. These basic requirements define mechanical engineering. The following professional divisions of the American Society of Mechanical Engineers give a good idea of types of work in which the mechanical engineer may become associated: air pollution, applied mechanics, automatic control, aviation and space, bio-mechanical and human factors, design engineering, diesel and gas engine power, energetics, fluids engineering, fuels, gas turbine, heat transfer, management, materials handling, metals engineering, nuclear engineering, petroleum, power, pressure vessels and piping, process industries, railroad, rubber and plastics, safety, solar energy, textile, and underwater technology.

There are numerous opportunities in all the fields associated with these divisions, in particular in the areas of: research, design, systems analysis, management consulting, maintenance, production, teaching and sales.

Because of the wide variety of engineering opportunities available to the mechanical engineer, the curriculum is designed to give the student a thorough training in the basic sciences: physics, chemistry, mathematics, solid and fluid mechanics, dynamics, thermodynamics, heat transfer, materials, electricity, nuclear technology, power, and design. This curriculum leads to the Bachelor of Science degree, which is the stepping stone to immediate employment and/or continued study to the Master of Science and Doctor of Philosophy degrees.

MECHANICAL ENGINEERING CURRICULUM

JUNIOR YEAR	Semester	
General Education Courses	1	11
ENEE 060, 062—Principles of Electrical Engineering	3	3
ENEE 061, 063—Electrical Engr. Lab	3	3
ENES 030—Materials Science	1	1
ENME 101—Dynamics of Machinery	3	3
ENME 102—Fluid Mechanics I	2	2
	3	3

In the Mechanical Engineering Department there are five main divisions of specialization both at the undergraduate and graduate levels. These include Design and Systems Analysis; Energy Conversion; Fluid Mechanics; Materials; and Solid Mechanics. A graduate student may major in one of these fields with a minor in one or more of the others. Opportunities are also available for a student to take advanced work in Industrial Engineering and Operation Research (under Design and Systems Analysis), Marine and Ocean Engineering (under Fluid Mechanics), Bio-Mechanical Engineering (under Energy Conversion), or Acoustics (under solid mechanics).

The Materials Courses are listed under a separate heading in this catalogue.

Students planning graduate work should preferably choose electives to provide the best background for their main areas of interest. The areas of current specialization and research in Mechanical Engineering at the University of Maryland are:

- I DESIGN AND SYSTEMS ANALYSIS
 - a. Mechanical Engineering Design
 - b. Controls Systems Analysis

- II ENERGY
 - a. Thermodynamics
 - b. Heat Transfer
 - c. Energy Conversion
 - d. Propulsion

- III FLUID MECHANICS
 - a. Incompressible Flow
 - b. Compressible Flow
 - c. Viscous Flow
 - d. Unsteady Hydrodynamics

- IV SOLID MECHANICS
 - a. Dynamics
 - b. Continuum Mechanics
 - c. Elasticity, Linear and Non-linear
 - d. Stress Waves

- e. Vibrations, Linear, Non-linear
- f. Plasticity
- g. Viscoelasticity
- h. Shells, Linear and Non-linear
- i. Structural Dynamics
- j. Acoustics

V MATERIALS

See listing under Engineering Materials section.

FOR UNDERGRADUATES

ENME 015. (02) INTRODUCTION TO MECHANICAL ENGINEERING.

Two lectures a week. Prerequisites, MATH 020, PHYS 030 and CHEM 009. Development of the student's capacity to solve engineering problems by the application of fundamental principles and fully defined procedures. Several projects require the use of a computer.

ENME 50. (03) PRINCIPLES OF MECHANICAL ENGINEERING.

Three lectures a week. Prerequisites, PHYSICS 032, MATH 021. Required of civil engineers. Laws and corollaries of classical thermodynamics. Properties and characteristics of pure substances and perfect gases. Vapor and gas cycles. Mixture of gases including applications to psychrometry. Introduction to heat transfer.

ENME 60. (03) THERMODYNAMICS. I

Two lectures and one laboratory period a week. Prerequisites, PHYSICS 031, MATH 21 concurrently. Required of sophomores in mechanical and aeronautical engineering. Properties, characteristics, and fundamental equation of gases, and vapors. Application of first and second laws of thermodynamics in the analysis of basic heat engines, air compression, and vapor cycles. Flow and non-flow processes for gases and vapors.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

DESIGN AND SYSTEMS ANALYSIS

ENME 103. (03) MATERIALS ENGINEERING.

Two lectures and one laboratory period a week. Prerequisite, ENES 30. Processes and methods to manufacture and usefully apply engineering materials, alloys and heat treatment of steel, strengthening processes for ferrous and non-ferrous alloys. Fabrication techniques for metals, polymers, and refractories. Specification, inspection, control and automation.

ENME 152. (03) MACHINE DESIGN.

Two lectures and one laboratory period a week. Prerequisites, ENME 101, 103. Working stresses, stress concentration, stress analysis and repeated loadings. Design of machine elements. Kinematics of mechanisms.

ENME 156. (03) MECHANICAL ENGINEERING ANALYSIS AND DESIGN.

ENME 157. (04) MECHANICAL ENGINEERING ANALYSIS AND DESIGN.

First semester, two lectures and one laboratory period per week. Second semester two lectures and two laboratory periods per week. Prerequisite, senior standing in mechanical engineering. Creative engineering and problem analysis. Systems design including control reliability and manufacturing requirements. Use of computers in design. Design of multi-variable systems.

ENME 165. (03) AUTOMATIC CONTROLS.

Three lectures per week. Prerequisites, ENEE 62. Senior standing. Hydraulic, electrical, mechanical and pneumatic automatic control systems. Open and closed loops. Steady state and transient operation, stability criteria, linear and non-linear systems. Laplace transforms.

ENME 167. (03) OPERATIONS RESEARCH. I

Three lectures a week. Prerequisite, senior standing in mechanical engineering. Applications of linear programming, queuing model, theory of games and competitive models to engineering problems.

ENME 168. (03) INTRODUCTION TO INDUSTRIAL ENGINEERING.

Three lectures per week. Prerequisite, ENME 103 and ECON 37 or consent of instructor. This course is concerned with the design, improvement and installation of integrated systems of men, materials and equipment.

Areas covered include industrial activities, plant layout and design, value analysis, engineering economics, quality and production control, methods engineering, industrial relations, etc.

ENERGY CONVERSION

ENME 100. (03) THERMODYNAMICS.

Two lectures and one laboratory period a week. Prerequisites, PHYSICS 031, MATH 21. The properties, characteristics and fundamental equations of gases, and vapors. Application of the first and second laws of thermodynamics in the analysis of basic heat engines, air compression, and vapor cycles. Flow and non-flow processes for gases and vapors.

ENME 106. (03) TRANSFER PROCESSES.

Three lectures a week. Prerequisite, ENME 102. Conduction by steady state and variable heat flow, laminar and condensation of vapors. Transfer of mass, heat, and momentum.

ENME 107. (03) ENERGY CONVERSION.

Three lectures a week. Prerequisite, ENME 100. Required of seniors in electrical engineering. Chemical, heat, mechanical, nuclear and electrical energy conversion processes, cycles and systems. Direct conversion processes of fuel cells, thermionics, and magnetohydrodynamics.

ENME 150. 04 ENERGY CONVERSION.

ENME 151. 03 ENERGY CONVERSION.

First semester. Three lectures, one laboratory a week. Second semester. Two lectures, one laboratory a week. Prerequisites, ENME 104, ENME 106. Chemical heat, mechanical, nuclear and electrical energy conversion processes, cycles and systems. Reciprocating, turbo- and jet-propulsion power plants and components using all types of heat and reaction sources. Direct conversion processes of fuel cells, thermionics and magnetohydrodynamics.

ENME 161. (03) ENVIRONMENTAL ENGINEERING.

Three lectures a week. Prerequisites, ENME 101, 106, senior standing in mechanical engineering. Heating and cooling load computations. Thermodynamics of refrigeration systems. Low temperature refrigeration. Problems involving extremes of temperature, pressure, acceleration and radiation.

ENME 164. (03) THERMODYNAMICS. II

Three lectures a week. Prerequisites, ENME 104, ENME 106, senior standing. Applications to special systems, change of phase, low temperature. Statistical concepts, equilibrium, heterogenous systems.

FLUID MECHANICS

ENME 102. (03) FLUID MECHANICS. I

Two lectures and one laboratory period a week. Prerequisite, ENME 015. A rational study of fluids at rest and in motion. Principles of viscous and turbulent flow in pipes, nozzles, etc. Impulse and momentum. Pumps, turbines, and meters. Dimensional analysis and laws of similarity.

ENME 104. (03) GAS DYNAMICS.

Two lectures and one laboratory period a week. Prerequisite, ENME 102. Compressible flow in ducts and nozzles, effect of area change, heat addition, friction, and normal shocks. Thermodynamics of chemically reacting flows, combustion and equilibrium.

ENME 163. (03) FLUID MECHANICS. II

Three lectures a week. Prerequisites, ENME 104, ENME 106, senior standing. Hydrodynamics with engineering applications. Stream function and velocity potential, conformal transformations, pressure distributions, circulation, numerical methods and analogies.

ENME 180. (03) MECHANICAL ENGINEERING ANALYSIS FOR THE OCEANIC ENVIRONMENT.

Study of the characteristics of the marine environment which affect the design, operation and maintenance of mechanical equipment, effects of waves, currents, pressure, temperature, corrosion, and fouling. Study of design parameters for existing and proposed mechanical systems used in marine construction, on shipboard, in search and salvage operations.

ENME 181. (03) MECHANICAL ENGINEERING SYSTEMS FOR UNDERWATER OPERATIONS.

Prerequisite, ENME 180. or consent of instructor. Study of propulsion, control, and environmental systems for submerged vehicles. Design of mechanical systems in support of diving and saturated living operations.

ENME 190. (03) INTRODUCTION TO ENGINEERING ACOUSTICS.

Three lectures per week. Prerequisite ENME 116 or equivalent. Study of the physical behavior of sound waves. Introduction to terminology and instrumentation used in acoustics. Criteria for noise and vibration control. Some fundamentals underlying noise control and applications to ventilation systems, machine and shop quieting, office buildings, jet noise, transportation systems and underwater sound.

SOLID MECHANICS

ENME 101. (02) DYNAMICS OF MACHINERY.

One lecture and one laboratory period a week. Prerequisites, ENES 021, ENME 116 concurrently. Dynamic characteristics of machinery with emphasis on systems with single and multiple degree of freedom.

ENME 153. (03) ELASTICITY AND PLASTICITY. I

Three lectures a week. Prerequisite, ENME 152. Analysis of plates and shells, thick walled cylinders, columns, torsion of non-circular sections, and rotating disks.

ENME 162. (03) Dynamics. II

Three lectures a week. Prerequisites, ENME 101, ENME 116, senior standing in mechanical engineering. Linear and non-linear plane and three-dimensional motion, moving axes, LaGrange's equation, Hamilton's principle, non-linear vibration, gyroscope, celestial mechanics.

ENGINEERING MATH, EXPERIMENTATION, ETC.

ENME 116. (03) APPLIED MATHEMATICS IN ENGINEERING.

Prerequisites, MATH 21. MATHEMATICAL TECHNIQUES applied to the analyses and solution of engineering problems. Use of differentiation, integration, differential equations, partial differential equations and integral transforms. Application of infinite series, numerical statistical methods.

ENME 120. (02) MEASUREMENTS LABORATORY.

One lecture and one laboratory period a week. Prerequisites, ENES 30, ENME 101, and ENEE 60, ENME 106 concurrently. Required of juniors in mechanical engineering. Theory of dynamic measurements and application to the selection of measurement systems; strain gage and other transducers; determination of dynamic characteristics of measurement systems; complex wave form analysis; statistical treatment of results.

ENME 140. (03) ENGINEERING ANALYSIS AND COMPUTER PROGRAMMING.

Three lectures a week. Prerequisite, ENME 116. Elements of operational calculus, vector analysis, numerical methods and programming for computers. Errors, interpolation, series, integration, iteration and solution of equations.

ENME 154. (02) ENGINEERING EXPERIMENTATION

ENME 155. (02) ENGINEERING EXPERIMENTATION. One lecture and one laboratory period a week. Prerequisite, senior standing in mechanical engineering. Theory of experimentation. Selected experiments emphasize planned procedure, analysis and communications of results, analogous systems and leadership.

ENME 166. (03) SPECIAL PROBLEMS.

Three lectures a week. Prerequisite, senior standing in mechanical engineering. Advanced problems in mechanical engineering with special emphasis on mathematical and experimental methods.

FOR GRADUATES

See Graduate School Catalog for descriptions.

DESIGN AND SYSTEM ANALYSIS

ENME 206. (03) ADVANCED MECHANICAL ENGINEERING DESIGN.

ENME 207. (03) ADVANCED MECHANICAL ENGINEERING DESIGN.

ENME 212. (03) CONTROL SYSTEMS ANALYSIS AND SYNTHESIS.

ENME 213. (03) NONLINEAR AND ADAPTIVE CONTROL SYSTEMS.

ENERGY

ENME 204. (03) ADVANCED THERMODYNAMICS.

ENME 205. (03) ADVANCED THERMODYNAMICS.

ENME 216. (03) ENERGY CONVERSION-SOLID STATE

ENME 217. (03) ENERGY CONVERSION-SOLID STATE

ENME 218. (03) ENERGY CONVERSION-PLASMA STATE.

ENME 219. (03) ENERGY CONVERSION-PLASMA STATE.

ENME 229. (03) JET PROPULSION.

ENME 230. (03) JET PROPULSION.

ENME 231. (03) ADVANCED HEAT TRANSFER.

ENME 232. (03) ADVANCED HEAT TRANSFER.

FLUID MECHANICS

ENME 208. (03) DESIGN OF TURBOMACHINERY.

ENME 209. (03) DESIGN OF TURBOMACHINERY.

ENME 210. (03) ADVANCED FLUID MECHANICS.

ENME 211. (03) ADVANCED FLUID MECHANICS.

ENME 233. (03) COMPRESSIBLE FLOW.

ENME 234. (03) COMPRESSIBLE FLOW.

ENME 280. (03) VISCOUS FLOW.

ENME 281. (03) VISCOUS FLOW.

ENME 282. (03) SPECIAL TOPICS IN UNSTEADY HYDRODYNAMICS.

ENME 283. (03) SPECIAL TOPICS IN UNSTEADY HYDRODYNAMICS.

SOLID MECHANICS

ENME 200. (03) INTERMEDIATE DYNAMICS.

ENME 201. (03) ADVANCED DYNAMICS.

ENME 202. (03) CONTINUUM MECHANICS.

ENME 214. (03) LINEAR THEORY OF ELASTICITY.

ENME 214. (03) STRESS WAVES IN CONTINUOUS MEDIA.

ENME 215. (03) STRESS WAVES IN CONTINUOUS MEDIA.

ENME 221. (03) LINEAR VIBRATIONS.

ENME 222. (03) NON-LINEAR VIBRATIONS.

ENME 223. (03) PLASTICITY.

ENME 224. (03) PLASTICITY.

ENME 227. (03) NON-LINEAR ELASTICITY.

ENME 228. (03) VISCOELASTICITY.

ENME 235. (03) LINEAR AND NON-LINEAR ELASTIC SHELLS.

ENME 236. (03) LINEAR AND NON-LINEAR ELASTIC SHELLS.

ENME 274. (03) ADVANCED STRUCTURAL DYNAMICS I.

ENME 275 (03) ADVANCED STRUCTURAL DYNAMICS II.

SPECIAL TOPICS AND RESEARCH

ENME 220. SEMINAR.

ENME 238. 02-03 ADVANCED TOPICS IN MECHANICAL ENGINEERING.

ENME 399. RESEARCH IN MECHANICAL ENGINEERING.

ENME 499. RESEARCH IN MECHANICAL ENGINEERING.

NUCLEAR ENGINEERING*

PROFESSORS: Duffey, Johnson and Silverman.

ASSOCIATE PROFESSOR: Munno.

ASSISTANT PROFESSORS: Almenas, Blair, and Sheaks.

PART-TIME PROFESSOR: Goldman.

LECTURER: Belcher.

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. Others uses are in the areas of chemical processing, medicine, instrumentation, and isotope tracer analysis. The nuclear engineer is primarily concerned with the design and operation of energy conversion devices ranging from very large reactors to miniature nuclear batteries, and with the use of nuclear reactions in many environmental, biological and chemical processes. Because of the wide range of uses for nuclear systems, the nuclear engineer finds interesting and diverse career opportunities in a variety of companies and laboratories.

Programs of study in nuclear engineering at the undergraduate and graduate level are offered through the Chemical Engineering Department. Students may use Nuclear Engineering as a field of concentration in the Bachelor of Science in Engineering Program.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

ENNU 100. (02) INTRODUCTION TO NUCLEAR TECHNOLOGY.

Prerequisites, MATH 021 and PHYS 032. Engineering problems of the nuclear energy complex, including basic theory, nuclear reactor design, and isotopic and chemical separations.

ENNU 101. (03) ENVIRONMENTAL ASPECTS OF NUCLEAR ENERGY.

Protection of the public and the environment from the hazards of nuclear operations. Radiation monitoring, handling and disposal of radioactive wastes. Site selection plant design and operation as related to the environment.

ENNU 102. (03) NUCLEAR REACTOR OPERATION.

Introduction to nuclear reactor operations. Outline of reactor theory. Nature and monitoring techniques of ionizing radiation, radiation safety. Reactor instrument response. Operation of the University of Maryland nuclear reactor.

ENNU 103. (03) RADIOISOTOPE POWER SOURCES.

Prerequisite, ENNU 100 or permission of instructor. Principles and theory of radioisotope power sources. Design and use of nuclear batteries and small energy conversion devices.

ENNU 148. (03) NUCLEAR TECHNOLOGY LABORATORY.

One lecture and two laboratory periods a week. Prerequisites, PHYS. 21, MATH 021. Techniques of detecting and making measurements of nuclear or high energy radiation. Radiation safety experiments. Both a sub-critical reactor are sources of radiation.

ENNU 163. (03) NUCLEAR REACTOR ENGINEERING. I

Prerequisites, MATH 066 and PHYSICS 032 or consent of instructor. Elementary nuclear physics, reactor theory, and reactor energy transfer. Steady-state and time-dependent neutron distributions in space and energy. Conduction and convective heat transfer in nuclear reactor systems.

ENNU 167. (03) NUCLEAR REACTOR ENGINEERING. II

Prerequisite, ENNU 163. General plant design considerations including radiation hazards and health physics, shielding design, nuclear power economics, radiation effects on reactor materials, and various types of nuclear reactor systems.

ENNU 169. (03) REACTOR CORE DESIGN.

Prerequisite, ENNU 163, or consent of instructor. Design of nuclear reactor cores based on a sequence of standard computer codes. Thermal and epithermal cross sections, multigroup diffusion theory in one and two dimensions, and fine structure flux calculations using transport theory.

FOR GRADUATES

See Graduate School Catalog for descriptions.

ENNU 202. (03) NUCLEAR REACTOR ENGINEERING.

ENNU 203. (03) NUCLEAR REACTOR ENGINEERING.

ENNU 208. (03) NUCLEAR REACTOR LABORATORY.

ENNU 209. (03) NUCLEAR REACTOR LABORATORY.

ENNU 211. (03) NUCLEAR FUEL AND WASTE PROCESSING.

ENNU 213. (02) SELECTED TOPICS IN NUCLEAR ENGINEERING.

ENNU 214. (Var.) SPECIAL PROBLEMS IN NUCLEAR ENGINEERING.

ENNU 215. (03) RADIATION ENGINEERING.

ENNU 216. (03) RADIATION ENGINEERING.

ENNU 217. (03) RADIATION EFFECTS LABORATORY.

ENNU 220. (03) NUCLEAR REACTOR PHYSICS. I

ENNU 221. (03) NUCLEAR REACTOR PHYSICS. II

ENNU 231. (03) NEUTRAL PARTICLE TRANSPORT THEORY.

ENNU 233. (03) RADIATION SHIELDING AND ENERGY DEPOSITION.

ENNU 235. (03) NUCLEAR REACTOR DESIGN.

ENNU 237. (03) NUCLEAR REACTOR DYNAMICS.

ENNU 240. (03) FAST REACTOR ENGINEERING.

ENNU 399. (Var.) THESIS RESEARCH IN NUCLEAR ENGINEERING. (Master's Level)

ENNU 499. (Var.) DISSERTATION RESEARCH IN NUCLEAR ENGINEERING. (Doctoral Level)

COGNATE ACTIVITIES

Departments in The College of Engineering which contribute significantly to activities in education, research, and professional service include the Institute of Fluid Dynamics and Applied Mathematics; the Department of Wind Tunnel Operations; and the Fire Service Extension Department. These Departments work closely with academic departments of the University in areas of common interest. The scope of work in each department area is outlined briefly in paragraphs which follow.

Fellowship grants and contracts for fundamental research contribute to the overall professional-scientific activity of the staff of the College. The staff of the College of Engineering available for research studies will be glad to discuss proposed problems of importance to industry and of public interest where means can be found for the cooperative researches; such studies may be undertaken with the approval of the administration of the University.

INSTITUTE FOR FLUID DYNAMICS AND APPLIED MATHEMATICS

The Institute for Fluid Dynamics and Applied Mathematics is a center for applied interdisciplinary research in areas requiring combined efforts in physical and mathematical sciences, environmental sciences, and engineering. It hosts a faculty of eminent stature to promote a variety of programs, many involving members of other departments on campus and from other institutions. Its purpose is to provide graduate training for students interested in having an opportunity to perform research in a multidisciplinary environment.

The Institute faculty conduct theoretical and experimental research in meteorology, atomic physics, molecular physics, plasma physics, atmospheric physics, fluid dynamics, statistical mechanics, theoretical biophysics and geophysics, and in all areas of applied mathematics. Applied mathematicians in the Institute are currently studying topics in numerical analysis, control theory, nonlinear processes, elasticity, asymptotic expansions, approximation theory, and in application of mathematics to life sciences and environmental sciences. Indi-

vidual research efforts are coordinated wherever possible to constitute broad programs in the atmospheric, environmental, space and life sciences. Research topics are determined entirely by the interests of students and faculty. Interdepartmental programs are strongly encouraged.

Students interested in pursuing advanced study within the Institute may be admitted to the University as graduate students in any department of engineering, or in Mathematics, Physics, or Chemistry. Those interested in meteorology may be admitted directly to the Graduate Program in Meteorology which exists within the Institute. Further information may be obtained by writing to the Director of the Institute for Fluid Dynamics and Applied Mathematics.

WIND TUNNEL OPERATIONS

The Wind Tunnel Operations Department conducts a program of experimental research and development in cooperation with the aircraft industry, agencies of government, and other industries with problems concerning aerodynamics. Testing programs cover a variety of subjects including all types of aircraft, missiles, ordnance, parachutes, radar antennas, trucks, automobiles, structures, and exterior equipment subject to high winds.

The Department has a 7.75x11-foot wind tunnel that can be operated at speeds from 0 to 240 mph. This facility has powered model drive equipment, and auxiliary vacuum and high pressure air supplies for boundary layer control studies. Supporting shops include complete woodworking, machine shop, photographic, and instrumentation facilities.

The full time staff of the Department includes engineering, computing, shop, and technical operations personnel. This staff cooperates with other faculty and students in the College of Engineering on problems of mutual interest.

FIRE SERVICE EXTENSION DEPARTMENT

The Fire Service extension Department provides in-service training for volunteer, municipal, and industrial firemen and serves in an advisory capacity in matters of fire prevention, fire protection, and fire safety regulations. Classes are conducted in Maryland by local instructors who work under the guidance of Senior Instructors of the Department. Basic training is given in the fundamentals of firemanship. An advanced course covers the technical field of fire prevention, control and extinguishment. Specialized courses are offered for fire officers in tactics and strategy of fire suppression and in fire department administration. A training course of 42 clock hours for rescue operations is also available. An increasingly important program is that of establishing and improving fire prevention and fire protection in Maryland industry, institutions and mercantile establishments.

A four-day short course is held annually in September at the University. Specialized courses include instructor training, pump school series, hydraulics, and aerial ladders.

Additional information may be obtained from the Director, Fire Service Extension Department, University of Maryland, College Park, Maryland 20742.



HOME ECONOMICS

THE COLLEGE OF HOME ECONOMICS serves Maryland and surrounding areas with its program for the education of young men and women interested in the social, economic, scientific and aesthetic aspects of family living in relation to the community. The educational offerings of the College are planned to help students function effectively and creatively as individuals, as family members and as responsible citizens; to prepare them for positions for which home economics is a major or minor preparation; and to promote an appreciation for and utilization of the findings of research. The College is concerned with contributing to the education for home and family life of women and men enrolled in other schools and colleges as well as those majoring in home economics.

The over-all function of home economics is to intergrate the contributions of the physical and biological sciences, the social sciences, psychology, philosophy and art in the treatment of all phases of family life, to the end that they are used by families in all parts of society and by the agencies serving families.

The College of Home Economics is organized into the Departments of Family and Community Development; Food, Nutrition, and Institution Administration; Housing and Applied Design; and Textiles and Clothing.

SPECIAL FACILITIES AND ACTIVITIES

PHYSICAL FACILITIES
The home of the College of Home Economics, following campus tradition, is a colonial brick building, planned and built to present modern equipment and facilities for education in home economics. A management center is maintained on the campus

for resident experiences in management activities of family life.

Located between two large cities, the College provides unusual opportunities for both faculty and students. In addition to the University's general and specialized libraries, Baltimore and Washington furnish added library facilities. The art galleries and museums, the government bureaus and city institutions stimulate study and provide enriching experiences for home economics students.

SOCIETIES

HOME ECONOMICS CHAPTERS

Membership is open to all home economics students. The club is affiliated with the Maryland and American Home Economics Associations.

OMICRON NU

National home economics honor society. Senior and Second-semester Junior students of high scholarship are eligible for election to membership.

N.S.I.D.

A student chapter affiliated with the National Society of Interior Designers.

STUDENT FACULTY COUNCIL

An advisory group, elected by students and faculty, to promote the interests of the College of Home Economics. Student representatives to the College Assembly, College Faculty Council, and Standing Committees of the College Assembly are named from this group.

LOAN FUND

A LOAN FUND, composed of contributions by the District of Columbia Home Economics Association, Maryland Chapter of Omicron Nu, and personal gifts, is available for students majoring in home economics.

ADMISSION

In selecting students emphasis will be placed upon good marks and other indications of probable success in college as well as upon the pattern of subjects pursued in high school. In general, four units of English and one unit each of social and natural sciences, algebra and plane geometry are required. While foreign language is desirable for certain programs no foreign language is required for entrance.

All students desiring to enroll in the College of Home Economics must apply to the Director of Admissions of the University of Maryland at College Park.

DEGREES

The degree of Bachelor of Science is conferred for the satisfactory completion, with an average of "C" or better, of a prescribed curriculum of 120 academic semester hour credits. This is exclusive of health and physical activities for women and men. No grade below a "C" is acceptable in courses within the field chosen as a major.

The Master of Science degree is offered in food, nutrition and institution administration; in textiles and clothing; in related areas of home economics in the College of Home Economics; and also in home economics education in the College of Education. (see the **Graduate School Catalog**.)

GRADUATE SCHOOL

Application for admission to the Graduate School must be made by July 15 for the fall term and by December 15 for the spring term on blanks obtained from the Office of the Graduate School. Admission to the summer session is governed by the date listed in the Summer School catalog. The summer session deadline date is May 15.

The Graduate Record Examination is required of graduate school applicants for Home Economics.

Applications for Graduate Assistantships should be requested from the Dean's Office in the College of Home Economics. First consideration in awarding financial aid will be given to applications received before March 1 for the Fall semester and before August 1 for the Spring semester. Foreign students should apply before February 1 for the Fall semester.

STUDENT LOAD

The student load in the College of Home Economics varies from 15-19 credits. A student wishing to carry more than 19 credits must have a "B" grade average and permission of the Dean.

A minimum of 120 academic credits are required for graduation. However, for certification in some professional organizations additional credits are required. Consult your advisor.

CURRICULA

A student may elect one of the following curricula, or a combination of curricula: food, nutrition, dietetics, or institution administration (food service); family, community, or consumer studies; home economics education; housing, advertising design, in-

terior design, costume design, or crafts; textiles or textiles and clothing. A student who wishes to teach home economics may register in home economics education in the College of Home Economics under the Department of Family and Community Development or in the College of Education.

GENERAL INFORMATION

Specific inquiries concerning undergraduate or graduate programs in the College of Home Economics may be directed to the heads of the various departments or to the Dean, College of Home Economics, University of Maryland, College Park 20742.

REQUIRED COURSES

The curricula leading to a major in the College of Home Economics are organized into three categories: (1) Technical areas, (2) educational, community, and family life areas, and (3) consumer service areas. These represent the broad professional fields into which graduates are eligible to enter and pursue their chosen work. The positions vary in nature, scope, and title, but require similar general studies background and fundamentals for specialization.

Individual programs of study are developed cooperatively with faculty advisors to provide a balanced and sequential arrangement of studies in preparation for the chosen field. University, college, departmental and interdepartmental requirements are identified for curricula in each of the categories described above.

All students in the College of Home Economics are required to complete a series or sequence of courses to satisfy University requirements and departmental requirements. The remaining courses needed to complete a program of study are elected by the student with the approval of his advisor.

The final responsibility of meeting all the requirements for a specific major rests with each individual student.

UNIVERSITY REQUIREMENTS

(General Education—Academic)

	Semester Hours	Credit
ENGL COMP 001 or ENGL HONORS COMP 021	3	3
ENGL 003.004	6	6
Fine Arts or Philosophy (choice of one)	3	3
DANC 032, 182 or 183, 184		
Art 010, 060, 061, 062, 065, 066, 067, 071, 080, 081		
MUSC 020		
SPCH 016, 014		
PHIL 001, 041, 045, 052, 053, 056, 174, 152, 154		
History (any combination of History courses for which the student is eligible except State History)	6	6
Mathematics (any credit bearing course)	3-4	7
SAT score determines qualification		
Natural Science (choice of two courses)	6	6
One course must be a physical science and the other a biological science. One of them must be a laboratory (4 hour) course.		
Social Science (choice of two courses)	6	6
SOCY 001, 003, ANTH 001, ECON 037 or 031,		
GVPT 001, GVPT 003, or GVPT 101; PSYC 001		
Total	34-35	34-35
(Non-Academic)		
For men and women:		
HLTH 005	2	2
Physical Education—2 semesters	2	2
Total	4	4

COLLEGE OF HOME ECONOMICS REQUIREMENTS

for every student

APDS 001—Fundamentals of Design or APDS 004—Survey of Art History	3	3
TXCL 005—Textiles and Clothing in Contemporary Living	3	3
FDNT 005—Food and Nutrition of Individuals and Families or		

NUTR 020—Elements of Nutrition	3
FMCD 050—Decision Making in Family Living	3
Root Discipline Requirements Outside the College	
SOCY 001—Sociology of American Life ²	3
PSYC 001—Introduction to Psychology ²	3
ECON 037—Fundamentals of Economics	3
SPCH 007 or 001—Public Speaking	2,3
Typical Freshman Year (15 to 18 hours each Semester)	
Semester Hours	
ENGL 001, 003—Composition and Literature	6
Mathematics	0,3
FMCD 005—Introduction to Family Living	3
APDS 001—Fundamentals of Design	3
SPCH 007 or 001—Public Speaking	2,3
SOCY 001—Sociology of American Life	3
FDNT 005—Food and Nutrition of Individuals and Families	3
TXCL 005—Textiles and Clothing in Contemporary Living	3
Physical or Biological Science	3-6
HLTH 005	2
Physical Education	2
Electives ³	4

²Any two of these automatically satisfy the 6-hour social science requirement of General Education.

³Required for H.E. Education and Family and Community Development majors.

⁴CLTH 010 required for Textiles and Clothing majors.

DEPARTMENT OF FOOD, NUTRITION AND INSTITUTION ADMINISTRATION

The area of food, nutrition and institution administration is broad and offers many diverse professional opportunities. Courses introduce the student to the principles of selection, preparation and utilization of food for human health and the welfare of society. Emphasis is placed on the scientific, cultural and professional aspects of this broad area of food and nutrition. The Department offers four areas of emphasis: Experimental Foods, Nutrition, Dietetics, and Institution Administration. Each program provides for competencies in several areas of work; however, each option is designed specifically for certain professional careers.

All areas of emphasis have in common several courses within the Department and the University; the curricula are identical in the freshman and sophomore years.

Experimental Foods is designed to develop competency in the scientific principles of food and their reactions. Physical and biological sciences in relation to foods are emphasized. The program is planned for students who are interested in product development, quality control, and technical research in foods. The Nutrition program is designed to develop competency in the area of nutrition for students who wish to emphasize physical and biological sciences. Dietetics develops an understanding and competency in food, nutrition and management as related to problems of dietary departments. The curriculum includes courses necessary to meet the academic requirements for American Dietetic Association internship and membership. Institution Administration emphasis is related to the administration of quantity food service in university and college residence halls and student unions, school lunch programs in elementary and secondary schools, restaurants, coffee shops and industrial cafeterias. The curriculum meets academic requirements for approved college, industry or business internship and membership in the American Dietetic Association.

FOOD AND NUTRITION CURRICULUM

FRESHMAN YEAR		Semester
ENGL 001, 003—Composition and World Literature	3	I
MATH 010 or 018	3	II
APDS 001 or APDS 004—Fundamentals or History of Design	3	

FRESHMAN YEAR		Semester
ENGL 001, 003—Composition and World Literature	3	I
MATH 010 or 018	3	II
APDS 001 or APDS 004—Fundamentals or History of Design	3	
SPCH 007—Public Speaking	2	3
FDNT 005—Food and Nutrition of Individuals and Families	3	
TXCL 005—Textiles and Clothing in Contemporary Living	3	
CHEM 008, 009—General Chemistry	4	3
HLTH 005—Science and Theory of Health	2	2
PE 000—Physical Education	1	1
Total	16	16

SOPHOMORE YEAR		Semester
ENGL 004—World Literature	3	I
CHEM 010, 012—College Chemistry III	3	2
FOOD 052, 053—Science of Food Preparation	3	3
ECON 037—Fundamentals of Economics	3	3
PSYC 001—Introduction of Psychology	3	
ZOOL 001—General Zoology	4	4
MICB 001—General Microbiology	3	4
FMCD 050—Decision Making in Family Living	3	3
FDNT 050—Professional Orientation	1	1
Total	16	16

EXPERIMENTAL FOODS EMPHASIS

JUNIOR YEAR		Semester
HIST—History Requirement	3	I
SOCY 001 or 141—Introduction to Sociology or Sociology of Personality	3	3
Fine Arts or Philosophy requirement	3	
NUTR 121—Science of Nutrition	3	3
FOOD 152, 153—Advanced and Experimental Food Science	3	3
CHEM 161, 163—Biochemistry	3	3
FDSC 102—Principles of Food Processing	3	3
Total	15	15

SENIOR YEAR		Semester
PHYS 001—Elements of Physics	3	I
FDSC 112—Analytical Quality Control	3	3
FDSC 111—Food Product Research and Development	3	3
Electives ⁵	12	9
Total	15	15

⁵9 hours of the 21 electives must be selected from the following list:

- AGRI 101—Agricultural Biometrics (3) or FDSC 113—Statistical Quality Control (3)
- CHEM 019—Elements of Quantitative Analysis (3)
- NUTR 124—Advanced Nutrition (3)
- FOOD 130—Special Problems in Foods (3)
- FOOD 060—Meal Management (3)
- FOOD 170—Economics of Food Consumption (3)
- MICB 081—Applied Microbiology (4)
- IADM 151—Quantity Food Purchasing (3)
- IADM 152—Quantity Food Production (3)
- FMCD 170—Communication Skills and Techniques in Home Economics (3)
- AGEN 113—Mechanics of Food Processing (4)

NUTRITION EMPHASIS

JUNIOR YEAR		Semester
History Requirement	3	I
SOCY 001 or 141—Introduction to Sociology or Sociology of Personality	3	3
Fine Arts or Philosophy requirement	3	
FOOD 060—Meal Management	3	3
CHEM 161, 163—Biochemistry	3	3
ZOOL 014, 015—Human Anatomy and Physiology	4	4
NUTR 121—Science of Nutrition	3	3
Total	16	16

SENIOR YEAR		Semester
NUTR 124, 125—Advanced and Therapeutic Nutrition	3	3
NUTR 130—Special Problems in Nutrition	3	3
Electives ⁶	11	8
Total	14	14

⁶9 hours of the 19 electives must be selected from the following list:

- AGRI 101—Agricultural Biometrics (3)
- PSYC 110—Educational Psychology (3)
- CHEM 019—Elements of Quantitative Analysis (4)
- CHEM 162—Biochemistry Lab. (2)
- CHEM 164—Biochemistry Lab. (2)
- NUTR 140—Maternal, Infant and Child Nutrition (2)
- NUTR 145—International Nutrition (2)
- NUTR 150—History of Nutrition (2)
- FOOD 170—Economics of Food Consumption (3)
- FMCD 170—Communication Skills and Techniques in Home Economics (3)

	Semester	
	I	II
JUNIOR YEAR		
History Requirement	1	
SOCY 001 or 141—Introduction to Sociology or Sociology of Personality	3	
NUTR 121—Science of Nutrition		3
IADM 150—Food Service Organization and Management	2	
IADM 152—Quantity Food Production		3
ZOOL 014, 015—Anatomy and Physiology	4	4
BSAD 020—Accounting	3	
BSAD 021—Accounting		3
Electives		2
Total	15	15

*Students not planning to meet academic requirements for ADA may substitute up to five additional courses in business administration of the social sciences.

SENIOR YEAR		
IADM 151—Quantity Food Purchasing	3	
IADM 152—Food Service Personnel Administration		2
IADM 155—Food Service Equipment and Planning	2	
BSAD 180 or ECON 160—Business Law or Labor Economics	3	
IADM 130 or 140—Special Problems or Practicum in Institution Administration		3
History Requirement	3	
Fine Arts or Philosophy requirement		3
Electives	3	7
Total	14	15

DIETETIC EMPHASIS

	Semester	
	I	II
JUNIOR YEAR		
NUTR 121—Science of Nutrition		3
CHEM 161, 163—Biochemistry	3	3
ZOOL 014, 015—Anatomy and Physiology	4	4
FOOD 060—Meal Management	3	
History Requirement	3	3
IADM 150—Food Service Organization and Management	3	
IADM 152—Quantity Food Production		3
Total	16	16

SENIOR YEAR		
NUTR 124, 125—Advanced and Therapeutic Nutrition	3	3
IADM 151—Quantity Food Purchasing	3	
IADM 153—Food Service Personnel Administration		2
IADM 155—Food Service Equipment and Planning	2	
PSYC 110—Educational Psychology		3
Fine Arts or Philosophy requirement	3	
SOCY 001 or 141—Introduction to Sociology or Sociology of Personality		3
Electives	3	3
Total	14	14

FOOD, NUTRITION, AND INSTITUTION ADMINISTRATION

Professor: Prather.

Associate Professors: Ahrens and Butler.

Assistant Professors: Bangs, Eheart, Wang, Zallen.

Instructors: Blyler, Knighton, Matter, Niffenegger, VanEgmond.

FOOD

FDNT 005. FOOD AND NUTRITION OF INDIVIDUALS AND FAMILIES. (3)

Two lectures and one two-hour laboratory period a week. Consent of instructor. A study of food in contemporary living. The economic, social and esthetic implications of food as well as its nutritive value. Selection and use of food in relation to eating habits, health, and well-being of the individual. Survey of meal preparation and service applied to family situations.

FDNT 050. PROFESSIONAL ORIENTATION. (1)

Second semester. A series of lectures introducing the student to the broad field of careers in food, nutrition, dietetics, and institution administration. Includes trends, role of related sciences, educational and personal requirements, ethics, and opportunities in each professional area.

FOOD 010. SCIENTIFIC PRINCIPLES OF FOOD. (3)

Two lectures and one two-hour laboratory period a week. Prerequisites, FDNT 005 or NUTR 020, and CHEM 008 or concurrent. Study of basic scientific principles as applied to food preparation processes. For non-departmental majors.

FOOD 052, 053. SCIENCE OF FOOD PREPARATION. (3, 3)

One lecture and two two-hour laboratory periods a week. Prerequisites, FDNT 005, CHEM 009 or concurrent. Com-

position and structure of food with study of the fundamental principles involved in food preparation. Especially designed for departmental majors.

FOOD 060. MEAL MANAGEMENT. (3)

Two lectures and one three-hour laboratory a week. Prerequisites, FOOD 010 or 052. Retail selection of food commodities in relation to levels of spending; management of family meals through organization of available resources.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

FOOD 130. SPECIAL PROBLEMS IN FOODS. (2-3)

First or second semester. Prerequisites, FOOD 152 and consent of instructor. Individual selected problems in the area of food science.

FOOD 152. ADVANCED FOOD SCIENCE. (3)

First semester. Three lectures per week. Prerequisites, FOOD 052, 053, CHEM 161 or concurrently. Chemical and physical properties of food as related to consumer use in the home and institutions.

FOOD 153. EXPERIMENTAL FOOD SCIENCE. (3)

Second semester. One lecture, two laboratories per week. Prerequisite, FOOD 152 or equivalent. Individual and group laboratory experimentation as an introduction to methods of food research.

FOOD 170. ECONOMICS OF FOOD CONSUMPTION. (3)

Prerequisites, Economics and consent of the instructor. Interrelations of food, population and economic progress; trends in food-consumption patterns; world and local food problems.

FOOD 180. FOOD ADDITIVES. (3)

Alternate years. Prerequisite, FOOD 152 or equivalent. Effects of intentional and incidental additives on food quality, nutritive value and safety. FDA approved additives, GRAS substances, pesticide residues, mycotoxins, antibiotics, and hormones will be reviewed.

FOR GRADUATES

See the Graduate School Catalog for descriptions.

FOOD 200. ADVANCED EXPERIMENTAL FOOD. (3-5)

FOOD 204. NUTRITIONAL AND QUALITY EVALUATION OF FOOD. (3)

FOOD 210. READINGS IN FOOD (3)

FOOD 220. SEMINAR. (1-2)

FOOD 240. FOOD ENZYMES (3)

FOOD 399. RESEARCH. (1-6)

NUTRITION

(See FDNT 005)

NUTR 020. ELEMENTS OF NUTRITION. (3)

Three lectures per week. Fundamentals of human nutrition. Nutrient requirements related to changing individual and family needs. For non-departmental majors.

NUTR 080. NUTRITION FOR HEALTH SERVICES. (3)

Prerequisites, CHEM 008, ZOOL 001. Two lectures and one two-hour laboratory. A study of nutritional status and the effect of food habits and food consumption on family health. Nutritional requirements for individuals in different stages of development. Techniques and procedures for the application of nutrition knowledge with consideration of various economic levels and social backgrounds.

NUTR 121. SCIENCE OF NUTRITION. (3)

Second semester. Prerequisites, ZOOL 1, CHEM 10, 12 or concurrently. Two lectures and one two-hour laboratory. An understanding of the chemical and physiological utilization of nutrients present in food as related to individual human nutritional status; includes digestion and absorption, requirements, deficiencies.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

NUTR 124. ADVANCED NUTRITION. (3)

First semester. Prerequisites, consent of department; ZOOL 001; CHEM 161, 163 or concurrently. Two lectures and one two-hour laboratory. The progress of nutrition as found in the results of current research, with emphasis on interpretation and application.

NUTR 125. THERAPEUTIC NUTRITION. (3)

Second semester. Two lectures and one laboratory period

a week. Prerequisites, NUTR 121, 124. Modifications of the normal adequate diet to meet human nutritional needs in pathological conditions.

NUTR 130. SPECIAL PROBLEMS IN NUTRITION. (2-3)

First or second semester. Prerequisites, NUTR 121 and consent of instructor. Individual selected problems in the area of human nutrition.

NUTR 140. MATERNAL, INFANT AND CHILD NUTRITION. (2)

Two lectures per week. Prerequisite, course in basic nutrition. Nutritional needs of the mother, infant and child and the relation of nutrition to physical and mental growth.

NUTR 145. INTERNATIONAL NUTRITION. (2)

Two lectures a week. Prerequisite, course in basic nutrition. Nutritional status of world population and local, national, and international, programs for improvement.

NUTR 150. HISTORY OF NUTRITION. (2)

Two lectures per week. Prerequisite, course in basic nutrition. A study of the development of the knowledge of nutrition and its interrelationship with social and economic developments.

FOR GRADUATES¹²

See the Graduate School Catalog for descriptions.

NUTR 208. RECENT PROGRESS IN HUMAN NUTRITION. (3)

NUTR 210. READINGS IN NUTRITION. (3)

NUTR 211. PROBLEMS IN NUTRITION. (3-5)

NUTR 212. NUTRITION FOR COMMUNITY SERVICES. (3)
(Staff)

NUTR 220. SEMINAR. (1-2)

NUTR 221. INTERMEDIARY METABOLISM IN NUTRITION (3)

¹²Prerequisite for all 200 courses in Food and Nutrition, consent of department.

NUTR 285. HUMAN NUTRITIONAL STATUS. (3)

NUTR 399. RESEARCH. (1-6)

**FOR ADVANCED UNDERGRADUATES AND GRADUATES
INSTITUTION ADMINISTRATION**

IADM 130. SPECIAL PROBLEMS IN FOOD SERVICE. (2-3)

First or second semesters. Prerequisites, senior standing and consent of instructor. Individual selected problems in the area of food service.

IADM 140. PRACTICUM IN INSTITUTION ADMINISTRATION. (3)

Prerequisite, 5 credits in IADM and consent of department. In-service training and practical experience, totaling at least 240 hours, in an approved food service.

IADM 150. FOOD SERVICE ORGANIZATION AND MANAGEMENT. (3)

First semester. Introduction to the food services, principles of organization, management, financial control, and technical operations. Records, reports and organization charts included.

IADM 151. QUANTITY FOOD PURCHASING. (3)

First semester. Prerequisite, FOOD 052, introductory accounting recommended. Food selection and the development of integrated purchasing programs. Standards of quality; the marketing distribution system.

IADM 152. QUANTITY FOOD PRODUCTION. (3)

Second semester. Two hours of lecture and one three-hour laboratory a week. Prerequisites, FOOD 052, or consent of instructor. Scientific principles and procedures employed in food preparation in large quantity. Laboratory experience in management techniques in quantity food production and service.

IADM 153. FOOD SERVICE PERSONNEL ADMINISTRATION. (2)

Second semester. Prerequisite, IADM 150. Principles of personnel administrative in food services; emphasis on personnel selection; supervision and training; job evaluation, wage and payroll structure, current labor regulations, and interpersonal relationships and communications.

IADM 154. SCHOOL FOOD SERVICE. (3)

Two lectures and one morning a week for field experience in a school food service. Prerequisites: FOOD 10, or 52, 53, and NUTR 121, or consent of instructor. Study of organization and management, menu planning, food purchasing, preparation, service, and cost control in a school lunch program.

IADM 155. FOOD SERVICE EQUIPMENT AND PLANNING. (2)

First semester. Two lectures a week. Prerequisite, con-

sult of instructor. Equipment design, selection, maintenance and efficient layout, relation of the physical facility to production and service.

IADM 181, 182. ADMINISTRATIVE DIETETICS. (3, 3)

(Open only to students accepted into and participating in the U.S. Army Dietetic Internship program at Walter Reed General Hospital.) Application of management theory through guided experience in all aspects of hospital dietary department administration.

IADM 183. APPLIED DIET THERAPY. (3)

(Open only to students accepted into and participating in the U.S. Army Dietetic Internship program at Walter Reed General Hospital.) Application of principles of normal and therapeutic nutrition in the total medical care and instruction of patients.

For Graduates

See the Graduate School Catalog for descriptions.

IADM 200. FOOD SERVICE ADMINISTRATION. (3)

IADM 210. READINGS IN FOOD ADMINISTRATION. (3)

IADM 235. COMPUTER APPLICATION IN FOOD SERVICE. (3)

IADM 245. SANITATION AND SAFETY IN FOOD SERVICE. (3)

IADM 255. EXPERIMENTAL QUANTITY FOOD PRODUCTION. (3)

IADM 399. RESEARCH. (1-6)

DEPARTMENT OF TEXTILES AND CLOTHING

Students may major in one of three options. Each option offers diverse professional opportunities. Through supportive courses students add to their major studies a concentration of work in an allied area such as art, business, family services, journalism, sciences, or speech and dramatic art.

In the **Textile Science** option emphasis is placed on the scientific and technological aspects of the field. Graduates of this option will be qualified for employment in many facets of the textile industry including research and testing laboratories, consumer technical service and marketing programs, and in buying and product evaluation.

In the **Textiles and Clothing** option emphasis is placed on the cultural, economic and professional aspects of the field. Students are prepared for careers in fashion merchandising and promotion, instruction and demonstration with business and educational organizations, fashion designing, consumer services, and technical or managerial positions with a clothing manufacturer.

Graduates of the **Textile Marketing** option will be able to function as communicators between the textile producer and consumer in merchandising and fashion promotion, in consumer education programs in business, and in textile product promotion and development.

Men majoring in either of these curricula are allowed substitutions for certain required courses.

TEXTILES CURRICULUM

Freshman Year (Common to all options)	Semester Hours
English 001 and 003.....	3 3
Math 003, 010 or 018.....	3-4 ...
APDS 001.....	3 ...
Speech 007 or 001.....	... 2-3
FDNT 005.....	... 3
Textiles in Contemporary Living (TXCL 005).....	3 ...
Physical Science (Chem 8,9 or 18.20).....	4 4
Health 005.....	... 2
Physical Education.....	1 1
	17-18 15-16

TEXTILES AND CLOTHING OPTION

Sophomore Year	
English 004.....	3
Economics 31 and 32.....	3
Psychology 001.....	3
FMCD 050.....	3
Apparel I and II (CLTH 010, 021).....	3
Intro. to Textile Materials (TEXT 050).....	3
Textile Materials: Evol. and Char. (TEXT 055).....	3
Elective.....	3
	<hr/>
	15

Junior Year	
Sociology 001.....	3
Apparel Design: Draping (CLTH 120) or Apparel Design: Experimental Processes (CLTH 122).....	3
Textile Science: Chem. Structure and Prop. of Fibers (TEXT 102) or Environmental Textiles (TXCL 128).....	3
History.....	3
Fine Arts Requirement.....	3
Marketing (BSAD 149).....	3
Home Economics Electives.....	6
Electives.....	6
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	30

Senior Year	
Clothing and Human Behavior (TXCL 141).....	3
Economics of Text. and Apparel Industries (TEXT 165).....	3
History.....	3
Home Economics Elective.....	3
Electives.....	18-20
	<hr/>
	30-32

TEXTILE MARKETING OPTION

Sophomore Year		Semester Hours
English 004.....	3	...
Economics 31 and 32.....	3	3
Psychology 001.....	3	3
FMCD 050.....	3	...
Apparel I and II (CLTH 010 and CLTH 021) or Home Economics Electives.....	3	3
Introduction to Textile Materials (TEXT 050).....	3	3
	<hr/>	
	15	15

Junior Year	
Sociology 001.....	3
Textile Science: Chem. Struc. and Prop. of Fibers (TEXT 102) or Environmental Textiles (TXCL 128).....	3
Fine Arts Requirement.....	3
History.....	6
Marketing (BSAD 149).....	3
Journalism 152, 166, 165 or 170.....	3
RATV 115 (or alternative).....	3
Electives.....	6
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	30

Senior Year	
Clothing and Human Behavior (TXCL 141).....	3
Econ. of the Textile and Apparel Industries (TEXT 165).....	3
Statistics (BSAD 130).....	3
BSAD 151, 156 or 158.....	3
Electives.....	18-21
	<hr/>
	30-33

TEXTILE SCIENCE OPTION

Sophomore Year		Semester Hours
English 004.....	3	...
FMCD 050.....	3	3
Psychology 001.....	3	3
Introduction to Textiles (TEXT 050).....	3	...
Textile Materials: Evol. and Char. (TEXT 055).....	3	3
Chemistry 10, 12, 14, 16 or 22, 24, 25, 26.....	5	5
Math 019, 020 or 010, 011.....	3-4	3-4
	<hr/>	
	14-15	17-18

Junior Year	
Fine Arts Requirement.....	3
Physics 010, 011 or 030, 031.....	3-4
Textile Science: Chem. Struc. and Prop. of Fibers (TEXT 102).....	3
Sociology 001.....	3
Statistics.....	3
Economics 31 and 32.....	3
Electives.....	3
	<hr/>
	15-16

Senior Year	
Textile Science: Finishes (TEXT 154) or Textile Science: Chem. and Phys. of Fibers and Polymers (TEXT 150).....	3
Econ. of Textile and Apparel Industries (TEXT 165).....	3
History.....	6
Electives.....	15-18
	<hr/>
	27-30

TEXTILES AND CLOTHING

PROFESSOR AND HEAD: Smith.
ASSOCIATE PROFESSORS: Dardis.
ASSISTANT PROFESSORS: Heagney, Spivak, Wilbur.
INSTRUCTORS: Eyler, Jones, Pledger.

TXCL 005. TEXTILES IN CONTEMPORARY LIVING (3)
 Three lectures per week. A multidisciplinary approach to the consumer in the near environment with emphasis on apparel and environmental textiles.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

TXCL 128. ENVIRONMENTAL TEXTILES (3)
 Three lectures per week. Prerequisite, TEXT 050. A consideration of the properties, performance, and care of textile materials other than clothing used in the near environment. Included are furnishings, floor coverings, wall treatments, and recreational and structural materials. Environmental conditions such as soiling, heat, radiation, weathering, aging, moisture and solvents will be considered.

TXCL 141. CLOTHING AND HUMAN BEHAVIOR. (3)
 Fall semester. Three lectures per week. Prerequisites, PSYC 001, SOCY 001. An exploration of socio-psychological approaches to the study of clothing in relation to human behavior. Social and psychological theories will be examined as possible framework for the study and investigation of clothing.

TXCL 145. HISTORY OF COSTUME I. (3)
 Fall semester. Three lectures per week. Prerequisites, TXAP 420. University History requirements. The Wrap-style dress. A critical study of the various forms of dress; analyzing shape and form of garments and the component parts of which they are made, taking special note of the distinctive styles and unique shapes which help distinguish one period from another; relating the history of costume to events, to achievements, to the social attitudes and development of the various times and cultures of man.

TXCL 147. HISTORY OF COSTUME II. (3)
 Spring semester. Three lectures per week. Prerequisites, same as for History of Costume I. The Shaped-style dress, a critical study of the various forms of dress, analyzing shape and form of garments and the component parts of which they are made, taking special note of the distinctive styles and unique shapes which help distinguish one period from another; relating the history of costume to events to achievements, to the social attitudes and development of the various times and cultures of man.

TXCL 185. JUNIOR HONORS SEMINAR. (1)
 Spring semester. Limited to juniors in the Departmental Honors Program. Readings, reports, and discussion of selected topics.

TXCL 188. SENIOR HONORS THESIS. (3-4)
 Limited to students in the Departmental Honors Program. An independent literary, laboratory, or field study, conducted throughout the student's senior year. Student should register in both fall and spring.

TXCL 198. SPECIAL STUDIES FOR UNDERGRADUATES. (2-4)
 Independent study by an individual student or by a group of students in advanced work not otherwise provided in the department. Students must prepare a description of the study they wish to undertake. The plan must be approved by the faculty directing the study and the department head.

TEXTILES

TEXT 050. INTRODUCTION TO TEXTILE MATERIALS. (3)
 Two lectures and one two-hour laboratory per week. An introduction to the properties of textile materials. Behavior of textile materials are observed in relation to environmental conditions which influence aesthetics, comfort and performance.

TEXT 055. TEXTILE MATERIALS: EVALUATION AND CHARACTERIZATION. (3)
 Two lectures and one two-hour laboratory per week. Prerequisite TEXT 050. An investigation of the behavior of

textile materials in relation to environmental factors and conditions of service influencing performance, comfort, and aesthetics. Laboratory experience provides an opportunity to explore a variety of textile materials and methods of evaluation.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

TEXT 102. TEXTILE SCIENCE: CHEMICAL STRUCTURE AND PROPERTIES OF FIBERS. (3)

Two lectures and one three-hour laboratory per week. Prerequisites, TEXT 055 and CHEM 009 or 020. The chemical structure, properties and reactions of the major classes of natural and man-made fibers. Emphasis is placed upon the relationship between molecular structure and physical properties of fibers and fabrics. Laboratory includes chemical identification of fibers, preparation of selected fibers, and examination of chemical reactions and properties of fibers.

TEXT 150. TEXTILE SCIENCE: CHEMISTRY AND PHYSICS OF FIBERS AND POLYMERS. (3)

Two lectures and one three-hour laboratory per week. Prerequisites, Consent of instructor. The theory of fiber structure and the relationship between the chemical and physical properties of natural and man-made fibers. Laboratory includes study of performance of textile materials in relation to their chemical and physical properties.

TEXT 153. HISTORY OF TEXTILES. (3)

Three lectures per week. Prerequisites, TEXT 050 (150) or consent of instructor. A study of historic and contemporary fibers and fabrics. Emphasis will be placed on the analysis of designs and techniques of decorating fabrics and the relationship of textiles to the aesthetic and developmental cultures of society.

TEXT 154. TEXTILE SCIENCE: Finishes. (3)

Two lectures and one three-hour laboratory per week. Prerequisites, TEXT 102 or consent of instructor. A study of the chemical reactions and mechanisms involved in imparting water repellance, crease resistance and crease recovery properties, shrink-resistance, flame resistance, soil-release properties, and moth and mildew resistance to textile materials. Properties of the finished material which effect its end-use will also be examined. Laboratory work includes the application of finishes, identification of finishes and a study of the properties of finished fabrics

TEXT 165. ECONOMICS OF THE TEXTILE AND APPAREL INDUSTRIES. (3)

Fall semester. Three lectures per week. Prerequisites, ECON 37 in Fall, 1970 only or ECON 31 and 32. Trends in the production and consumption of textiles and apparel; economic analysis of the textile and apparel industries; factors affecting changes in output, price, location, and market structure.

TEXT 185. JUNIOR HONORS SEMINAR. (1)

Spring semester. Limited to juniors in the Departmental Honors Program. Readings, reports, and discussion of selected topics.

TEXT 188. SENIOR HONORS THESIS. (3-4)

Limited to students in the Departmental Honors Program. An independent literary, laboratory, or field study, conducted throughout the student's senior year. Student should register in both fall and spring.

TEXT 198. SPECIAL STUDIES FOR UNDERGRADUATES. (2-4)

Fall and spring semesters. Independent study by an individual student or by a group of students in advanced work not otherwise provided in the department. Students must prepare a description of the study they wish to undertake. The plan must be approved by the faculty directing the study and the department head.

CLOTHING

CLTH 010. APPAREL I. (3)

Six hours of laboratory per week. A study of the fundamental principles and processes of pattern design and apparel construction. Students will relate flat pattern and construction techniques to apparel design problems.

CLTH 011. EXPERIMENTAL CLOTHING DESIGN. (2)

(Fall, 1970 only). Two laboratory periods a week. Prerequisite, CLTH 010. Application of principles and methods of clothing construction with emphasis on management and analysis of values to be achieved.

CLTH 021. APPAREL II. (3)

Six hours of laboratory per week. Prerequisites, CLTH 010 and 011 or Apparel I and TEXT 050. A continuation of Apparel I involving more advanced problems. Emphasis is placed on successful integration of pattern design with construction processes in contemporary fabrics.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

CLTH 120. APPAREL DESIGN: DRAPING. (3)

Two three-hour laboratory periods per week. Prerequisites, CLTH 021 (222) or Apparel I, APDS 001. Students explore pattern design through draping on the human form. Emphasis is on the interrelationships between material, design, and form.

CLTH 122. APPAREL DESIGN: EXPERIMENTAL PROCESSES. (3)

Two three-hour laboratory periods per week. Prerequisites, CLTH 021 or Apparel II and TEXT 102 and APDS 001. Processes are related to fiber and fabric characteristics, style, and end-use. Opportunities are provided for students to: 1) learn ways of tailoring by machine and by hand; 2) explore, adapt, and create new processes with modern textile materials; and 3) evaluate results in terms of design quality.

FOR GRADUATES

See the Graduate School Catalog for descriptions.

TEXT 200. SPECIAL STUDIES IN TEXTILES. (2-4)

CLTH 220. SPECIAL STUDIES IN CLOTHING. (2-4)

TXCL 230. SEMINAR. (1)

TXCL 232. ECONOMICS OF TEXTILES AND CLOTHING. (3)

TXCL 233. SYNTHESIS OF BEHAVIORAL SCIENCE CONCEPTS IN TEXTILES AND CLOTHING. (3)

TXCL 399. RESEARCH. (1-6)

DEPARTMENT OF FAMILY AND COMMUNITY DEVELOPMENT

In the fall of 1968 the areas of (1) General Home Economics, (2) Extension, (3) Family Life and Management, and (4) Home Economics Education in this college were integrated as one department, the Department of Family and Community Development. Commitments to students who entered the General or Extension programs prior to or at registration in the spring of 1969 will be fulfilled, but future students will enroll in one of the newly devised areas of concentration within the Department of Family and Community Development: Family Studies, Community Studies, Management and Consumer Studies, or Home Economics Education.* Students who formerly would have enrolled in the Extension curriculum will enroll in the Community Studies emphasis.

These areas of concentration will prepare students for roles as family life educators, extension specialists, consumer consultants, mental health team members, and teachers of home economics at the secondary level.

FAMILY STUDIES CURRICULUM

Supportive courses will be selected from either Home Economics or Sociology-Psychology.

Freshman Year	Semester	Hours
ENGL 001,003—Composition and Literature	6
PSYC 001	3
FMCO 005—Introduction to Family Living	3
APDS 001—Fundamentals of Design or	3
APDS 004—Art History	3
SOCY 001—Sociology of American Life	3
FDNT 005—Food and Nutrition of Individuals and Families	3
or NUTR 020	3
TEXT 105—Textiles in Contemporary Living	3
Biological Science	4
Health and Physical Education Requirements	4
Total	32
Sophomore Year	Semester	Hours
ENGL 004—Composition and World Literature	3
Physical Science	3-4
SPCH 007 or 001—Public Speaking	2-3
ECON 007—Fundamentals of Economics	3
Fine Arts OR Philosophy	3

*Students in Home Economics Education may enroll in either the College of Home Economics or the College of Education.

Math Requirement	3	
FMCD 050—Decision Making in Family Living	3	
FMCD 060—Family Relations	3	
Supportive Courses	6	
Electives	3	
Total	32-34	
Junior Year		
FMCD 131—Family Crisis and Disintegration	3	Semester Hours
FMCD 130—Family Patterns	3	
EDHD 105,106 OR 107—Human Development	3	
History Requirement	6	
FMCD 132—The Child in the Family	3	
Supportive Courses	6	
Electives	6	
Total	33	
Senior Year		
FMCD 188—Legal Aspects of Family Problems	3	Semester Hours
FMCD 185—Introduction to Family Counseling	3	
FMCD 145 or 146—Practicum or Living Experience with Families	3-6	
Supportive Courses	6	
FMCD 180 or Elective	2	
Electives	10	
Total	27-30	

COMMUNITY STUDIES CURRICULUM

Supportive courses will be chosen from the following areas: Home Economics courses, Sociology and/or Psychology or Family Life courses in the Department of Family and Community Development beyond the core requirements.

Government and/or Economics, or management and consumer problems courses in the Department of Family and Community Development beyond the core requirements.

Freshman Year		
ENGL 001,003—Composition and Literature	6	Semester Hours
Math Requirement	3	
SOCY 001—Introduction to Sociology	3	
FDN 005—Food & Nutr. of Individuals & Families OR NUTR 020	3	
FMCD 005—Introduction to Family Living	3	
Biological Science	4	
APDS 001—Fund. of Design OR APDS 004—Art History	3	
TEXT 105—Tex. in Contemporary Living	3	
PSYC 001—Introduction to Psychology	4	
Physical Education and Health Requirement	4	
Total	35	
Sophomore Year		
ENGL 004—World Literature	3	Semester Hours
Fine Arts or Philosophy	3	
CHEM 001 (or other Science)	3-4	
ECON 037—Fund. of Economics	3	
FMCD 050—Decision Making in Family Living	3	
SPCH 007 or 001—Public Speaking	2-3	
FOOD 010—Scientific Principles of Food	3	
Supportive Courses	6	
Electives	3	
Total	29-30	
Junior Year		
FMCD 130—Family Patterns	3	Semester Hours
FMCD 141—Personal and Family Finance	3	
FMCD 145—Practicum with Families OR FMCD 144—Residence Experience OR FMCD 146—Living Experiences with Families	3	
SOCY 071—Dynamics of Social Interaction	3	
FOOD 060—Meal Management OR FOOD 170—Economics of Food Consumption	3	
Supportive Courses	6	
Electives	9	
Total	30	
Senior Year		
FMCD 180—Professional Seminar or elective	2	Semester Hours
FMCD 170—Communication Skills	3	
History Requirement	6	
Supportive Courses	12	
Electives	6	
Total	29	

MANAGEMENT AND CONSUMER STUDIES CURRICULUM

Supportive courses will be selected in blocks from Economics, Business Administration, Public Relations, Sociology, Psychology or Family Life.

Freshman Year		
ENGL 001,003—Composition and Literature	6	Semester Hours
Math Requirement	3	
TEXT 105—Textiles in Contemporary Living	3	
SOCY 001—Introduction to Sociology	3	
PSYC 001—Introduction to Psychology	3	
CHEM 001, 003 OR Physical and Biological Science Requirement	8	
FDNT 005—Food & Nutr. of Individuals & Families OR NUTR 020	3	
Health & Physical Education Requirements	4	
Total	33	
Sophomore Year		
SPCH 007 or 001—Public Speaking	2-3	Semester Hours
APDS 001—Fundamentals of Design OR APDS 004—Art History	3	
FMCD 050—Decision Making in Family Living	3	
History Requirement	6	
ENGL 004—World Literature	3	
Fine Arts or Philosophy	3	
Supportive Courses	6	
Electives	3	
Total	29-30	

Junior Year		
FMCD 130—Family Patterns	3	Semester Hours
FMCD 080—Household Equipment & Space Utilization OR HSAD 041—Family Housing OR TXCL 128—Fund. of Home Furnishings	3-4	
FOOD 066—Meal Management OR FOOD 170—Food Economics	3	
FMCD 180—Professional Seminar or elective	2	
Supportive Courses	9	
Electives	9	
Total	29-30	

Senior Year		
FMCD 132—The Child in the Family	3	Semester Hours
FMCD 141—Personal and Family Finance	3	
FMCD 143—Consumer Problems	3	
FMCD 144—Resident Experience OR FMCD 145—Practicum	3	
CLTH 100—Family Clothing OR TEXT 050—Consumer Textiles	3	
Statistics	3	
Supportive Courses	9	
Electives	6	
Total	33	

HOME ECONOMICS EDUCATION CURRICULUM

Students electing this curriculum may be registered in the College of Home Economics or in the College of Education.

The home economics education curriculum is designed for students who are preparing to teach home economics in the secondary schools. It includes study of each area of home economics and the supporting disciplines.

Fifteen hours of the total curriculum include an area of concentration which must be unified in content and which will be chosen by the student.

Freshman Year		
ENGL 001 or 021—Composition	1	Semester
SOCY 001—Introduction to Sociology	3	II
FMCD 005—Introduction to Family Living	3	
FDNT 005—Food and Nutr. of Indiv. & Fam. OR NUTR 020—Elements of Nutrition	3	
MATH requirement	3-4	
PHED	1	
PSYC 001—Introduction to Psychology	3	
APDS 001—Fundamentals of Design	3	
ENGL 003—World Literature	3	
HLTH 005—Science and Theory of Health	2	
TEXT 105—Textiles in Contemp. Living	3	
Total	16-17	15
Sophomore Year		
ENGL 004—World Literature	3	
HIST	3	
CHEM 001—General Chemistry	4	
HSAD 040—Design and Furnishings in the Home OR HSAD 041—Family Housing	3	
SPCH 001—Public Speaking	3	
CLTH 010—Principles and Methods of Clothing Design (or CLTH 011)	2	
HIST	3	
CHEM 003—General Chemistry	4	
FOOD 010—Scientific Principles of Food	3	
Fine Arts or Philosophy Requirement	3	
FMCD 050—Decision Making in Family Living	3	
Total	16	18

Junior Year		
EDUC 110—Human Development and Learning	6	
FOOD 060—Meal Management	3	
FMCD 141—Personal and Family Finance or alternative Area of concentration*	3	
FMCD 132—The Child in the Family OR EDHD 107—Growth and Development in Early Childhood	3	
ECON 037—Fundamentals of Economics	3	
EDSE 125—Problems in Teaching Home Economics	3	
ZOOD 001 or MICB 001	4	
Area of concentration**	3	
Total	15	16
		Semester
Senior Year	1	II
EDSE 140—Curriculum, Instruction & Observation ¹⁰	3	
EDSE 145—Principles & Methods of Secondary Education	3	
EDSE 148—Teaching Secondary Vocational Home Economics	8	
FMCD 144—Resident Experience in Home Management OR FMCD 145—H. M. Practicum	3	
FMCD 060—Family Relations OR SOCY 164—The Family & Society	3	
EDUC 111—Foundations of Education	3	
Area of Concentration*	9	
HOEC 180—Professional Seminar II	2	
Total	17	17

FAMILY AND COMMUNITY DEVELOPMENT

Associate Professors: Brown, Lemmon, Wilson.
Assistant Professors: Brabble, Churaman, Olson, Orvedal.
Instructors: Garrison, MacMahon.
Lecturer: Mannino.

FMCD 005. INTRODUCTION TO FAMILY LIVING. (3)

Interrelations of the individual and his family through the various stages of the family life cycle; underlying principles of guidance of children as applied to home situations.

FMCD 050. DECISION MAKING IN FAMILY LIVING. (3)

Designed for second, third, or fourth semester students. Decision making in relation to family values, philosophies, goals, and resources, and general socio-economic conditions.

FMCD 060. FAMILY RELATIONS. (3)

Prerequisites, PSYC 001; FMCD 005. Study of factors influencing establishment and maintenance of satisfying interpersonal relations throughout the family life cycle as affected by management in the home.

FMCD 080. HOUSEHOLD EQUIPMENT AND SPACE UTILIZATION. (4)

2 lectures, 2 laboratory sessions. Study of household equipment and space utilization as they affect family members in task performance. Emphasis is on the consumer's viewpoint, supported by laws of the physical sciences.

FOR ADVANCED UNDERGRADUATES AND GRADUATES

FMCD 130. FAMILY PATTERNS. (3)

Prerequisite, FMCD 060 and PSYC 001. A study of family patterns within the sub-cultures of America and various other cultures. Emphasis will be given to those patterns and life styles which evolve as adaptations to cultural demands.

FMCD 131. FAMILY CRISES AND DISINTEGRATION. (3)

Prerequisite, PSYC 001. A study of significant changes within the family setting which ultimately require major adjustments in inter-personal and intra-personal relations.

FMCD 132. THE CHILD IN THE FAMILY. (3)

Three lectures. Prerequisite, PSYC 001. Study of the child from prenatal stage through adolescence, with emphasis on responsibility for guidance in the home. Biological and psychological needs as they affect the child's relationship with his family and peers.

*Area of Concentration: 15 semester hours

A) Including maximum of two home economics courses, with the remainder of the 15 hours in supporting behavioral, physical and biological sciences, philosophy, special education, or human development.

B) Of the 15 hours, 9 must be upper division.

¹⁰Student teaching block

¹¹Required only of students registered in College of Home Economics.

FMCD 141. PERSONAL AND FAMILY FINANCE. (3)

Study of individual and family finances with particular emphasis upon financial planning, savings, insurance, investments, income taxes and use of credit.

FMCD 143. CONSUMER PROBLEMS. (3)

Prerequisite, FMCD 050. Consumer practices of American families. Merchandising practices as they affect the consumer. Organizations and laws in the interest of the consumer.

FMCD 144. RESIDENT EXPERIENCE IN HOME MANAGEMENT. (3)

Prerequisites, FMCD 050, 080, 141, or 143; FOOD 060; or equivalent. Residence from four to nine weeks in the home management center. Experience in planning, coordinating, and participating in the activities of a household, composed of a faculty member, a group of students, and possibly an infant on a part-time basis. Students not living in dormitories are billed at the rate of \$5.00 a week for a room in the Home Management Residence. A charge of \$40.00 for food and supplies is assessed each student. Dormitory residents will be refunded a prorated amount for meals.

FMCD 145. PRACTICUM WITH FAMILIES CHILDREN HOME MANAGEMENT. (3)

A planned supervised experience with families through participation and observation will be arranged for each student. The practicum is designed to increase the student's awareness and understanding of the dynamics of family resource management.

FMCD 146. LIVING EXPERIENCES WITH FAMILIES. (3-6)

a. Domestic Intercultural

b. International Intercultural

Prerequisites, FMCD 080, ANTH 001, FMCD 050; optional, language competence. An individual experience in living with families of a sub-culture within the U.S. or with families of another country, participating in family and community activities. A foreign student may participate and live with an American family.

FMCD 170. COMMUNICATION SKILLS AND TECHNIQUES IN HOME ECONOMICS. (3)

Principles and techniques for professional demonstration and presentation of home economics and its related areas with selected experiences in television, radio, creative writing, and photography.

FMCD 180. PROFESSIONAL SEMINAR. (2)

Survey of professional opportunities, responsibilities and trends in each departmental area of emphasis. Concentration will be on the development of personal qualities and professional ethics essential for effective occupational performance.

FMCD 185. INTRODUCTION TO FAMILY COUNSELING. (3)

Prerequisites, PSYC 001 and 005; FMCD 005 and 131. Basic principles of counseling and its effect on family action.

FMCD 188. LEGAL ASPECTS OF FAMILY PROBLEMS. (3)

Laws and legal involvement that directly affect specific aspects of the family: adoption, marriage, estate planning, property rights, wills, etc. Emphasis will be given to the involvement of a professional lawyer; principles and interpretation of the law.

FMCD 190. SPECIAL TOPICS. (1-3)

a. Family studies

b. Community studies

c. Management and consumer studies

For Graduates

See the Graduate School Catalog for descriptions.

HOEC 201. METHODS OF RESEARCH IN HOME ECONOMICS. (3)

HOEC 202. INTEGRATIVE ASPECTS OF HOME ECONOMICS. (2)

HOEC 290. SPECIAL TOPICS. (1-6)

HOEC 399. THESIS RESEARCH. (1-6)

HOME ECONOMICS EDUCATION

EDSE 125. PROBLEMS IN TEACHING HOME ECONOMICS. (3)

A study of the managerial aspects of teaching and administering a homemaking program; the physical environment, organization and sequence of instructional units; resource materials; evaluation; home projects.

EDSE 126. EVALUATION OF HOME ECONOMICS. (3)

The meaning and function of evaluation in education; the

development of a plan for evaluating a homemaking program with emphasis upon types of evaluation devices, their construction and use.

EDSE 140. CURRICULUM, INSTRUCTION, AND OBSERVATION. (3)

The place and function of home economics education in the secondary school curriculum. Philosophy of education for home and family living; characteristics of adolescence, construction of source units, lesson plans, and evaluation devices; directed observations in junior and senior high school home economics departments.

EDSE 148E. TEACHING VOCATIONAL HOME ECONOMICS IN THE SECONDARY SCHOOLS. (2-8)

First and second semesters.

FOR GRADUATES

See the Graduate School Catalog for descriptions.

EDSE 260. SEMINAR IN HOME ECONOMICS EDUCATION. (2)

EDSE 261. TRENDS IN THE TEACHING AND SUPERVISION HOME ECONOMICS. (2-4)

DEPARTMENT OF HOUSING AND APPLIED DESIGN

The fundamental purpose of programs of concentration in this area is to provide a broad, general education in addition to individually and professionally oriented instruction in design. Dependent upon elected allied areas of study, professional opportunities include: design of interiors, fashions, advertising, home furnishings; illustration of fashions and interiors; sales promotion or retailing of wearing apparel, homes and home furnishings; fashion or home furnishings journalism; housing consultant, urban development programs.

ADVERTISING DESIGN CURRICULUM

		Semester		II
Freshman Year				
ENGL 001 or 021—Composition	3		3	
ENGL 003—World Literature				3
Math Requirement	3-4			
Science Requirement			3-4	
SPCH 007 or 001—Public Speaking	2-3			
ART 016—Drawing I	3			
HLTH 005—Science and Theory of Health	2			
Physical Education	1		1	
EDIN 001—Mechanical Drawing			3	
FDNT 005—Food and Nutrition of Individuals and Families or NUTR 020—Elements of Nutrition				3
APDS 001—Fundamentals of Design	3			3
APDS 002—Design II				3
Total	17-19		16-17	

		Semester		II
Sophomore Year				
ENGL 004—World Literature	3			
PSYC 001—Introduction to Psychology	3			
ECON 037—Fundamentals of Economics			3	
Science Requirement			3-4	
FMCD 050—Decision Making in Family Living	3			
TEXT 105—Textiles in Contemporary Living	3			
APDS 010—Presentation Techniques				3
APDS 011—Action Drawing—Fashion Sketching				3
APDS 030—Silk Screen Printing				3
APDS 038—Photography	2			
APDS 003—Design III—3-Dimensional Design	3			
Total	17		15-16	

		Semester		II
Junior Year				
History Requirement	3		3	
SOCY 001—Sociology of American Life	3			3
ART 178—Twentieth Century Art	3			
EDIN 034—Graphic Arts I	3			
APDS 120—Fashion Illustration	3			
APDS 130—Typography and Lettering	3			
APDS 132—Advertising Layout	3			
APDS 136—Display Design	2			
Restricted Elective				3
Total	15		15	

		Semester		II
Senior Year				
PHIL 147—Philosophy of Art	3			
APDS 134, 135—Advanced Problems in Advertising Design	3		3	

APDS 138—Advanced Photography			2	
APDS 180—Professional Seminar				3
Restricted Electives			3	3
Free Electives			6	3-4
Total	15		13-14	

COSTUME CURRICULUM

		Semester		II
Freshman Year				
ENGL 001 or 021—Composition	3		3	
Fine Arts Requirement	3			
SOCY 001—Sociology of American Life	3			
ART 016—Drawing I	3			
HLTH 005—Science and Theory of Health	2			
Physical Education	1		1	
Science Requirement			3-4	
TEXT 105—Textiles in Contemporary Living	3			
APDS 001—Fundamentals of Design	3			
APDS 002—Design II				3
APDS 010—Presentation Techniques				3
Total	15		16-17	

		Semester		II
Sophomore Year				
ENGL 003, 004—World Literature	3		3	
Math Requirement	3-4			
Science Requirement			3-4	
SPCH 007 or 001—Public Speaking				2-3
FDNT 005—Food and Nutrition of Individuals and Families or NUTR 020—Elements of Nutrition	3			
FMCD 050—Decision Making in Family Living				3
APDS 003—Design III—3-Dimensional Design	3			
APDS 011—Action Drawing—Fashion Sketching	3			
APDS 020—Introduction to Fashion Design				3
Total	15-16		14-16	

		Semester		II
Junior Year				
PSYC 001—Introduction to Psychology	3		3	
History Requirement	3			3
ART 061—History of Art	3			
ECON 037—Fundamentals of Economics			3	
APDS 038—Photography	2			
APDS 120—Fashion Illustration	3			
APDS 121—Fashion Design and Illustration				3
APDS 130—Typography and Lettering				3
Restricted Electives	3			3
Total	17		15	

		Semester		II
Senior Year				
APDS 122, 123—Advanced Costume	2		2	
APDS 132—Advertising Layout	3			
APDS 136—Display Design				3
APDS 180—Professional Seminar				2
Restricted Electives	6		3	
Free Electives	4-6		4-5	
Total	15-17		14-15	

CRAFTS CURRICULUM

		Semester		II
Freshman Year				
ENGL 001 or 021—Composition	3			
ENGL 003—World Literature				3
History Requirement	3			
SOCY 001—Sociology of American Life				3
HLTH 005—Science and Theory of Health	2			
Physical Education	1		1	
FDNT 005—Food and Nutrition of Individuals and Families or NUTR 020—Elements of Nutrition				3
TEXT 105—Textiles in Contemporary Living	3			
APDS 001—Fundamentals of Design	3			
APDS 002—Design II				3
CRAF 041—CRAFT Fundamentals and Materials				3
Total	15		16	

		Semester		II
Sophomore Year				
ENGL 004—World Literature	3			
Math Requirement	3-4			
Science Requirement			3-4	
PSYC 001—Introduction to Psychology				3
SPCH 007 or 001—Public Speaking				2-3
EDIN 002—Woodworking I	3			
APDS 003—Design III—3-Dimensional Design	3			
APDS 010—Presentation Techniques	3			
APDS 011—Action Drawing—Figure Sketching				3
CRAF 041—Decorative Textiles				3
Total	15-16		14-16	

		Semester		II
Junior Year				
PHIL 147—Philosophy of Art	3			

Science Requirement	3-4	
ECN037 - Fundamentals of Economics	3	
FMCD 050 - Decision Making in Family Living	3	
APDS 030 - Silk Screen Printing	3	
APDS 038 - Photography	3	2
CRAF 020 - Ceramics - Material and Processes	3	
CRAF 120 - Advanced Ceramics I	3	
CRAF 030 - Metalry I	3	
CRAF 040 - Weaving	3	
Free Elective	3	3
Total	15-16	17
Senior Year		
History Requirement	3	
APDS 180 - Professional Seminar	3	2
CRAF 121 - Advanced Ceramics II	3	
CRAF 130 - Advanced Metalry I	2	
CRAF 190 - Individual Problems in Crafts	2-3	3-4
Restricted Electives	6	3
Free Electives		4-6
Total	16-17	12-15

HOUSING CURRICULUM

Freshman Year		Semester
		II
SDCY 001 - Sociology of American Life	3	
SPCH 001 or 007 - Public Speaking	2-3	
FONT 005 - Food and Nutrition of Individuals and Families	3	
TEXT 105 - Textiles in Contemporary Living	3	
APDS 001 - Fundamentals of Design	3	
Physical Education	1	1
ENGL 001 or 021 - Composition	3	
PSYC 001 - Introduction to Psychology	3	
HLTH 005 - Science and Theory of Health	2	
CLTH 010 - Principles and Methods of Clothing Design	2	
APDS 002 - Design II	3	
APDS 010 - Presentation Techniques	3	
Total	15-16	17

Sophomore Year		Semester
		II
ENGL 003,004 - World Literature	1	3
Science Requirement	3-4	
PSYC 021 - Social Psychology	3	
FMCD 050 - Decision Making in Family Living	3	
TEXT 105 - Consumer Textiles	3	
APDS 003 - Design III - 3-Dimensional Design	3	
HSAD 040 - Design and Furnishings in the Home	3	
HSAD 041 - Family Housing	3	
HSAD 046 - Materials of Interior Design	3	
Total	15-16	15

Junior Year		
Math Requirement	3	
Science Requirement	3-4	
History Requirement	3	
SDCY 071 - Dynamics of Social Interaction	3	
Fine Arts Requirement	3	
Elective	3	
FMCD 060 - Family Relations or alternative	3	
HSAD 142 - Space Development	3	
HSAD 143 - Interior Design I	3	
Restricted elective	3	
Total	15-16	15

Senior Year		
History Requirement	3	
ECN 037 - Fundamentals of Economics	3	
ART 071 - Masterpieces of Architecture	3	
FMCD 144 - Home Management Residence	3	
FMCD 130 - Family Patterns or alternative	3	
FMCD 132 - The Child in the Family	3	
Restricted Electives	3	
Free Electives	3	
Total	15	15

INTERIOR DESIGN CURRICULUM

Freshman Year		Semester
		II
ENGL 001 or 021 - Composition	3	
ENGL 003 - World Literature	3	
SDCY 001 - Sociology of American Life	3	
History Requirement	3	
Math Requirement	3	3-4
HLTH 005 - Science and Theory of Health	2	
Physical Education	1	1
EDIN 001A - Mechanical Drawing	2	
TEXT 105 - Textiles in Contemporary Living	3	
NUTR 020 - Elements of Nutrition	3	

APDS 001 - Fundamentals of Design	3	
APDS 002 - Design II	3	
Total	17	16-17
Sophomore Year		
ENGL 004 - World Literature	3	
PSYC 001 - Introduction to Psychology	3	
Science Requirement	3-4	
ECN 037 - Fundamentals of Economics	3	
SPCH 007 or 001 - Public Speaking	2-3	
FMCD 050 - Decision Making in Family Living	3	
TEXT 050 - Consumer Textiles	3	
APDS 003 - Design III - 3-Dimensional Design	3	
APDS 038 - Photography	3	2
HSAD 046 - Materials of Interior Design	3	3
APDS 010 - Presentation Techniques	3	
Total	17-18	14-15

Junior Year		
History Requirement	3	
PHIL 147 - Philosophy of Art	3	
TEXT 153 - International Textiles	3	2
HSAD 140 - Period Homes and Their Furnishings	3	
HSAD 142 - Space Development	3	
HSAD 143 - Interior Design I	3	3
Restricted Electives	3	3
Free Electives	3	3
Total	15	14

Senior Year		Semester
		II
Science Requirement	3-4	
HSAD 141 - Contemporary Developments in Architecture, Interiors, Furnishings	3	3
HSAD 144 - Interior Design II	3	
HSAD 145 - Professional Aspects of Interior Design	3	3
HSAD 146 - Interior Design III	3	4
HSAD 147 - Interior Design IV	3	4
Restricted Electives	3	
Free Electives	6	
Total	15-16	14

HOUSING, APPLIED DESIGN AND CRAFTS

Professor and Chairman: Shearer.
 Professor: Curtiss.
 Assistant Professors: Beckwith, Roper.
 Instructors: Holvey, Ritzman, Schmitz, Nelson, Williams, McDonnell, Odland, Nisonger.
 LECTURER: Davis, Ribatta.

APPLIED DESIGN

APDS 001. FUNDAMENTALS OF DESIGN. (3)
 Knowledge of basic art elements and principles gained through design problems which employ a variety of media. (Meets requirement for Home Economics core.) (Staff)

APDS 002. DESIGN II. (3)
 Prerequisite: APDS 001. Continued exploration of design as a means of visual expression with added emphasis on color and lighting. (Staff)

APDS 003. DESIGN III: THREE-DIMENSIONAL DESIGN. (3)
 Three laboratory periods. Prerequisites: APDS 001, 002. Creative efforts directed to discriminating use of form, volume, depth, and movement. (Staff)

APDS 004. SURVEY OF ART HISTORY. (3)
 A rapid survey of Western culture expressed through and influenced by the visual arts: monumental and residential architecture; furniture, textiles and costume; painting and sculpture. (Meets requirements for Home Economics core.) (Staff)

APDS 010. PRESENTATION TECHNIQUES. (3)
 Three laboratory periods. Prerequisites: APDS 001, 002 or equivalent. Comparative approach to basic presentation techniques used in the several areas of commercial design. (Staff)

APDS 011. ACTION DRAWING-FASHION SKETCHING. (3)
 Second semester. Three laboratory periods. Prerequisites: APDS 001 and consent of instructor. Study of the balance and proportion of the human figure. Sketch techniques applied to action poses and fashion drawing in soft and lithograph pencils, pastels, water color, ink. Drawing from model. (Staff)

APDS 020. INTRODUCTION TO FASHION DESIGN. (3)
 Three laboratory periods. Prerequisite: APDS 001 or equivalent. Basic fashion figure drawing. Original designs ren-

dered in transparent and opaque water color, soft pencil, pastels, and ink. Primarily for non-majors. (Staff)

APDS 030. SILK SCREEN PRINTING. (3)

Three laboratory periods. Prerequisites: APDS 001, 002, or equivalent. Use of silk screen processes in execution of original designs for commercial production. (Staff)

APDS 038. PHOTOGRAPHY. (2)

One lecture, 3 hours laboratory. Prerequisites: APDS 001, 002, or equivalent. Study of fundamental camera techniques. Exploration of the expressive possibilities in relation to the field of design and visual communication. (Staff)

For Advanced Undergraduates and Graduates

APDS 120. FASHION ILLUSTRATION. (3)

First semester. Three laboratory periods. Prerequisites: APDS 001, 002, 003, 010, 011. Fabric and clothing structure as they relate to illustration. Opportunity to explore rendering styles and techniques appropriate to reproduction methods currently used in advertising. Guidance in development of individuality in presentations. (Staff)

APDS 121. FASHION DESIGN AND ILLUSTRATION. (3)

Second semester. Three laboratory periods. Prerequisite: APDS 120. Design and illustration of fashions appropriate to the custom market and to mass production. (Staff)

APDS 122-123. ADVANCED COSTUME. (2, 2)

First and/or second semesters. Prerequisites: APDS 120 or 121. Advanced problems in fashion illustration or design. Problems chosen with consent of instructor. (Staff)

APDS 130. TYPOGRAPHY AND LETTERING. (3)

Three laboratory periods. Prerequisites: APDS 001, 002. Experience in hand lettering techniques as a means of understanding lettering styles in design composition. Recognition of type faces used in advertisement, book, and magazine layout. Effect of printing processes on design choices. (Staff)

APDS 132. ADVERTISING LAYOUT. (3)

First semester. Three laboratory periods. Prerequisites: APDS 130, INED 001. Design of advertising layouts from initial idea to finished layout. Typography and illustration as they relate to reproduction processes used in direct advertising. (Staff)

APDS 134-135. ADVANCED PROBLEMS IN ADVERTISING DESIGN. (3, 3)

Second semester. Two laboratory periods. Prerequisite: APDS 132. Advanced problems in design and layout planned for developing competency in one or more areas of advertising design. (Staff)

APDS 136. DISPLAY DESIGN. (3)

Three laboratory periods. Prerequisites: INED 001, APDS 130 or equivalent. Application of design principles to creative display appropriate to exhibits, design shows, merchandising. Display construction. (Staff)

APDS 138. ADVANCED PHOTOGRAPHY. (2)

Two laboratory periods. Prerequisite: APDS 038. Composition, techniques, and lighting applicable to illustration, documentation, advertising design and display. (Staff)

APDS 139. ADVANCED PHOTOGRAPHY. (3)

Three laboratory periods. Continuation of APDS 138. (Staff)

APDS 180. PROFESSIONAL SEMINAR. (2)

Second semester. Two lecture-discussion periods. Prerequisite: departmental major with junior standing. Professional and career opportunities, ethics, practices. (Staff)

APDS 190. INDIVIDUAL PROBLEMS IN APPLIED DESIGN. (3-4)

(190-a—Advertising; 190-b—Costume)
Open only to advanced students who, with guidance, can work independently.

CRAFTS

CRAF 001. CRAFT FUNDAMENTALS AND MATERIALS. (3)

First semester. Three laboratory periods. Prerequisites: APDS 001 or equivalent. Introduction to materials and techniques. Recognition of design limitations imposed by inherent quality of materials.

CRAF 002. RECREATIONAL CRAFTS. (2)

Two laboratory periods. Prerequisites: APDS 001 or equivalent. Problems to encourage creative expression in variety of materials. Emphasis on achievement of aesthetic

quality in use of easily available materials, simple tools. Suitable for non-majors.

CRAF 020. CERAMICS I—MATERIALS AND PROCESSES. (3)

Three laboratory periods. Prerequisites: APDS 001 and consent of the instructor. Fundamental preparation and use of clay. Execution of original designs while developing elementary skills in the production of clay sculpture and pottery. (Staff)

CRAF 030. METALRY I. (3)

Three laboratory periods. Prerequisites: APDS 001 plus one additional design course, or equivalent. Opportunity to develop basic skills in the execution of creatively conceived design problems in copper, pewter, and silver. Standards of craftsmanship as they relate to design quality. (Staff)

CRAF 040. WEAVING. (3)

First semester. Three laboratory periods. Prerequisites: APDS 001, 002, or equivalent, TXCL 005. Basic weaves, patterns drafted. Creative weaving as a study of texture, pattern, and color appropriate to purpose. (Staff)

CRAF 041. DECORATIVE TEXTILES. (3)

Second semester. Three laboratory periods. Prerequisites: APDS 001, 002 or equivalent. Execution of original designs appropriate to textile decoration, fibers and fabrics and to the process involved (i.e. batik, block printing, silk screen, stitchery and applique). (Staff)

For Advanced Undergraduates and Graduates

CRAF 102. CREATIVE CRAFTS. (3)

Three laboratory periods. Prerequisite: CRAF 001 or 002. Problems to stimulate creative experimentation as approach to design. Work with paper, fabric, clay, wood, metal. (Staff)

CRAF 120-121. ADVANCED CERAMICS I, ADVANCED CERAMICS II. (3, 3)

Three laboratory periods. Prerequisite: CRAF 020. Experience in experimental development of body and textures, glazes, and colors and their utilization in clay products of original design. Calculation of body and glaze composition. (Staff)

CRAF 130-131. ADVANCED METALRY I, ADVANCED METALRY II. (2, 2)

Two laboratory periods. Prerequisite: CRAF 030. Advanced application of skills to design and fabrication of metals; jewelry, stone setting, metal casting, cloisonne hand-raised hollow ware. (Staff)

CRAF 140-141. ADVANCED WEAVING, AND-OR ADVANCED TEXTILE DESIGN. (2, 2)

Two laboratory periods. Prerequisites: CRAF 040, 041. Execution of original textile designs which reflect the demands both of the custom market and of mass production. Problems chosen with the consent of instructor. (Staff)

CRAF 190. INDIVIDUAL PROBLEMS IN CRAFTS. (3-4)

(190-a—Ceramics; 190-b—Metalry; 190-c—Textiles)
Open only to advanced students who, with guidance, can work independently. (Staff)

Housing & Interior Design

HSAD 040. DESIGN AND FURNISHINGS IN THE HOME. (3)

3 lectures a week. Prerequisites: APDS 001 or 004. Designed to meet need for basic information and competency in choice and arrangement of home furnishings. For NON-MAJORS only. (Staff)

HSAD 041. FAMILY HOUSING. (3)

First semester. Housing and its relationship to family living. A study of factors which shape housing design; investigation of group and individual housing needs and values. (Staff)

HSAD 046. MATERIALS OF INTERIOR DESIGN. (3)

Second semester. Prerequisite: Consent of instructor. Investigation of materials and construction characteristics of interior architecture and furnishings. Emphasis on use, limitations, sources. Directions in current research. (Staff)

FOR ADVANCED UNDERGRADUATES AND GRADUATES

HSAD 140. PERIOD HOMES AND THEIR FURNISHINGS. (3)

First semester. Prerequisites: APDS 001, HSAD 046, or equivalent. A study of authentic interiors and furnishings. Exploration of style influences apparent in contemporarily produced items. (Staff)

HSAD 141. CONTEMPORARY DEVELOPMENTS IN ARCHITECTURE, INTERIORS, FURNISHINGS. (3)

Second semester. Prerequisite: HSAD 046 and consent of instructor. Style origins and development of twentieth century architecture as living space. Architects, designers, trends, philosophy of relationship of interior space to furnishings. (Staff)

HSAD 142. SPACE DEVELOPMENT. (3)

First semester. One lecture, 2 two-hour laboratories. Prerequisites: APDS 001, 002, 003, INED 001A, or equivalent. A study of blue prints and house construction as they relate to the interior designer. Development and drafting or original plans emphasizing the functional spatial relationship of furnishings to interiors. (Staff)

HSAD 143. INTERIOR DESIGN I. (3)

First semester. One lecture-discussion, two laboratory periods. Prerequisites: APDS 010, INED 001 or equivalent. Complete presentation of rooms; isometric and perspective projections rendered in color; purchase and work orders. Emphasis on individual and family living space. (Staff)

HSAD 144. INTERIOR DESIGN II. (3)

One lecture-discussion, two laboratory periods. Prerequisite: HSAD 143. Continuation of HSAD 143 with emphasis on commercial and contract assignments. (Staff)

HSAD 145. PROFESSIONAL ASPECTS OF INTERIOR DESIGN. (3)

One lecture plus work experience. Professional orientation, ethics, and practices. (Staff)

HSAD 146-147. INTERIOR DESIGN II, IV. (4, 4)

First and/or second semesters. 8 hours laboratory. Prerequisite: HSAD 144. Preparation of complete presentation: work specifications, floor plans, purchase orders, renderings, etc. Portfolio preparation. (Staff)

HSAD 148. READINGS IN HOUSING. (3)

Second semester. Seminar. Prerequisites: SOCY 001, HSAD 041, Senior standing. To satisfy individual interests and needs, opportunity afforded for concentrated reading on one or more facets of housing (urban renewal, public housing, etc.) Examination of completed research, needed future research. (Staff)

HSAD 190. INDIVIDUAL STUDY IN HOUSING AND/OR INTERIOR DESIGN. (3-4)

Guidance for the advanced student capable of independent subject matter investigation or creative work. Problem chosen with consent of instructor. (Staff)



Physical Education, Recreation and Health

THE COLLEGE OF PHYSICAL EDUCATION, RECREATION AND HEALTH provides preparation leading to the Bachelor of Science degree in the following professional areas: physical education, health education and recreation. The College also offers curricula in safety education and elementary physical education. Moreover, in conjunction with the Graduate School and the College of Education, graduate programs leading to the master's and doctor's degrees are available in physical education, health education and recreation. The College provides a research laboratory for faculty members and graduate students who are interested in investigating the effects of exercise and various physical education activities upon the body, as well as determining methods and techniques of teaching various sports.

A one year required program of physical education and a one semester required health education program are provided by this College for all freshmen men and women of the University. The College provides an extensive intramural sports program for both men and women.

In addition to its various on-campus offerings, this College regularly conducts courses in physical education, health education and recreation in various parts of the State of Maryland and conducts workshops wherever requested by proper officials.

FACILITIES

Five separate buildings are used for the Intramural Sports Program for men, the WRA Program for women, the Professional Physical Education Program, the Health Education Program and the Recreation Program. There is also ample outdoor space. Some of the facilities are shared with the

Intercollegiate Athletic Program. A multi-million dollar facility for the College is contemplated for the very near future. Architectural drawings are completed and ground breaking will occur soon.

INDOOR ACTIVITIES

STUDENT ACTIVITIES BUILDING. This building houses the offices of the Department of Intercollegiate Athletics and the College of Physical Education, Recreation and Health. It contains six activity teaching stations: the main arena, the swimming pool, the small gym, the weight training room, the wrestling room and the judo room. In addition, there are ten classrooms, a research laboratory, a safety and driver education center, a departmental library, and a conference room.

The main arena of this building has a seating capacity of 12,004 and 19,796 sq. ft. of floor space. This arena provides facilities for class work in basketball, volleyball, badminton, bait casting, fencing and mass games and relays.

The swimming pool is divided into two areas by a permanent bulkhead. The shallow end is 42 x 24 feet and the large area is 42 x 75 feet with a depth ranging from 4 to 13 feet.

The small gymnasium is used for gymnastics, including tumbling, trampolining and all types of apparatus work. The total floor space is 9,462 sq. ft.

The weight training class room is equipped with sufficient weights for 11 stations of three men each.

There is a wrestling room containing 8,056 sq. ft.

PREINKERT FIELD HOUSE. Preinkert Field House contains the offices of both men and women

teachers of Physical Education and Health Education. There is a regulation size swimming pool, 75 x 35 feet equipped with two one-meter diving boards. In the gymnasium, 90 x 50 feet, classes are held in badminton, volleyball, basketball, stunts and tumbling, apparatus and tennis. There are two large backboards used for indoor tennis practice. The adjacent classroom is used for professional classes. The dance studio, used for dance and fundamental of movement classes, is 40 x 60 feet.

In addition to the above areas, there are locker and shower rooms used by those enrolled in physical education and those participating in recreational activities and a small lounge for major students.

ARMORY. The Armory is used primarily for the intramural program. It houses the offices of the Director of Intramurals and an athletic equipment room from which students may secure equipment for recreational purposes. The 28,800 sq. ft. of floor space has four full length basketball courts, with badminton and volleyball courts superimposed on them. This facility is also used as an indoor track, with an indoor vaulting, high and broad jump pits, a one-tenth mile track, and a 70 yard straight-away.

COLISEUM. The Coliseum is used as a supplementary facility for the intramural and required program of physical education for men and women. Included in the facilities are an equipment issue room, adequate shower and locker rooms for both men and women, a classroom, and office space for several of the men's and women's physical education staff.

The 6,555 square feet of floor space is used primarily for required co-educational classes in square and social dance and for intramural basketball. In addition to the one large basketball court, however, there are five badminton and two volleyball courts available for co-ed class instruction.

HEALTH EDUCATION CLASSROOM BUILDING (AA)

This building is utilized primarily by the required and health major programs. Six classrooms are available for the health programs, and most of the offices for the Health faculty are located in this building.

OUTDOOR ACTIVITIES

THE STADIUM. The stadium, with a seating capacity of 33,536 has a one-quarter mile cinder track with a 220-yard straightaway. Pits are available for pole vaulting and high and broad jumping. Immediately east of the stadium are facilities for the shot put, discus and javelin throw. The College of Physical Education, Recreation and Health use these facilities for required classes in track and field. Also east of the stadium are 13.1 acres devoted to three practice football fields, the baseball stadium, a practice baseball, lacrosse, and soccer field. The College uses these facilities for major skill classes in football, soccer, and baseball. West of the stadium are 11.3 acres devoted entirely to physical education out-door play fields. There are four combination soccer-touch football play fields, with complete goal posts, and four softball fields with wire backstops.

Surrounding the Armory are four touch football fields and eight softball fields, encompassing 18.4 acres. These fields, plus the four in the Fraternity Row horseshoe are used exclusively for intramurals.

Immediately west of the Cole Activities Building are 14 all-weather tennis courts. A modern 18-hole golf course was opened in 1957. This 204-acre course includes two lakes, and an additional 5.8-acre golf driving range for instructional purposes. The golf driving range, equipped with lights, and the golf course greatly adds to our present recreational facilities. An outdoor playing field 300 feet by 600 feet is also provided for touch football, soccer, speedball and softball.

The outdoor facilities adjacent to the Preinkert Field House include four hard surfaced tennis courts, two softball diamonds and combination hockey and soccer fields.

RESEARCH LABORATORY

One of the important aspects of advanced study at the University of Maryland is research. To encourage research, the College of Physical Education, Recreation, and Health makes available to the student a spacious, well equipped research laboratory. Students and faculty alike are encouraged to make use of the laboratory and its facilities for the purpose of conducting their special research projects.

GENERAL INFORMATION

ENTRANCE REQUIREMENTS

All students desiring to enroll in the College of Physical Education, Recreation, and Health must apply to the Director of Admissions of the University of Maryland at College Park.

Sixteen units of high school credits are required for admittance to this college. **Required** high school subjects are: four units of English, one unit of social science, and one unit of natural science. **Desirable** high school subjects include: algebra, plane geometry and additional natural and physical sciences, such as chemistry and physics.

Satisfactory health and physical vigor are essential for persons pursuing a career in the areas of this College.

UNDERGRADUATE PROFESSIONAL CURRICULA

GUIDANCE

At the time of matriculation and first registration, each student is assigned to a member of the faculty of the College who acts as the student's academic adviser. This faculty member will be in physical education, recreation or health education, depending on the student's choice of curriculum. The student should confer regularly with his adviser prior to and at the time of each registration.

NORMAL LOAD

The normal university load for students is 12-19 credit hours per semester. The requirements in physical education and health for men and women are fulfilled by professional courses in the College. No student may register for more than 19 hours unless he has a "B" average for the preceding semester and approval of the Dean of the College.

ELECTIVES

Electives should be planned carefully, and well in advance, preferably during the orientation course the first semester, or with the student's academic adviser during the second semester. It is important

to begin certain sequences as soon as possible to prevent later conflict. Electives may be selected from any department of the University in accordance with a student's professional needs. Those selected must meet with the approval of the adviser and the Dean of the College.

TRANSFER STUDENTS

Only students in good standing as to scholarship and conduct are eligible to transfer into this College from another college or university. Only courses applicable to his curriculum and passed with a grade of "C" or better will be transferred. Students wishing to transfer to this College from another college of this University are subject to the general University regulations on his subject.

FRESHMAN AND SOPHOMORE PROGRAM

The work of the first two years in this College is designed to accomplish the following purposes: (1) provide a general basic or core education and prepare for later specialization by giving a foundation in certain basic sciences; (2) develop competency in those basic techniques necessary for successful participation in the professional courses of the last two years.

While much of the academic course work will be alike, the technique courses will vary considerably in the different curriculums. The technique courses must be satisfactorily completed, or competencies demonstrated before the student can be accepted for the advanced courses in methods and in student teaching. It is very important that each requirement be met as it occurs.

STUDENT TEACHING

Opportunity is provided for student teaching experience in Physical Education and/or Health Education. The student devotes eight weeks during his last semester of his senior year to observation, participation, and teaching under a qualified supervising teacher in an approved elementary, junior or senior high school or in a combined program at the elementary and secondary levels in the vicinity of the University. A University supervisor from the College of Physical Education, Recreation, and Health visits the student periodically and confers with both the student teacher and the cooperating teacher, giving assistance when needed.

To be eligible for student teaching, the student must (1) have an accumulative grade point average of at least a 2.3, (2) **must have the recommendation of the University supervising teacher, and (3) must have fulfilled all required courses for the B. S. degree except those in the Block Student Teaching Semester except for those exceptions approved by each department.** The student must obtain a grade of "C" or better in all professional courses in his curriculum and he must register for all courses in the "Block" concurrently. Those desiring to teach at the elementary level must have successfully completed PHED 120 and must split their teaching experience into 4 hours of EDSE 147 and 4 hours of EDSE 149. Those desiring an elementary minor in physical education in addition, must complete PHED 55, 57, and 195.

FIELD WORK

Recreation major students are expected to carry out a number of field experiences during

their University career; volunteer or part-time recreation employment during the school year, summer employment in camps or at playgrounds, etc. These experiences culminate in a senior semester of field work for which a student receives credit and during which the student works as a staff member (for 20 hours per week) in the field of recreation in which he or she hopes to be employed such as public recreation, recreation for the exceptional, agencies (Y's, Scouts, etc.), military recreation, etc.

DEGREES

The degree of Bachelor of Science is conferred upon students who have met the conditions of their curricula as herein prescribed by the College of Physical Education, Recreation, and Health.

Each candidate for a degree must file a formal application with the Office of the Registrar during the registration period, or not later than the end of the third week of classes of the regular semester, or at the end of the second week of the summer session, prior to the date of graduation.

CERTIFICATION

The Maryland State Department of Education certifies for teaching only when an applicant has a tentative appointment to teach in a Maryland county school. No certificate may be secured by application of the student on graduation. Course content requirements for certification are indicated with each curriculum. Certification is specifically limited to graduates who "rank academically in the upper four-fifths of the class and who make a grade of 'C' or better in student teaching." In order to insure the meeting of these requirements, students will not be approved for student teaching except as indicated above. A student intending to qualify as a teacher in Baltimore, Washington, or other specific situations should secure a statement of certification requirements before starting work in the junior year and discuss them with his academic adviser.

STUDENT ORGANIZATIONS

MAJORS' CLUB: All students enrolled in the college are eligible for membership in this organization. It conducts various professional meetings, brings in speakers and promotes various co-recreational activities. It has sponsored trips to District and National conventions of the American Association for Health, Physical Education, and Recreation, and is chartered as a student major club of that organization.

AQUALINERS: This synchronized swimming club is open to all men and women registered in the University. Through weekly meetings the group concentrates on additional stroke perfection, individual and group stunts, diving, and experimentation with various types of accompaniment and choreographic techniques. An original water show is presented each spring and several demonstrations are given each year. Tryouts are held twice a year—once at the beginning of the fall semester, and again after the water show during the spring semester.

UNIVERSITY OF MARYLAND RECREATION AND PARKS SOCIETY: In the fall of 1959 the University

of Maryland Recreation and Parks Society was formed by the undergraduate and graduate major and minor students of the College. The Society, an affiliate of the state and national recreation organizations, provides opportunities for university and community service, for rich practical experience, and for social experiences for those students having a mutual professional recreation interest.

GYMKANA TROUPES: The Gymkana Troupe includes men and women students from all colleges that wish to express themselves through the medium of gymnastics. These individuals coordinate their talents in order to produce an exhibitional performance that has been seen in many places including Bermuda, Iceland, Azores, Idaho, Montana, and the Eastern Seaboard of the United States. The organization has three principal objectives: (1) to provide healthful, co-recreational activities that provide fun for the students during their leisure hours; (2) to promote gymnastics in this locality; and (3) to entertain our students and people in other communities.

This organization is co-sponsored by the Physical Education Department and the Student Government Association; and it welcomes any student, regardless of the amount of experience, to join and to have fun.

INTRAMURALS FOR MEN: The Intramural Department offers an extensive opportunity for all men to participate in a recreational program of either individual or team sports. A variety of activities are available to fill the student's leisure time and develop skills which may be carried over into later life. Also, many desirable attributes, such as fair play, leadership, teamwork and sportsmanship, are encouraged and developed by the student participating in the program.

Leagues and tournaments are conducted in the following sports: touch football, horseshoe pitching, tennis, cross country, track and field, basketball, table tennis, badminton, boxing, wrestling, bowling, volleyball, swimming, foul shooting and softball.

Management and officiating in intramural sports are conducted by students majoring in physical education under the supervision of the Director of Intramurals and under policies and regulations established by the Intramural Council.

WEIGHT LIFTING CLUB: The University of Maryland Weight Lifting Club is open to all students and faculty for exercise with the weights throughout the week during all hours that Cole Student Activities Building is open.

The University of Maryland Olympic Barbell Club is a more highly organized group of the original club. It is recognized by the Student Government Association. Bi-monthly meetings are held, which assist in leadership, offer clinics and demonstrations, etc.; participate in competition, and earn awards of recognition.

WOMEN'S RECREATION ASSOCIATION: All women students of the University are members of the Women's Recreation Association, an affiliate of the Athletic and Recreational Federation of College Women. Under the leadership of its elected student officers and representatives and appointed sports

managers, the WRA sponsors a full program of intramural, extramural, and interest group activities. These activities seek to develop new interests and skills for leisure-time enjoyment provide opportunities for continuing both old and new interests, and provide a democratic atmosphere for educational leadership experiences. Included are free and tournament play in archery, badminton, basketball, bowling, fencing, field hockey, golf, softball, swimming, table tennis, and volleyball; social events; and co-recreational activities in bowling, badminton, volleyball. Intramural tournaments are organized through the dormitory, sorority, and "day dodger" groups of the University. Sports Days and Play Days with other colleges and universities enable the more skilled students to participate with others of similar abilities. Opportunities are also provided for officiating experience and for the earning of official WNORC ratings in basketball, field hockey, swimming, and volleyball.

Various special groups and clubs interested in recreation exist on campus outside the Women's Recreation Association program and offer rich opportunities for the development of other recreational interest. Some of these are the Terrapin Trail Club, Chess Club, Gymkana Troupe, Sailing Club, Ski Club, and musical and dramatic groups.

PHI ALPHA EPSILON: Honorary Society of the College of Physical Education, Recreation, and Health.

The purpose of this organization is to recognize academic achievement and to promote professional growth by sponsoring activities in the fields of physical education, recreation, health, and related areas.

Students shall qualify for membership at such time as they shall have attained junior standing in physical education, health, or recreation, and have a minimum overall average of 2.7 and a minimum professional average of 3.1. Graduate students are invited to join upon passing the Graduate Diagnostic Examination.

The organization is open to both men and women.

SIGMA TAU EPSILON: This society, founded in 1940, selects those girls who have attained an overall 2.5 average and demonstrated outstanding leadership, service and sportsmanship like qualities in the organization and activities of the Women's Recreation Association and its affiliated groups.

PROFESSIONAL CURRICULA

PHYSICAL EDUCATION

This curriculum prepares students (1) for teaching physical education in the secondary school (2) for coaching and (3) for leadership in youth and adult groups which offer a program of physical activity. The first two years of this curriculum are considered to be an orientation period in which the student has an opportunity to gain an adequate background in general education as well as in those scientific areas closely related to this field of specialization. In addition, emphasis is placed upon the development of skills in a wide range of motor activities. Further, students are encouraged to select related areas, especially in the fields of biology, social science, psychology, health education, and recreation as fields of secondary interest. These materially increase the vocational

opportunities which are available to a graduate in physical education.

EQUIPMENT: Students may be required to provide individual equipment for certain courses.

UNIFORMS: Suitable uniforms, as prescribed by the College are required for the activity classes and for student teaching. These uniforms should be worn only during professional activities.

MEN—During the freshman and sophomore years, men will wear red and black T-shirts, black trunks, white socks, gym shoes, supporter and sweat suit. During the junior year, men will purchase full length black pants with gold braid on side and a black jacket, which are required for student teaching.

WOMEN—Tailored blue shorts, white shirt, ankle socks, and tennis shoes, and leotard and skirt, and warm-up suit.

FOR STUDENT TEACHING—an appropriate teaching costume will be selected under the guidance of the supervisor of student teaching before the beginning of the junior year.

FRESHMAN YEAR		I	II
ENGL 1, 3—Composition and Literature		3	3
Social Science Elective			3
ZOOL 1—General Zoology		4	
SPCH 7—Public Speaking		2	
MATH 3 or 10 (only above MATH 1)			3
PHED 30—Introduction to Physical Education and Health		2	
PHED 40w—Fundamentals of Movement		2	
PHED 50—Rhythmic Activities		2	
DANC 52—Dance Techniques			2
PHED 62w, 64w—Skills Laboratory		2	2
HLTH 40—Personal and Community Health Electives			3
			1
Total		17	17

SOPHOMORE YEAR		Semester	
		I	II
ENGL 4—World Literature		3	
ZOOL 14, 15—Human Anatomy and Physiology		4	4
Social Science Elective		3	
HIST 21 or 22—U.S. History			3
Science Group Requirement (Physics or Chemistry 7)			4
HLTH 50—First Aid and Safety		1	
PHED 66w, 68w—Skills Laboratory		2	2
PHED 77w—Aquatics			2
PHED 82—Organization and Administration of Intramurals		1	
Electives		3	2
Total		17	17

PHYSICAL EDUCATION CURRICULUM FOR MEN

FRESHMAN YEAR		Semester	
		I	II
ENGL 1—Composition		3	
Social Science Elective			4
MATH (only above Math 1)		3	
ZOOL 1—General Zoology			4
SPCH 7—Public Speaking		2	
HLTH 40—Personal and Community Health			3
PHED 30—Introduction to Physical Education and Health		2	
PHED 50—Rhythmic Activities		2	
PHED 61, 63—Skills Laboratory		2	2
PHED 77—Aquatics			2
Electives		3	3
Total		17	17

SOPHOMORE YEAR		Semester	
		I	II
ENGL 3, 4—Composition and World Literature		3	3
ZOOL 14, 15—Human Anatomy and Physiology		4	4
Social Science Elective		3	
PHED 65, 67—Laboratory Skills		2	2
HIST 21 or 22—U.S. History			3
Science Group Requirement (Physics or Chemistry 1)			4
HLTH 50—First Aid and Safety		1	
Electives		4	1
Total		17	17

JUNIOR YEAR		Semester	
		I	II
HIST		3	
Fine Arts elective			3
PHED 100—Kinesiology		4	
PHED 105, 107—Skills Laboratory		2	2
PHED 114—Methods, Curriculum and Observation for Secondary Schools		4	
PHED 120—Physical Education for the Elementary School			3
Theory of Coaching elective (PHED 123, 125 or 126)		2	
PHED 180—Measurement in Physical Education and Health			3
EDUC 110—Human Development and Learning			6
Electives		2	
Total		17	17

SENIOR YEAR		Semester	
		I	II
EDUC 111—Foundations of Education		1	
PHED 133—Adopted Physical Education		2	
EDSE 145—Principles and Methods of Secondary Education			3
EDSE 148—Student Teaching in Secondary Schools			8
PHED 160—Theory of Exercise		3	
PHED 181—Advanced Training and Conditioning		3	
PHED 190—Organizations and Administration of Physical Education			3
PHED 193—History and Philosophy of Sport and Physical Education			3
Electives		6	
Total		17	17

JUNIOR YEAR		Semester	
		I	II
Fine Arts Elective			3
History			3
PHED 100—Kinesiology		4	
PHED 105w, 107w—Laboratory Skills		2	2
EDUC 110—Human Development and Learning			6
PHED 114—Methods in Physical Education in Secondary Schools		4	
PHED 120—Physical Education for the Elementary Schools			3
PHED 124—Theory of Coaching			2
PHED 180—Measurement in Physical Education and Health			3
Electives		1	1
Total		17	17

SENIOR YEAR		Semester	
		I	II
EDUC 111—Foundations of Education		3	
EDUC 145—Principles and Methods of Secondary Education			3
EDSE 148—Student Teaching in Secondary Schools			8
PHED 133—Adopted Physical Education		2	
PHED 160—Theory of Exercise			3
PHED 190—Organization and Administration of Physical Education			3
PHED 193—History and Philosophy of Sports and Physical Education			3
Electives		9	
Total		17	17

REQUIREMENTS FOR DEGREE IN PHYSICAL EDUCATION

Requirements for the Bachelor of Science degree in physical education in the College of Physical Education, Recreation and Health are as follows:

Men	Sem. Cr.
Professional Physical Education courses (PHED 30, 50, 61, 63, 65, 67, 77, 100, 105, 107, 114, 120, (123 or 125 or 126), 133, 160, 180, 181, 190, 193)	48
Foundation Science courses as presented (ZOOL 1, 14, 15; PHYS 1 or CHEM 7)	16
Education courses as prescribed	20
General Education Requirements (ENG 1, 3, 4; Fine Arts, HIST, MATH 3 or 10; Soc. Sc.; Science, as shown above)	27
Specifically prescribed requirements (SPCH 7)	2
Health courses as prescribed (HLTH 40, 50)	4
Electives	19
Total	136

Women

Professional Physical Education courses (PHED 30, 40w, 50, Danc 52, PHED 62, 64, 66, 68, 77w, 82w, 100, 105, 107, 114, 120, 124, 133, 160, 180, 190, 193).....	49
Foundation Science courses as prescribed (ZOO1 1, 14, 15; PHYS 1 or CHEM 7).....	16
Education courses as prescribed.....	20
General Education Requirements (ENGL 1, 3, 4; Fine Arts 3 hrs.; MATH 3 or 10; Soc. Sc. 6 hours; Science, shown above.....	27
Specially prescribed requirements (SPCH 7).....	27
Health courses as prescribed (HLTH 40, 50).....	4
Electives.....	18
Total.....	136

MINOR IN PHYSICAL EDUCATION

20 semester hours in physical education and 4 semester hours in cognate areas.

REQUIRED COURSES

Men—PHED 30; P.E. 61, 63, 65, 67, (2-6⁵); PHED 114, P.E. 123, 125, or 126.

Women—PHED 30; P.E. 62, 64, 66, 68, (2-6⁷); PHED 114, PHED 124.

ELECTIVE COURSES

Men and Women—Phed 69, 78w, 100, 133, 160, 180, 181, 185, 187, 190, 193.

If planning to teach, the cognate courses for men should be HLTH 40 and HLTH 50; for women, HLTH 50 and HLTH 120.

Note: To be certified to teach in Maryland, 30 semester hours are required in physical education in addition to the following or equivalent, ZOO1 1, 14, 15 and Chemistry or Physics.

There are two plans for a minor in elementary school physical education. Plan A is for students in the College of Physical Education, Recreation, and Health, and Plan B is for students outside the College of Physical Education Recreation, and Health.

I. Plan A. (for students in this College)

10 semester hours in elementary school physical education courses and 10 hours in cognate areas.

REQUIRED COURSES

PHED 55, 57, 120, 195.

ELECTIVE COURSES

10 hours in any of the following cognate areas: human development, elementary education, biological science, health education. (Not more than 6 hours shall be taken in any one cognate area.)

STUDENT TEACHING

Students will be required to do 4 weeks of their 8 weeks student teaching at the elementary school level in physical education.

II. Plan B. (for students outside this College)

13 semester hours in elementary school physical education courses and 10 hours in cognate areas.

REQUIRED COURSES

PHED 55, 57, 120, 130, 195.

ELECTIVE COURSES

10 hours in any of the following cognate areas: human development, elementary education, biological science, health education. (Note more than 6 hours shall be taken in any one cognate area.)

HONORS PROGRAM**THE HONORS PROGRAM IN PHYSICAL EDUCATION**

The aim of the Honors Program is to encourage superior students by providing an enriched program of studies which will fulfill their advanced interests and needs. Qualified students are given the opportunity to undertake intensive and often independent studies wherein initiative, responsibility, and intellectual discipline are fostered. To qualify for admission to the program:

1. A Freshman must have a B average in academic (college Prep) curriculum of an accredited high school.
2. A Sophomore must have an accumulative GPA of 3.00 in all college courses of official registration,
3. All applicants must have three formal recommendations concerning their potential, character, and other related matters,
4. All applicants must be accepted by the Faculty Honors Committee,

In completing the program, all Honors students must:

1. Participate in an Honors Seminar where Thesis and other relevant research topics are studied,
2. Pass a comprehensive oral examination covering subject matter background,
3. Successfully prepare and defend the Honors Thesis.

On the basis of the student's performance in the above program, the College may vote to recommend graduation without Honors, with Honors, or with High Honors.

FACULTY

PROFESSORS: Clarke, Eyer, Fratey, Humphrey, Husman.
ASSOCIATE PROFESSORS: Church, Cronin, Kelley, Kramer, Steel, Stull, Woods.
ASSISTANT PROFESSORS: Arrighi, Campbell, Freunds Schuh, Hult, Ingram, Jackson, Johnson, Kesler, Krouse, Love, McKnight, Santa Maria, Schmidt, Tyler, Vander, Velden.
INSTRUCTORS: Beardmore, Crowson, Drum, Fringer, Kurlle, Murray, Royer, Roys, Sigler, Terauds, Wrenn.

PHED 30. INTRODUCTION TO PHYSICAL EDUCATION. (2)

First and second semesters. An orientation to the profession, including the relationship of physical education to education, current trends and practices, career opportunities, and areas of research. (Staff)

PHED 40w. FUNDAMENTALS OF MOVEMENT. (2)

First and second semesters. Three hours a week. Introduction to analysis of muscular activity; conditioning exercises and programs; improvement of physical fitness; and analysis of the relationship of mechanical principles to basic movement and skills. (Staff)

PHED 50. RHYTHMIC ACTIVITIES. (2)

First and second semesters. Six hours a week. Development of rhythmic sensitivity through analysis of rhythm and its application to movement, skills in folk, square and social dance, teaching techniques for use in schools and recreational programs. (Staff)

PHED 55. ELEMENTARY SCHOOL RHYTHMIC ACTIVITIES. (2)

First and second semesters and summer. A survey of the various types of rhythmic activities suitable for use in the elementary school. Basic rhythms, singing games, and folk and square dancing are considered. (Staff)

PHED 57. ELEMENTARY SCHOOL SKILLS AND SELF-TESTING ACTIVITIES. (2)

First and second semesters and summer. A survey of the

various types of skills, stunts, and tumbling activities suitable for use in the elementary school. (Staff)

PHED 61m., 63m. SKILLS LABORATORY. (2, 2)

First and second semesters, respectively. Six hours a week. Progressive techniques and practice of skills in selected team and individual sports as apparatus, soccer, track and field, and tumbling and trampolining. (Staff)

PHED 62w., 64w. SKILLS LABORATORY. (2, 2)

First and second semesters, respectively. Six hours a week. Progressive techniques, knowledges and practice of selected team and individual sports as field hockey, basketball, volleyball, and track and field. (Staff)

PHED 65m, 67m. SKILLS LABORATORY. (2, 2)

First and second semesters, respectively. Six hours a week. Progressive techniques and practice of skills in selected team and individual sports as football, wrestling, basketball and baseball. (Staff)

PHED 66w, 68w. SKILLS LABORATORY. (2, 2)

First and second semesters, respectively. Six hours a week. Techniques, knowledge and practice of selected team and individual sports as softball, field games, stunts and tumbling, apparatus and tennis. (Staff)

PHED 69. SKILLS LABORATORY. (2)

First and second semesters. Three hours a week. Prerequisite: PHED 61. Complex gymnastic activities above the elementary phase. (Staff)

PHED 71. ELEMENTARY SWIMMING. (1)

First and second semesters. Progressive techniques and practice of elementary swimming including basic and intermediate swimming instruction. (Staff)

PHED 72w. ELEMENTARY SWIMMING AND DIVING. (1)

First and second semesters. Three hours a week. Progressive techniques and practice in the elementary phase of swimming and diving, designed to make the student self-sufficient in deep water. (Staff)

PHED 73. ADVANCED SWIMMING. (1)

First and second semesters. Prerequisite: PHED 71 or equivalent. Progressive techniques and practice of advanced swimming skills, water stunts, and survival swimming. (Staff)

PHED 74w. INTERMEDIATE SWIMMING AND DIVING. (1)

First and second semesters. Three hours a week. Prerequisite: PHED 72 or equivalent. Progressive techniques and practice of skills in swimming and diving. (Staff)

PHED 75. LIFE SAVING AND WATER SAFETY. (1)

First and second semesters. Three hours a week. Prerequisite: PHED 73 or equivalent. Progressive techniques and practice of life saving and water safety skills. Course includes the Senior Life Saving material of the American Red Cross and the Y.M.C.A. (Staff)

PHED 76w. ADVANCED SWIMMING AND LIFE SAVING. (1)

First and second semesters. Three hours a week. Prerequisite PHED 74w American Red Cross Senior Life Saving, advanced swimming, and diving are included. (Staff)

PHED 77m. METHODS OF AQUATICS. (2)

First and second semesters. Three hours a week. Prerequisite: PHED 73 or equivalent. Training for aquatic leadership in schools, camps and clubs. Included are teaching methods, administration, facilities and equipment. (Staff)

PHED 77w. METHODS OF AQUATICS. (2)

First and second semesters. Three hours a week. Prerequisite: PHED 72 or equivalent. Training for aquatic leadership in schools, camps, and clubs. Included are teaching methods, organization and administration, analysis of competitive swimming, synchronized swimming, diving, and equipment and pool maintenance. (Staff)

PHED 78w. WATER SAFETY. (1)

Second semester. Three hours a week. Prerequisite: Current American Red Cross Senior Life Saving certificate. Principles and techniques of teaching swimming and life saving. (Staff)

PHED 79. FANCY DIVING. (1)

First and second semesters. Three hours a week. Progressive techniques and practice of fancy diving. Course will include work on the five categories of dives. (Staff)

PHED 82w. ORGANIZATION AND ADMINISTRATION OF INTRAMURALS. (1)

First and second semesters. Three hours a week. Organization and administration of intramural programs and tournaments and techniques of officiating women's sports. Opportunity to qualify for officials' ratings in hockey and basketball. (Staff)

For Advanced Undergraduates and Graduates

PHED 100. KINESIOLOGY. (4)*

First and second semesters and summer. Three lectures and two laboratory hours a week. Prerequisites: ZOO1 1, 14, and 15, or the equivalent. The study of human movement and the physical and physiological principles upon which it depends. Body mechanics, posture, motor efficiency, sports, the performance of atypical individuals, and the influence of growth and development upon motor performance are studied. (Staff)

PHED 101, 103. ORGANIZATION AND OFFICIATING IN INTRAMURALS. (1, 1)

First and second semesters, respectively. Organization, administration, and promotion of intramurals at various school levels. Included are types of tournaments, units of competition, handling of student leader personnel. (Staff)

PHED 105m, 107m. SKILLS LABORATORY. (2, 2)

First and second semesters, respectively. Four hours a week. Experience in individual and dual motor skills. (Staff)

PHED 105w, 107w. SKILLS LABORATORY. (2, 2)

First and second semesters, respectively. Four hours a week. Knowledge, techniques and practice in selected team, individual, and dual sports. (Staff)

PHED 114. METHODS IN PHYSICAL EDUCATION FOR SECONDARY SCHOOLS. (4)

First and second semesters. Three lectures and a lab. each week. Application of educational philosophy and principles to class organization and techniques of teaching physical education in the junior and senior high schools. (Staff)

PHED 120. PHYSICAL EDUCATION FOR THE ELEMENTARY SCHOOL. (3)*

First and second semesters and summer. Orientation of the general elementary teacher to physical education. Principles and practices in elementary physical education are discussed and a variety of appropriate activities are considered. (Staff)

PHED 123, 125, 126. COACHING ATHLETICS. (2,2,2)

First and second semesters. Two lecture hours a* week. Theory of coaching the various competitive sports commonly found in high school and college programs. (Staff)

PHED 124w. COACHING ATHLETICS. (2)

First and second semesters. Three hours a week. General theory and psychology of coaching; theory and practice of coaching selected competitive sports found in the secondary schools and community recreation programs. (Staff)

PHED 130. FUNDAMENTALS OF BODY DYNAMICS. (3)

First and second semesters and summer. Acquaintance of the elementary teacher with the scientific principles of mechanical-anatomical analysis and physiology of activities relating to physical growth and development. (Staff)

PHED 133. ADAPTED PHYSICAL EDUCATION. (2)

First and second semesters. Lecture and lab. Prerequisite: PHED 100 or equivalent. Application of kinesiological and physiological principles to handicapped students; designed to help prospective teachers meet exercise needs of those pupils with disabilities. (Staff)

PHED 135. COACHING SWIMMING AND DIVING. (2)

First and second semesters. Three hours a week. Analysis of the techniques of coaching swimming and diving. Included is a systematic treatment of the philosophy, historical development, and psychological theories of coaching aquatics. (Staff)

PHED 155. PHYSICAL FITNESS OF THE INDIVIDUAL. (3)*

First and second semesters and summer. A study of the major physical fitness problems confronting the adult modern society. Consideration is given to the scientific appraisal, development, and maintenance of fitness at all age levels. Such problems as obesity, weight reduction, chronic fatigue, posture, and special exercise programs are explored. Open to persons outside the professions of physical education. (Staff)

PHED 160. PHYSIOLOGY OF EXERCISE. (3)*

First and second semesters and summer. Two lectures and two laboratory hours a week. Prerequisites: ZOO1 1, 14, and 15, PHED 100 or equivalent. A study of the physiology of exercise, including concepts of work, muscular contraction, energy transformation, metabolism, oxygen debt, and nutrition and athletic performance. Emphasis is placed on cardiovascular and respiratory function in relation to physical activity and training. (Staff)

PHED 170. SUPERVISION IN ELEMENTARY SCHOOL PHYSICAL EDUCATION. (3)*

- First and second semesters and summer. Prerequisite: PHED 120. Principles and techniques of supervision are studied for improving the learning situation in elementary school physical education. (Staff)
- PHED 180. MEASUREMENT IN PHYSICAL EDUCATION. (3)*
First and second semesters and summer. Two lectures and two laboratory periods a week. Prerequisite: MATH 3 or 10. A study of the principles and techniques of educational measurement as applied to teaching of physical education; study of the functions and techniques of measurement in the evaluation of student progress toward the objectives of physical education and in the evaluation of the effectiveness of teaching. (Staff)
- PHED 181. ADVANCED TRAINING AND CONDITIONING. (3)
First and second semesters. Three hours a week. Prerequisite: PHED 100. Theoretical and practical foundations of the prevention, recognition, and treatment of athletic injuries. Physical conditioning and re-conditioning, preventive taping, first aid, and various modalities are emphasized. (Staff)
- PHED 185. MOTOR LEARNING AND SKILLED PERFORMANCE. (3)*
First and second semesters and summer. Prerequisites: PSYC 1 and PHED 180. A study of the research dealing with motor learning and motor performance. Major topics discussed are scientific methodology, individual differences, specificity, proprioceptive control of movement, motivation, timing, transfer, and retention. (Staff)
- PHED 187. PHYSICAL EDUCATION AND SPORT IN CONTEMPORARY CULTURES. (3)*
First and second semesters. Three lectures a week. Prerequisite: SOCY 1 or SOCY 5 or equivalent. A study of the cultural impact of physical education activities in the United States and selected countries. Individual research on selected topics is required. (Staff)
- PHED 189. FIELD LABORATORY PROJECTS AND WORKSHOP. (1-6)*.
First and second semesters and summer. Workshops and research projects in special areas of knowledge not covered by regularly structured courses. Note: The maximum total number of credits that may be earned toward any degree in physical education is six. (Staff)
- PHED 190. ORGANIZATION AND ADMINISTRATION OF PHYSICAL EDUCATION.
First and second semesters. The application of the principles of administration and supervision to physical education. Students are normally enrolled during the student teaching semester. (Staff)
- PHED 191. THE CURRICULUM IN ELEMENTARY SCHOOL PHYSICAL EDUCATION. (3)*
First and second semesters. Techniques planning and construction are considered from a standpoint of valid criteria for the selection of content in elementary school physical education. Desirable features of cooperative curriculum planning in providing for learning experiences will be presented and discussed. (Staff)
- PHED 193. HISTORY AND PHILOSOPHY OF SPORT AND PHYSICAL EDUCATION. (3)*
First and second semesters. History and philosophical implications of sport and physical education through ancient, medieval, and contemporary periods in western civilization. Students are normally enrolled during the student teaching semester. (Staff)
- PHED 195. ORGANIZATION AND ADMINISTRATION OF ELEMENTARY SCHOOL PHYSICAL EDUCATION. (3)*
First and second semesters and summer. Prerequisite: PHED 120. A study of the procedures basic to the satisfactory organization of all phases of the elementary school physical education program. Emphasis is placed on the organizational and administrative factors necessary for the successful operation of the program in various types of elementary schools. (Staff)
- PHED 196. QUANTITATIVE METHODS. (3)*
First and second semesters and summer. Statistical techniques most frequently used in research pertaining to physical education. Effort is made to provide the student with the necessary skills, and to acquaint him with the interpretations and applications of these techniques. (Staff)
- PHED 198H. HONORS SEMINAR. (1)
First and second semesters. Prerequisite: Participation in honors program. One discussion period a week. Guided discussion of research topics of current interest. Repeatable to a total of 3 hours credit. (Staff)
- PHED 199H. HONORS THESIS. (3)
First and second semesters. Prerequisites: PHED 198H and candidacy for honors in Physical Education. Advise-ment will be on an individual basis. Thesis must be defended in the Honors Seminar. (Staff)
- For Graduates**
See the Graduate School catalog for descriptions.
- PHED 200. SEMINAR IN PHYSICAL EDUCATION. (1)
PHED 201. PHILOSOPHY OF PHYSICAL EDUCATION. (3)
PHED 202. STATUS AND TRENDS IN ELEMENTARY SCHOOL PHYSICAL EDUCATION. (3)
PHED 203. SUPERVISORY TECHNIQUES IN PHYSICAL EDUCATION. (3)
PHED 204. PHYSICAL EDUCATION AND THE DEVELOPMENT OF THE CHILD. (3)
PHED 205. ANALYSIS OF CONTEMPORARY ATHLETICS. (3)
PHED 206, 207. HISTORY OF SPORT IN WESTERN CULTURE. (3-3)
PHED 210. METHODS AND TECHNIQUES OF RESEARCH. (3)
PHED 215. PRINCIPLES AND TECHNIQUES OF EVALUATION. (3)
PHED 230. RESEARCH LITERATURE. (3)
PHED 250. MENTAL AND EMOTIONAL ASPECTS OF SPORTS AND RECREATION. (3)
PHED 275. ADVANCED ANALYSIS OF HUMAN MOTION. (3)
PHED 280. SCIENTIFIC BASES OF EXERCISE. (3)
PHED 285. SEMINAR IN PERCEPTUAL SKILL, MOTOR LEARNING AND PERFORMANCE. (3)
PHED 287. ADVANCED SEMINAR. (1-3)
PHED 288. SPECIAL PROBLEMS IN PHYSICAL EDUCATION (1-6)
PHED 290. ADMINISTRATIVE DIRECTION OF PHYSICAL EDUCATION. (3)
PHED 291. CURRICULUM CONSTRUCTION IN PHYSICAL EDUCATION. (3)
PHED 399. RESEARCH THESIS. (1-5)
PHED 499. RESEARCH—DISSERTATION. (1-5)

*These courses may be taken for graduate credit with the permission of the advisor. Students taking 100 level courses for graduate credit will be expected to carry out a special research project.

REQUIREMENTS IN PHYSICAL EDUCATION

In the "General and Academic Regulations" (See Appendix C) the basic requirements in Physical Education for men and women are stated under the section entitled "Physical Education" as follows:

All undergraduate men and women students who are registered for more than eight semester hours of credit are required to enroll in and successfully complete two prescribed courses in physical education for a total of two semester hours of credit. The successful completion of these courses is required for graduation. These courses must be taken by all eligible students during the first two semesters of attendance at the University, whether or not they intend to pursue a degree. Men and women who have reached their thirtieth birthday are exempt from these courses. The thirtieth birthday must precede the Saturday of registration week. Students who are physically disqualified from taking these courses must enroll in adaptive courses for which credit will be given.

A student who has 56 transferred academic credits will not be required to register for physical education. Students with military service may receive credit for these courses by applying to the Director of the Men's Physical Education Program.

Students majoring or minoring in physical education, recreation, or health education may meet these requirements by enrolling in special professional courses.

The program of physical education offers the college student an opportunity to acquire skills, knowledges, and appreciations in a variety of physical and sports activities. Adequate participation now and in the future will contribute to more efficient physiological functioning, effective movement, improved human relations, and worthwhile use of leisure time. Students are urged to develop new skills as well as to select those in which they would like to have further experience.

The complete course offering for any one semester is listed in the "Schedule of Classes" for each semester. Special attention should be given to the time, place, and section of the activities. When selecting course for credit, consideration should be given to the following points:

MALE STUDENTS: All male students are required to take the basic program, P.E. 1, Orientation to Physical Education, the first semester in which they are enrolled in the University.

Each male student enrolled in required physical education will be furnished a red and black reversible T-shirt, black trunks, socks, supporter, and towel. Gymnasium shoes, and for some classes, sweat clothes must be furnished by the student.

At the end of each semester or upon withdrawal from the University each student must return his clothing to the equipment custodian or he will be billed for all items of clothing which are missing.

WOMEN STUDENTS: All women students will select the activity in which they would like to participate.

UNIFORM: Each woman student is expected to provide herself with gymnasium costume consisting of dark green bermuda shorts, white blouse, white socks and tennis shoes.

The Basic Program Courses are designated as:

- P.E. 1 Orientation to Physical Education (Male—First Semester)
- P.E. 2 Physical Education Activities (Female — First Semester)
- P.E. 3 Basic Physical Education (Male—2nd semester)
- P.E. 4 Physical Education Activities (Female — 2nd Semester)
- P.E. S10 Physical Activities (Summer) (Co-educational)

(The P.E. Basic Courses Listed above may be taken for credit beyond requirement or for Audit)

RECREATION

The increased amount of leisure time existent in our society because of the rapid development of modern civilization, and the imperative need for guidance in the wise use of that leisure time, has made society cognizant of the need for trained recreation leaders.

This curriculum, therefore, is designed to meet the needs of students who wish to qualify for the many positions in the field of recreation, and the needs of those students who desire a background in skills which will enable them to render distinct contributions to community life. The College draws upon various other departments and colleges within the University for courses to balance and enrich its offerings for its recreation curriculum.

Those majoring in recreation have opportunity for observation and practical experience in local, county, state and federal public recreation programs, in social and group work agency programs, and in the various programs of the Armed Forces, American Red Cross, local hospitals, etc. Major students are encouraged to select an 'option' area of interest around which to center their elective courses (for instance: public recreation, recreation for the ill and handicapped, outdoor recreation, etc.)

A very active student University of Maryland Recreation and Parks Society, an affiliate of the comparable state and national organizations, exercises degrees of leadership in selecting the annual "outstanding senior" and "outstanding alumnus" awards, in the granting of the various city, county and state society recreation scholarships, in the programming of the annual 'Governor's Conference on Recreation,' etc. It also provides opportunities for university and community service, for rich practical experience, and for social experiences for those students having a mutual professional recreation interest.

REQUIREMENTS FOR DEGREE IN RECREATION

Requirements for the Bachelor of Science degree in recreation in the College of Physical Education, Recreation, and Health are as follows:

College recreation courses (RECR 30, 40 or 150, 100, 110, 120, 140, 180, 185, 190)	25-26
Prescribed courses in related areas (PHED 50, 60 series—4 cr., 114; APDS 1; CRFT 2; MUSC 16, SOCY 1, 118; SPCH 1, 10, 113 or 127; PSYC 1; HDSD 106)	39
Additional prescribed courses in one recreation option area (public recreation, tion for the ill and handicapped or outdoor recreation)	12
Prescribed Health course (HLTH 40, 50) .	4
Additional General Education requirements (ENGL 9 cr.; HIST 6 cr.; Fine Arts 3 cr.; Science 7 or 8 cr.; MATH 3 cr.)	28-29
Electives (to encourage proficiency in one skill area, and provide for a minor) . .	22
Total	132

MINOR IN RECREATION

18 semester hours in recreation and 6 semester hours in cognate areas, including in the 18 hours the following: 10 hours in RECR 30, 40, 110, 120, 150, 170, 180, 185 or 190; RECR 100; SOCY 118.

6 hours of work in areas of the recreational skills—nature, arts and crafts, speech and dramatics—but not in the area of the student's major.

2 hours of work in the areas of swimming, sports and dance skills.

OR other courses approved by the student's adviser and the various departments involved, depending upon the student's interest and background.

Elective courses (6 hours) are selected with the approval of the student's adviser.

FACULTY

PROFESSOR AND CHAIRMAN: Harvey.
ASSOCIATE PROFESSORS: Churchill, Parker.
VISITING INSTRUCTORS: Bushart, Hutchison, Stevenson.

RECR 30. HISTORY AND INTRODUCTION TO RECREATION (2)

First and second semesters. An introduction to the be-

- ginnings, growth, and possibilities in recreation as presently conducted by individuals, agencies and governments; attitudes toward and theories of play; historical events and figures; organizations and groups interested in recreation, including their job opportunities, specifications and demands; a self analysis of individual student interests, limitations and capabilities in light of these specifications and demands. (Parker)
- RECR 40. CAMP COUNSELING AND ADMINISTRATION. (2)**
First and second semesters. A study of the philosophy and techniques of camp counseling including the qualifications, responsibilities and skills involved; the basic organization, administration and program planning practices and problems of camping as a whole; the relationship of these practices and problems to the counselor and his or her probable success. Outdoor skills will be taught and practiced insofar as possible with field trips included. (Staff)
- FOR ADVANCED UNDERGRADUATES AND GRADUATES**
- RECR 100. CO-RECREATIONAL GAMES AND PROGRAMS. (2)**
First and second semesters. Compilation and sampling of the techniques for use in low organization and party games and activities. Emphasis is placed upon those activities of value to a recreation leader or teacher, and upon the placement, sequence and variation of such activities for all age levels and interest. (Staff)
- RECR 110. NATURE LORE. (2)**
Second semester. An overall orientation course in nature interpretation covering from a recreational point of view, the various areas of the physical and biological sciences. Students will be required to attend evening classes, carry out various observations, and participate in practice-leadership experiences as scheduled. (Staff)
- RECR 120. PROGRAM PLANNING. (3)***
First and second semesters. Prerequisite, RECR 30 or RECR 170. Study of the various aspects, problems and practices of agency, military "exceptional" and governmental recreation programs and their planning (with particular emphasis on playground, community and teen center plans and procedures). Observations will be required. (Parker)
- RECR 140. OBSERVATION AND FIELD WORK IN RECREATION. (5)**
First and second semesters. Limited to recreation majors. Appropriate observations and field work placement will be selected and assigned on the basis of the student's interest and future employment plans. The field work experience itself will be expected to provide, (1) face to face leadership activity, (2) participation in staff activities and responsibilities as feasible (filing, making of reports, etc.), and (3) exposure to any and all intra and inter agency or department relationships and activities (budget hearings, training sessions, board meetings, etc.) (Churchill)
- RECR 150. CAMP MANAGEMENT. (3)***
First and second semesters. Summer session. Prerequisite: RECR 40 or experience. An advanced camping course for those students with previous training and experience; organization, administration, programming, current trends, evaluation, and special problems. Whenever possible, visiting specialists and field trips will be included. (Harvey)
- RECR 170. GENERAL FUNDAMENTALS OF RECREATION. (3)**
First and second semesters. This course is designed for and limited to students not majoring in recreation who wish to develop some understanding of the place, importance and potentialities of recreation in modern life. Included will be limited study of the areas of philosophy, program planning, leadership techniques, organization and administration, and interrelationships with other fields. (Harvey)
*This course may be taken for graduate credit with the permission of the advisor. Students taking 100 level courses for graduate credit will be expected to carry out a special project.
- RECR 175. INTRODUCTION TO THERAPEUTIC RECREATION. (3)**
First and second sessions. Summer session. A study of the nature of physical and emotional deficiency and illness, the effect upon them of various recreation skills, activities and programs, and the method recommended for the latter's implementation. (Bushart)
- RECR 180. LEADERSHIP TECHNIQUES AND PRACTICES. (3)***
First and second semesters. Prerequisite: RECR 30 or 170. A study of the various kinds and levels of leader-

- ship exerted by professional and volunteer workers, some of the difficulties and probable weaknesses to be met, and some of the tangible techniques to be used in personnel, staff, and public relationships. The group work approach will be emphasized and used, insofar as possible, in the solution of particular problems that grow out of required field experiences in handling on or off campus groups. (Churchill)
- RECR 184. OUTDOOR EDUCATION. (6)***
First and second sessions. Summer session. Field experience in an outdoor setting will be used to present the activities and techniques recommended for modern outdoor education practice. Where possible groups of participants will be utilized as subjects for practice instructional work class. Activity will emphasize not only the subject matter of science and education but also the broad concepts of conservation, worthy use of leisure time, education for democratic living, etc. (Harvey and Eley)
- RECR 185. PLANNING DESIGN, AND MAINTENANCE OF PARK AND RECREATION AREAS AND FACILITIES. (3)***
First and second semesters. A study of the relation of the park and recreation system to the total community planning process; area layout, design and maintenance of facilities. Field experience will include the conducting of actual community surveys and preparation of site plans as requested by various community groups. The development of such studies will include inspection of areas, site analysis, preparation of plans, and their presentation to the community. (Stevenson)
- RECR 189. FIELD LABORATORY PROJECTS AND WORKSHOP. (1-6)***
First and second semesters. Summer session. A course designed to meet the needs of persons in the field with respect to workshops and research projects in special areas of knowledge not covered by regularly structured courses. (Staff)
- RECR 190. ORGANIZATION AND ADMINISTRATION OF RECREATION. (3)***
First and second semesters. Summer session. A study of the organizational patterns and administrative problems involved in the various types of operating recreation groups and agencies; forms of organization; finance and budget; personnel; areas, facilities, and equipment; public relations. (Churchill)
- RECR 196. QUANTITATIVE METHODS. (3)***
First and second semesters. Summer session. A course covering the statistical techniques most frequently used in research pertaining to physical education, recreation and health education. An effort will be made to provide the student with the necessary skills, and to acquaint him with the interpretations and practical applications of these techniques. (Stull)
*This course may be taken for graduate credit with the permission of the advisor. Students taking 100 level courses for graduate credit will be expected to carry out a special project.
- FOR GRADUATES**
See the Graduate School Catalog for descriptions.
- RECR 200. SEMINAR IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (1)**
- RECR 201. FOUNDATIONS OF PHYSICAL EDUCATION, RECREATION AND HEALTH. (3)**
- RECR 202. PHILOSOPHY OF RECREATION. (3)**
- RECR 203. SUPERVISORY TECHNIQUES IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (3)**
- RECR 204. MODERN TRENDS IN RECREATION. (3)**
- RECR 210. METHODS AND TECHNIQUES OF RESEARCH (3)**
- RECR 230. SOURCE MATERIAL SURVEY. (3)**
- RECR 240. INDUSTRIAL RECREATION. (3)**
- RECR 260. HOSPITAL RECREATION. (3)**
- RECR 287. ADVANCED SEMINAR. (1-3)**
- RECR 288. SPECIAL PROBLEMS IN PHYSICAL EDUCATION, AND HEALTH. (1-6)**
- RECR 290. ADMINISTRATIVE DIRECTION OF RECREATION. (3)**
- RECR 399. RESEARCH—THESIS. (Master's Level)**
- RECR 499. RESEARCH—DISSERTATION. (Doctoral Level)**

HEALTH EDUCATION

This curriculum is designed to prepare the student to give leadership in the development of the school health program including (1) health services, (2) healthful environment, and (3) health instruction. Graduates of the departmental program have placement opportunities as health educators in the public schools and community colleges as well as in the public and voluntary health agencies, i.e. local health departments, local affiliates of the American Cancer Society, American Heart Association, etc. The minor is planned to be particularly suitable for students who major in physical education, home economics, and education at either the elementary or secondary level.

HEALTH CURRICULUM

	Semester	
FRESHMAN YEAR	I	II
ENGL 1,3—Composition and American Literature	3	3
Soc'y 1—Introduction to Sociology	3	...
ZOOL 1—General Zoology	...	4
SPCH 7—Public Speaking	2	...
PHED 1,3—Orientation: Developmental and Comotive (Men)	1	1
PHED 2,4—Orientation Activities: Swimming (Women)	1	1
CHEM 8,9—General Chemistry	4	4
ANTH 1 or 2—Introduction to Anthropology	3	...
HLTH 40—Personal and Community Health	...	3
Electives	...	3
Total	16	18

SOPHOMORE YEAR

ENGL 4—World Literature	3	...
HIST—(General Education Requirements)	3	3
ZOOL 14,15—Human Anatomy and Physiology	4	4
HLTH 50—First Aid and Safety	...	1
HLTH 70—Safety Education	3	...
PHIL—(General Education Requirement)	...	3
MATH—(Gen. Ed. Requirement other than Math 1)	3	...
Nutrition 20	...	3
Electives	...	3
Total	16	17

JUNIOR YEAR

EDUC 150—Educational Measurement or HLTH 180—Measurement in Physical Education and Health	...	3
MICB 001—General Microbiology	4	...
MICB 108—Epidemiology and Public Health	...	2
HLTH 110—Introduction to School Health Education	2	...
HLTH 120—Methods and Materials in Health Education	...	3
EDUC 110—Human Development and Learning	6	...
EDUC 111—Foundations of Education	...	3
PSYC 001—Introduction to Psychology	3	...
PSYC 005—Personality and Adjustment	...	3
Electives	3	3
Total	18	17

SENIOR YEAR

HLTH 140—Curriculum Instruction and Observation	...	3
HLTH 150—Health Problems of Children and Youth	3	...
HLTH 190—Org. and Adm. of School Health Programs	3	...
EDSE 145—Principles and Methods of Secondary Ed.	...	3
EDSE 148—Student Teaching in Secondary Schools	...	8
Electives	9	...
Total	15	14

DEGREE REQUIREMENTS IN HEALTH EDUCATION

Requirements for the Bachelor of Science degree in health education in the College of Physical Education and Health are as follows:

	Sem. Cr.
Foundation science courses (Zool 1,14,15; MICB 1,108; CHEM 8,9)	26
General Education Requirements (ENGL 1,3,4; PHIL, ANTH, SOCY 1; HIST (6 hours); MATH (Any above MATH))	27
Other specified requirements (SPCH 7; PSYCH 1,5; NUTR 20)	11
Professional Health Education courses (HLTH 40, 50, 70, 110, 120, 140, 150; EDUC 150 or HLTH 180, 190)	24
Education requirements (EDUC 110,111; EDSE 145,148)	20

Physical Education Requirements (PHED 1,3

Men Only; PHED 2,4 Women)	2
Electives	20
Total	130

MINOR IN HEALTH EDUCATION—24 hour minor

Twelve semester hours in health education (HLTH 40, 50, 110, 120, 150)

Twelve semester hours in related areas:

Six semester hours of biological science.

Six semester hours of psychology or human development.

MINOR IN SAFETY EDUCATION

Students wishing to obtain a minor in safety education and become certified to teach Safety and Driver Education in junior and senior high schools should take the following courses: HLTH 50 (1), HLTH 60 (2), HLTH 70 (3), HLTH 80 (3), HLTH 105 (3), and HLTH 145 (3), ENFP 104 (3) and ENFP 105 (3). In addition, six hours of psychology (other than the general education requirements) are required.

THE FACULTY

PROFESSOR: Johnson

ASSOCIATE PROFESSORS: Jones, Leviton, Tifft, Tompkins

ASSISTANT PROFESSORS: Miller

INSTRUCTORS: Bakhaus, Hart, Harich, Sands, Sechrest, Waters

HLTH 10. ORIENTATION TO HEALTH EDUCATION. (1)

First and second semesters. This course explores the field of health education in both the school and the community from the point of view of the health educator. Professional preparation and career opportunities are considered. (Staff)

HLTH 30. INTRODUCTION TO PHYSICAL EDUCATION RECREATION, AND HEALTH. (3)

First and second semesters. Development of understanding and appreciation of the historic and significant purpose and place of each of the specialized areas in general education. A study of the educational and personal requirements and opportunities of a career in each professional area. Students will be acquainted with the status and trends of each area. (Staff)

HLTH 40. PERSONAL AND COMMUNITY HEALTH. (3)

First and second semesters. Summer session. Meaning and significance of physical, mental and social health as related to the individual and to society; important phases of national health problems; constructive methods of promoting health of the individual and the community; health problems young people encounter with special emphasis on health knowledge for future teachers. (Cannot be taken as an elective by students having had Health 5.) (Staff)

HLTH 50. FIRST AID AND SAFETY. (1)

First and second semesters. Lecture, demonstration, and skill training in first aid measures for resuscitation, hemorrhage control, shock, burns, poisons, and bone injuries. Red Cross and Medical Self-Help certification awarded. (Staff)

HLTH 60. INSTRUCTOR'S COURSE IN FIRST AID. (2)

First and second semesters. Prerequisite, Health 50 or equivalent. Advanced consideration of first aid techniques; orientation to methods, techniques, and teaching aids; practical classroom instruction required. Red Cross instructor's certification awarded. (Staff)

HLTH 70. SAFETY EDUCATION. (3)

First and second semesters. Safety in the home, school, and community. Safety education programs in the public schools. (Staff)

HLTH 80. THE DRIVER AND HIS CHARACTERISTICS. (3)

First and second semesters. Prerequisite, Health 70. The aim of this course is to treat the driver behavior problem in its relation to many of the psychophysical factors and forces in the traffic environment that impinge upon the man behind the wheel. (Staff)

FOR ADVANCED UNDERGRADUATES AND GRADUATES*

HLTH 105. DRIVER EDUCATION AND TRAFFIC SAFETY 1. (3)

- First and second semesters. Summer session. Prerequisites, Health 70, 80. This course is a study of the place of the automobile in modern life and deals with the fundamentals, principles, practices, and content of high school driver education and traffic safety. Laboratory experience consists of observation and experience in teaching beginners to drive in dual control cars and simulators. Course includes eight weeks of practice teaching. (Staff)
- HLTH 110. INTRODUCTION TO SCHOOL HEALTH EDUCATION. (2)**
First and second semesters. Prerequisites, Health 5 or Health 40. This course deals with the aspects of school health: health environment, health services, and health education. The relationships of the school health program and the general education program are emphasized. The roles of teachers, administrators, health specialists and others in related fields are discussed. (Staff)
- HLTH 120. METHODS AND MATERIALS IN HEALTH EDUCATION. (3)**
First and second semesters. Summer session. Prerequisites, Health 5 or Health 40; Health 110 or consent of instructor. The purpose of this course is to present the interrelationships of curriculum planning, methodology, and the selection and use of teaching aids and materials. Special problems associated with health teaching are discussed. Students will become familiar with a variety of resources as well as planning for and presenting demonstration lessons. (Staff)
- HLTH 140. CURRICULUM, INSTRUCTION AND OBSERVATION. (3)**
First and second semesters. Summer session. Prerequisites, Health 40, 70, 110, 120. A course designed to provide directed observation and discussion, coordinating these experiences with those from previous methods courses in the development of curricula for health and physical education. The course is planned to prepare for student teaching which follows in the same semester. The observations will be made of health programs in junior and senior high schools. This course must be taken during the semester in which the student is doing student teaching. (Staff)
- HLTH 145. DRIVER EDUCATION AND TRAFFIC SAFETY II. (3)**
First and second semesters. Summer session. Prerequisites, Health 70, 80, 105, or their equivalents. Comprehensive programming for driver education; teaching to meet driving emergencies and winter conditions; resources and agencies; the teacher and driver education; consumer education, insurance and liability. (Staff)
- HLTH 150. HEALTH PROBLEMS OF CHILDREN AND YOUTH. (3)***
First and second semesters. Summer session. This course involves a study of the health needs and problems of pupils from the primary grades through high school. Physical, mental, and psychosomatic aspects of health are considered in relation to the developmental and school levels. Consideration is given to such topics as diet selection and control; exercise, recreation and rest; emotional upset and its implications; and psychosexual development and problems. The role of the teacher and parent in encouraging optimal health is emphasized. (Staff)
- HLTH 155. PHYSICAL FITNESS OF THE INDIVIDUAL (3)***
First and second semesters. Summer session. A study of the major physical fitness problems confronting the adult in modern society. Consideration is given to the scientific appraisal, development and maintenance of fitness at all age levels. Such problems as obesity, weight reduction, chronic fatigue, posture, and special exercise programs are explored. This course is open to persons outside the fields of Physical Education and Health. (Staff)
- HLTH 160. PROBLEMS IN SCHOOL HEALTH EDUCATION IN ELEMENTARY AND SECONDARY SCHOOLS. (3)***
First and second semesters. Summer session. This is a workshop type course designed particularly for in-service teachers to acquaint them with the best methods of providing good health services, healthful environment and health instruction. (Staff)
- HLTH 165. ORGANIZATION ADMINISTRATION AND SUPERVISION OF SCHOOL SAFETY EDUCATION. (3)**
Summer session Prerequisites, Health 70, 80, 105, 145 or their equivalents. Designed for teachers, school administrators, college instructors and others responsible for directing or supervising safety programs in the schools. Deals with the problems, policies, practices, administration and the supervision of a comprehensive accident prevention and safety education program for the schools. Considers integration factors of the school safety programs with the special emphasis on traffic programs. (Staff)
- HLTH 170. THE HEALTH PROGRAM IN THE ELEMENTARY SCHOOL. (3)***
Second semester. Summer session. Prerequisites, Health 5, or 40; 110. This course, designed for the elementary school classroom teacher, analyzes biological, sociological, nutritional and other factors which determine the health status and needs of the individual elementary school child. The various aspects of the school program are evaluated in terms of their role in health education. The total school health program is surveyed from the standpoint of organizing and administration, and health appraisal. Emphasis is placed upon modern methods and current materials in health instruction. (The State Department of Education accepts this course for biological science credit.) (Staff)
- HLTH 175. PROBLEMS IN DRIVER AND TRAFFIC SAFETY EDUCATION. (3)**
Summer session. Prerequisites, Health 70, 80, 105, 145, or their equivalents. An advanced course which gives consideration to the individual problems encountered in teaching driver and safety education. The psychology of teaching and learning are emphasized. Consideration is given to the implications of emotion and attitude factors in driver and traffic education. The course includes an examination of existing courses of study, research, supervisory and evaluation practices. (Staff)
- HLTH 178. FUNDAMENTALS OF SEX EDUCATION. (3)***
First and second semester. Summer session. This course is concerned with basic information regarding the physical, psychological, social, historical, semantic and comparative cultural aspects of sex. The adjustment needs and problems of children and adults during the course of maturing and aging are studied; and special consideration is given to the sex education program in schools. (Staff)
- HLTH 180. MEASUREMENT IN PHYSICAL EDUCATION AND HEALTH. (3)***
First and second semesters. Summer session. Two lectures and two laboratory periods per week. The application of the principles and techniques of educational measurement to the teaching of health and physical education; study of functions and techniques of measurements in the evaluation of student progress toward the objectives of health and physical education, and in the evaluation of the effectiveness of teaching. (Staff)
- HLTH 188. CHILDREN'S PHYSICAL DEVELOPMENTAL CLINIC. (1-4)**
First and second semesters. Summer session. Prerequisite, at least junior standing in health, physical education and recreation, or by special permission of the director. An opportunity to acquire training and experience in a therapeutically oriented physical education-recreation program for children referred by various education, special education, medical and psychiatric groups. (Staff)
- HLTH 189. FIELD LABORATORY PROJECTS AND WORKSHOP. (1-6)***
First and second semesters. Summer session. A course designed to meet the needs of persons in the field with respect to workshop and research projects in special areas of knowledge not covered by regularly structured courses.
Note: The maximum total number of credits that may be earned toward any degree in physical education, recreation, or health education under PHED, RECR, HLTH, or EDUC 189 is six. (Staff)
- HLTH 190. ORGANIZATION AND ADMINISTRATION OF SCHOOL HEALTH PROGRAMS. (3)***
First semester. Summer session. The three major aspects of the school health program are considered. Problems connected with health services, health instruction, and the health aspects of the school environment are discussed. The responsibilities of school personnel are delineated with emphasis on the role of the administrator. (Staff)

FOR GRADUATES

See the Graduate School Catalog for descriptions.

- HLTH 200. SEMINAR IN PHYSICAL EDUCATION, RECREATION, AND HEALTH. (1)**

- HLTH 210. METHODS AND TECHNIQUES OF RESEARCH (3)
 HLTH 220. SCIENTIFIC FOUNDATIONS OF HEALTH EDUCATION. (3)
 HLTH 240. MODERN THEORIES OF HEALTH. (3)
 HLTH 250. HEALTH PROBLEMS IN GUIDANCE. (3)

*This course may be taken for graduate credit with the permission of the adviser. Students taking 100 level courses for graduate credit will be expected to carry out a special project.

- HLTH 260. PUBLIC HEALTH. (3)
 HLTH 270. STATUS AND TRENDS IN HEALTH EDUCATION (3)
 HLTH 280. THE SCIENTIFIC BASES OF EXERCISE. (3)
 HLTH 287. ADVANCED SEMINAR. (1-3)
 HLTH 288. SPECIAL PROBLEMS IN HEALTH EDUCATION. (1-6)
 HLTH 290. ADMINISTRATIVE DIRECTION OF HEALTH EDUCATION. (3)
 HLTH 291. CURRICULUM CONSTRUCTION IN HEALTH EDUCATION. (3)
 HLTH 399. RESEARCH—THESIS. (1-5)
 HLTH 499. RESEARCH—DISSERTATION. (1-5)

REQUIRED HEALTH EDUCATION FOR MEN AND WOMEN

All students are required to complete one semester of Science and Theory of Health (HLTH 5) for graduation. Transfer students who do not have credit for a similar course must complete it before graduation. The department provides special sections each semester for upper classmen. This semester course is designed to meet the functional health needs and interests of college men and women. The basic units of instruction have evolved from present day scientific knowledge. It is hoped that through this health course the students will be better able to develop sound attitudes, behaviors and knowledge that will facilitate a more effective type of living. Audio-visual aids, reading, reports, guest speakers, and lectures help to enrich the class. The University environment, the personal and group adjustments which the students must make are considered to form the core of this course.

Men and women who have reached their thirtieth birthday at matriculation are exempt from HLTH 5. Military service does **NOT** exempt the student from the HLTH 5 requirement. The Department offers a proficiency examination, as outlined in the **General and Academic Regulations** of the University, which allows the student to establish credit for HLTH 5 by examination.

HLTH 5. SCIENCE AND THEORY OF HEALTH. (2)

First and second semesters. Summer session. A course concerned primarily with sound health knowledge, attitudes and behaviors as they apply to the individual. The major subjects dealt with in this course are: mental health and social adjustment; human reproduction and sex education; organic efficiency; ecology and health; and the need for health education and community action for health from local to world levels. (Staff)

MINORS IN OTHER AREAS

It is relatively easy for any student majoring in one curriculum of this College to complete the requirements for a minor in a cognate area of the College, as indicated after each major curriculum. Those who plan to teach in the public schools might wish to also qualify in another area. This is more difficult with the limited number of elective credits and must be planned carefully in advance. If it seems advisable, the Dean may waive certain required courses to allow development of a needed minor, or the student may be able to carry a heavier load than normal if his grade average permits.

Students majoring in physical education or health education should begin preparing for a teaching minor in a subject matter area during the sophomore year, if possible. Many opportunities exist in junior and senior high schools for a combination teacher of physical education and/or coach and a teacher of science, mathematics, history, etc.

ENGLISH MINOR

A minor in English requires 23 semester hours. It includes 9 semester hours of composition and literature, 3 semester hours of advanced American Literature, and 11 hours of electives. Electives must be chosen with the approval of the adviser and with the recommendations of the English Department.

MATHEMATICS MINOR

Two options should be noted for those desiring to take a concentration in math. If a person scored in Category 1 of the Math Placement Test, he should follow option 1—if he scored in Category 2, he should follow option 2.

Option 1	Option 2
MATH 18 .3 hrs	MATH 10 .3
MATH 19 .4	MATH 11 .3
MATH 20 .4	MATH 14 .3
MATH 21 .4	MATH 15 .3
MATH 100 .3)	MATH 100 .3)
MATH 133 .3) any one	MATH 133 .3) any one
MATH 170 .4)	MATH 170 .4)
—	—
18-19	15-16

PSYCHOLOGY MINOR

For a minor in Psychology at least 21 semester hours are required. The student should select the biological or the sociological approach to this minor.

- A. Biological: Psychology 1, Introduction to Psychology (3); Psychology 26, Developmental Psychology (3); Psychology 90, Statistical Methods in Psychology (3); Psychology 145, Experimental Psychology—Sensory Processes (4); Psychology 146, Experimental Psychology: Sensory Processes I (4); Psychology 148, Psychology of Human Learning (3); Psychology 180, Physiological Psychology (3).
- B. Sociological: Psychology 1, Introduction to Psychology (3); Psychology 5, Personality and Adjustment (3); Psychology 21, Social Psychology (3); Psychology 26, Developmental Psychology (3); Psychology 90, Statistical Methods in Psychology (3); Psychology 147, Experimental Psychology—Social Behavior (4); Psychology 148, Psychology of Human Learning (3).

SOCIAL SCIENCE MINOR

For a minor in this group, 24 semester hours are required as follows: History, 18 semester hours (including one year each of American and European history), economics, sociology, government, consumer education or geography, 6 semester hours.

SCIENCE MINORS

- A. General Science: 30 semester hours are required for a minor in general science including the following courses: CHEM 8, 9, General Chemistry (4,4); ZOOL 1, General Zoology (4); BOTN 1, General Botany (4); PHYS 1, 2, Elements of Physics (3, 3) or PHYS 10, 11, Fundamentals of Physics (4, 4). The remaining 6 or 8 semester hours will be chosen subject to the approval of the student's major adviser and of the science department in which his interest lies. ZOOL 14 and 15 (4, 4) are approved courses.
- B. Biological Minor: 20 semester hours are required for a biological minor and will include the following courses: ZOOL 1, General Zoology (4); ZOOL 14, and 15, Human Anatomy and Human Physiology (4, 4); CHEM 1, General Chemistry (4); BOTN 1, General Botany (4).
- C. Minors of 20 semester hours are also offered in chemistry and physics. A minor in chemistry must be supported by a one-year course in physics. Other courses will be chosen subject to the approval of the student's major adviser and the science department in which the student's interest lies.

SOCIOLOGY MINOR

For a minor in Sociology at least 18 semester hours are required as follows: Sociology 1, Introduction to Sociology; Sociology 86, Principles of Sociology (3); three semester hours chosen from Sociology 112, Rural-Urban Relations (3), Sociology 114, The City (3), Sociology 118, Community Organization (3), Anthropology 101 (3) or Sociology 105, Cultural Anthropology (3); three semester hours chosen from a social psychology group—Sociology 141, Sociology of Personality (3); Sociology 145, Social Control (3), Sociology 180, Small Group Analysis (3); and three semesters hours from an applied sociology group—Sociology 111, Sociology of Occupations and Careers (3), Sociology 115, Industrial Sociology (3), Sociology 116, Military Sociology (3), Sociology 121, Population (3), Sociology 131, Introduction to Social Service (3), Sociology 147 Sociology of Law (3), Sociology 153, Juvenile Delinquency (3), Sociology 186, Sociological Theory (3).

SPEECH MINOR

A minor of 22 semester hours is offered in speech. The minimum requirements for this minor are 12 semester hours in addition to the 10 semester hours of departmental requirements in Speech 1, 2, 3, and 4. The 12 semester hours above the departmental requirements must include 6 semester hours of courses numbered 100 or higher. All programs for minors must be approved by the departmental adviser.

GRADUATE STUDY

The College of Physical Education, Recreation, and Health offers course work in the areas of physical education, recreation and health education leading to the degree of Master of Arts, Doctor of Education, and Doctor of Philosophy. Persons not interested in an advanced degree may take course

work for purposes of teaching certification, renewal of certification, or professional growth. Within the three major areas—physical education, recreation, and health education—special study and research are available along the following lines: (1) Physical Education—elementary, secondary, higher education and research, administration, and athletics. (2) Recreation—public, industrial, hospital, youth-serving organizations and agencies, outdoor education, camp administration, higher education and research; (3) Health Education—elementary, secondary, higher education and research, safety education, and service organizations and agencies.

SPECIAL STUDY

Graduate students are encouraged to pursue advanced study along lines of their special interests. The wealth of research sources close to the University makes such study possible. In addition, the College of Physical Education, Recreation, and Health places at the disposal of graduate students a modern, spacious, well-equipped research laboratory.

GENERAL REGULATIONS GOVERNING GRADUATE WORK

Persons wishing to pursue graduate study must first gain admittance to the Graduate School. Application blanks for this purpose can be obtained by writing to the Dean of the Graduate School. Admittance to Graduate School entitles one to enroll in courses numbered 200 and above and to pursue course work leading to an advanced degree. Courses numbered 200 or above are graduate courses whereas courses numbered from 100 to 199 are advanced undergraduate and graduate courses. Persons not admitted to the Graduate School may enroll as special students in courses numbered under 200. To be admitted for graduate study, the applicant must:

- (1) be a graduate of an accredited college or university.
- (2) have a "B" average or its equivalent during the last two years of undergraduate work.
- (3) have the necessary prerequisite course work with a minimum of 16 semester credit hours in the subject field in which the applicant wishes to specialize.

MASTER OF ARTS DEGREE

The Master of Arts degree is awarded for successful completion of a minimum of 30 hours of advanced study beyond the undergraduate level. The Master's degree represents more than mere class attendance. It represents professional competency and the demonstrated ability to do critical thinking.

The student seeking the Master of Arts degree must declare a major subject field and a minor subject field. Twelve to fifteen credit hours will be in major area and nine to twelve hours, depending upon the number in the major area, will be in the minor field. The remaining six hours are made available to the student in order that he may study, relatively intensely, any problem or topic in which he has a special interest. This study culminates in a thesis.

One half, or fifteen of the thirty semester hours

required for the Master of Arts degree, must be in courses numbered 200 or above.

The program of the Master's degree is relatively flexible with only one course, (PHED 210, RECR 210, or HLTH 210), three credit hours, being required. All other course work is elective, subject to the adviser's approval. The student, in conjunction with the help of an adviser, works out a program of study suitable to the student's special needs and interests. During the term of initial enrollment in graduate study, the student takes the Graduate Diagnostic Examination. The purpose of this examination is to help the student and adviser to discover areas of strength and weakness. This provides information needed in directing the course of study. Upon completion of all course work, including the research project, the candidate undergoes a final oral examination which is directed primarily toward the student's research.

Graduate assistants working toward the Master's Degree should note that they may take only ten credit hours per semester during the fall and spring terms and six credit hours in Summer School. Consequently, a graduate assistant in order to obtain the Master's Degree, must attend the University at least three full semesters, or two semesters and two summer sessions.

THE DOCTOR OF EDUCATION DEGREE

The Doctor of Education degree is a professional degree offered in conjunction with the College of Education. Persons who are interested primarily in administrative and teaching positions in public school and related fields are encouraged to pursue this degree.

The degree is awarded for successful completion of a minimum of 90 hours of graduate credit and a demonstrated competency in the study and solution of problems related to the student's field of endeavor.

At least 30 class hours of the minimum of 90 hours must be taken on the College Park campus. The number of hours that can be transferred from another institution is subject to the decision of the Graduate Council. Each student is expected to select and carry to successful completion a research project of particular interest to him.

This project is reported in the form of a thesis and carries from six to nine hours of credit. In addition, each student must satisfy the language requirement by selecting Option I or IV. For detailed information concerning Options I or IV refer to the Office of Coordinator of Graduate Studies for the College.

In pursuing the Doctor of Education degree, the candidate must select an area of major emphasis and one or two areas of minor emphasis. Each candidate must take certain graduate background tests, and must successfully pass the following academic examinations: a six-hour preliminary examination taken relatively early in the program, a final written comprehensive examination covering the entire graduate course of study, and a final oral or written examination directed primarily toward the research project.

THE DOCTOR OF PHILOSOPHY DEGREE

The Doctor of Philosophy degree is offered primarily for those persons interested in preparing themselves for positions in teaching and research

on the college and university level. A **minimum** of 90 credit hours is required for this degree, plus the demonstrated ability to do scholarly work and research. At least thirty of the 90 hours must be taken on the College Park campus and the amount of credit that can be transferred from other institutions is subject to the decision of the Graduate Council. Each student must select and carry to completion a research project which may carry from 12 to 18 hours of credit. Course work must be planned on the basis of a major subject field and one or two closely related minor subject fields. In addition to class work, the student must satisfy the language requirement by selecting and completing Option I or IV. For detailed information concerning Options I and IV, refer to the office of the Coordinator of Graduate Studies for the College.

In pursuing the doctor of Philosophy degree, the candidate must take certain background tests, and must successfully pass the following academic examinations: a Graduate Diagnostic Examination taken early in the program, a written and oral comprehensive examination covering the entire graduate course of study, and a final oral examination directed primarily toward the research project.

DOCTORAL RESIDENCE

A minimum of one year (two consecutive semesters) of full-time study is required.

GENERAL ADVANCED STUDY

Students who are not seeking a degree, but are doing advanced study to fulfill some special need or renewal of teaching certification, are encouraged to select an adviser and to plan a program designed to help them best achieve their objectives.

PREREQUISITE FOR ADVANCED STUDY

The course prerequisite for advanced study in each of the three areas, physical education, recreation, and health are listed below. In certain instances experience or equivalent courses may be substituted for the courses listed. Students who are deficient in only one or two subjects may be admitted on a provisional basis, with the understanding that the deficiencies will be made up as soon as possible.

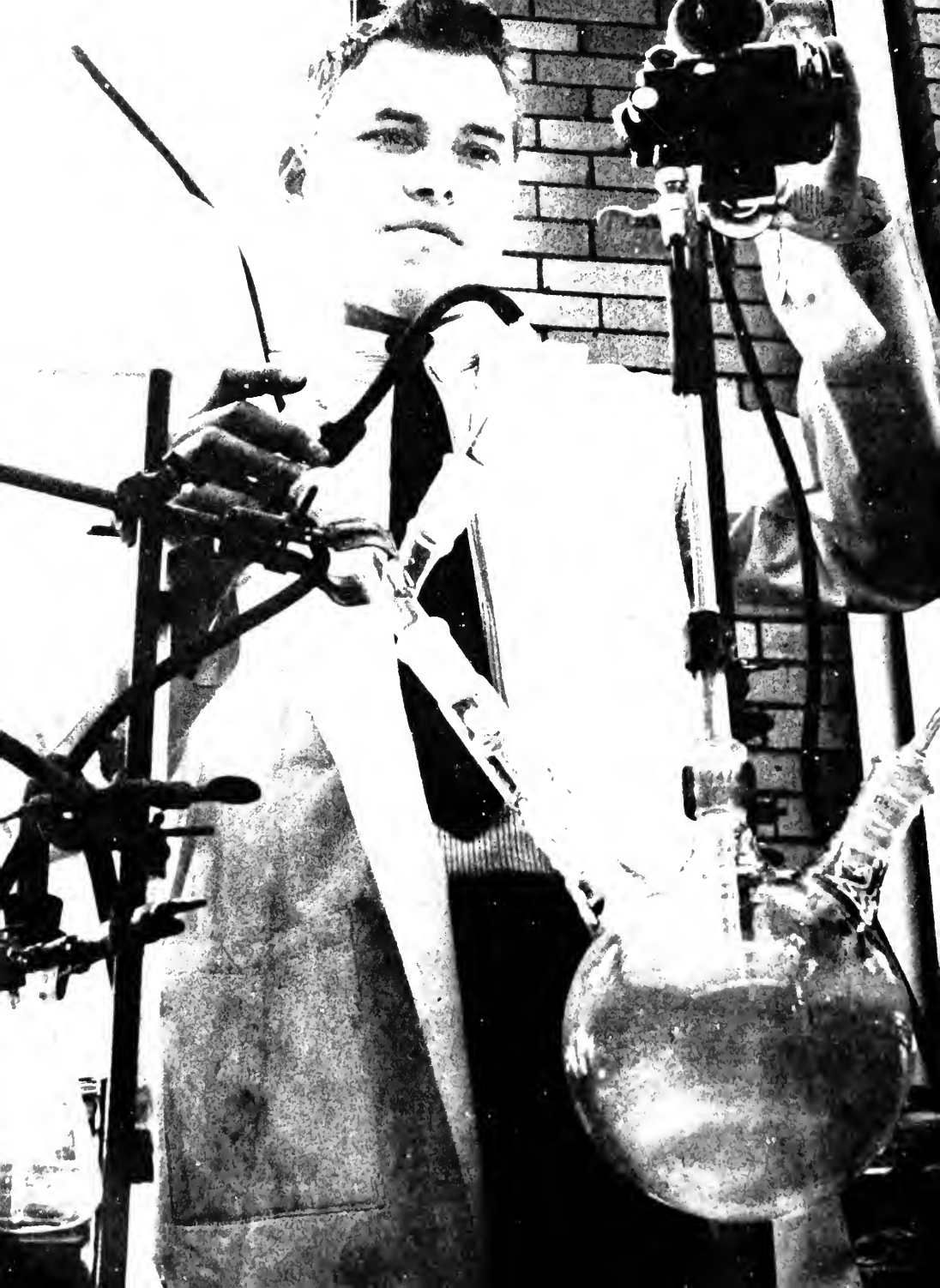
The following courses, or their equivalents, are prerequisites for advanced study:

- A. Physical Education—human anatomy, physiology, history and philosophy of physical education, theory of exercise (physiology of exercise), kinesiology, adapted physical education, measurement, methods, activity skills, administration, practice teaching (teaching experience), and human development (educational psychology).

Note: Measurement, administration, kinesiology and theory of exercise may be taken for graduate credit if they have not been taken on the undergraduate level. The student is expected to carry out a special research project if an advanced undergraduate course (100 level), is to carry graduate credit. No more than four hours of credit may count toward the M.A. degree.







Dentistry Medical Technology Nursing Pharmacy Physical Therapy

SCHOOL OF DENTISTRY THE DENTAL HYGIENE PROFESSION

The primary responsibility of the dental hygiene profession is to promote optimal oral health through the provision of preventive and educational services complementary to those within the purview of the dental profession.

In clinical office practice the dental hygienist's services are provided under the supervision of a dentist and are defined and governed by state dental practice acts. Although minor differences exist between state laws, in general those services which constitute permissible dental hygiene practice include: obtaining the patient's medical and dental history; conducting a preliminary clinical oral examination of the teeth and surrounding tissues for diagnosis by the dentist; performing diagnostic procedures (x-rays, impressions for study casts, saliva tests, oral cytologic smears, etc.) for use by the dentist; providing a complete oral prophylaxis (removal of all hard and soft deposits and stains and polishing of natural and restored surfaces of the teeth); applying topical medicaments and preventive agents; and assisting with office duties as assigned by the dentist. The dental hygienist also assumes a major role in patient education and counseling and supervision of oral hygiene practices.

Although the majority of dental hygienists are employed in dental offices, there are numerous opportunities and a growing need for those with baccalaureate and graduate degrees in dental hygiene education, community or public health, private and public institutions, commissioned service in the Armed Forces, research, and other special areas of practice. The dental hygienist's activities in these areas are dependent in varying degrees upon dental

knowledge and skills in providing clinical services. However, additional study beyond the basic dental hygiene curriculum is essential preparation for advanced professional career opportunities.

PROGRAM DESCRIPTION

The School of Dentistry offers only a four-year baccalaureate degree program in dental hygiene. The curriculum includes two years of preprofessional courses, a third year of intensive dental and dental hygiene study with clinical application, and a fourth year of advanced clinical practice and upper division electives in a recommended area of study, which will constitute a minor related to a specialized area of dental hygiene practice. The first two years of the pre-professional curriculum include general education requirements of the University of Maryland, dental hygiene education accreditation requirements, and elective lower division courses in one of the recommended minor areas of study. Completion of the pre-professional curriculum at the University of Maryland or another campus will be required for eligibility to apply for enrollment in the School of Dentistry as a junior standing student. A suggested course sequence for the first two years follows:

FRESHMAN YEAR

Course Title	1st Semester	2nd Semester
* # English 001—Composition.....	3	
* # Chemistry 008-009—General.....	4	4
* Philosophy 045, 041 or 001.....	3	
* Math 010.....	3	
* # Psychology 001—General.....	3	
Zoology 001—General (prerequisite for Anatomy and Physiology.....		4
* English—Literature.....		3
* # Sociology 001—Introduction.....		3
Elective.....		3
* P.E.—2-4.....	(1)	(1)
Totals.....	16	17

SOPHOMORE YEAR

* History	3	3
* English—Literature	3	
# Zoology 014-015—Anatomy and Physiology	4	4
# Nutrition 080—For Health Science Majors	3	
# Microbiology 001		4
Electives in selected minors (lower division)	3	6
* Health 5—Health Education	(2)	
	16	17

*General Education Requirement
#Dental Hygiene Pre-requisite

Although courses may be interchanged during the first two years, it is recommended that chemistry precede microbiology and nutrition to enable its application to these two subjects. It should be noted that Zoology 001 is a prerequisite for Zoology 014-105 (Human Anatomy and Physiology) at the University of Maryland. Among the philosophy courses offered at the University, the following, listed in order of preference, are considered to be the most appropriate for the education of the dental hygienists: Philosophy 045—Ethics, Philosophy 041—Elementary Logic and Semantics or Philosophy 001, Introduction.

To prepare for upper division courses in the student's minor during the senior year, the 12 hours of lower division electives should be taken in one of the following areas of study: Basic sciences, social sciences, or health education. Lower division courses in one of these minors will be accepted as prerequisites for upper division courses in education, should this minor be elected during the senior year. The Department of Dental Hygiene faculty will counsel students in the selection of courses for one of the recommended minors.

ADMISSIONS AND APPLICATIONS PROCEDURES HIGH SCHOOL STUDENTS

High school students, who wish to enroll in the pre-dental hygiene curriculum, should request applications directly from the Admissions Offices of the University of Maryland, College Park, Maryland 20742.

Young women or men who wish to prepare for a baccalaureate degree program in dental hygiene should pursue an academic program in high school, including the following recommended subjects: Biology, chemistry, math and physics.

PRE-DENTAL HYGIENE STUDENTS

Pre-dental hygiene students who have completed three semesters of the pre-professional curriculum should request an application at the end of the third semester from the Department of Dental Hygiene, University of Maryland School of Dentistry, Baltimore, Maryland 21201. **Applications for the Baltimore Campus should be received no later than June 1 prior to the fall semester for which the student wishes to enroll.**

Only those students who have successfully completed the two year pre-professional curriculum at the University of Maryland or another college or university will be eligible for admission to the School of Dentistry. **Because enrollment must be limited to 24 students, registration in the pre-professional curriculum does not assure the student of acceptance in the dental hygiene program.** All applicants will be required to submit Dental Hygiene Aptitude Test scores (DHAT information is available from the Department of Dental Hygiene) and to appear for a personal interview at the discretion of

the Dental Hygiene Committee on Admissions. A minimum of C average in the pre-professional curriculum will be required, and preference will be given to those students who have maintained high scholastic records.

REGISTERED DENTAL HYGIENISTS

Registered dental hygienists, who have completed a two year accredited dental hygiene program at another college or university, should apply to enroll in the pre-professional curriculum at one of the three University of Maryland campuses. Upon completion of general education, basic and social science, and elective requirements at the University of Maryland, dental hygiene credits will be evaluated for transferrability by the School of Dentistry and the Baltimore campus director of admissions. Registered dental hygienists should write directly to the Department of Dental Hygiene for additional information.

MEDICAL TECHNOLOGY SCHOOL OF MEDICINE

The University of Maryland Medical Technology program is four years in length, leading to a Bachelor of Science degree. The first three years are devoted to basic studies at the College Park campus. The last year is spent in clinical studies at University Hospital on the Baltimore City campus of the University of Maryland.

This program is administered by the School of Medicine, although the students have previously been registered in the School of Nursing at College Park as a temporary administrative measure. The curriculum in medical technology complies with the requirements and recommendations of the Board of Schools of the American Society of Clinical Pathologists (and the American Medical Association Council on Medical Education). Graduates of the program will be eligible to take the examination for registration given by the Board of Registry of the American Society of Clinical Pathologists.

ADMISSION

Applicants must meet the admission requirements of the University of Maryland. At least three years of college-preparatory mathematics and at least three years of science, including chemistry and physics, are strongly recommended.

CURRICULUM

Students must complete 90 semester-hours or more in academic subjects before being admitted to the senior year. (The two semester-hours in HLTH-005 and in Physical Education do not count toward this 90 semester-hour total.) The following courses are intended as a guide for the student in planning a curriculum which will meet both the University of Maryland requirements for graduation and the special requirements for the Registry Examination administered by the ASCP board of Schools.

MEDICAL TECHNOLOGY REQUIREMENTS (Pre-clinical Years)

*Chemistry (16-credit minimum)	Credit	Course Title
CHEM 008.009	(4.4)	General Chemistry
CHEM 031.033	(3.3)	Elements of Organic Chemistry
(OR 034.036	(2.2)	(Fall and Spring)
and 037.038)	(2.2)	
CHEM 019	(4)	Quantitative Analysis
(OR 161.162	(2.2)	Biochemistry
and 163.164)	(2.2)	(Fall and Spring)
Biological Science (16-credit minimum)		

ZOOL 001	(4)	General Zoology
ZOOL 014,015	(4,4)	Human Anatomy and Physiology
MICB 001	(4)	General Microbiology
Mathematics (6-credit minimum)		
MATH 010,011	(3,3)	Introduction to Mathematics
or		
MATH 018,019	(3,4)	Introductory Analysis and Elementary Analysis

General Education Courses (See University Requirements)

Other Recommendations	
SPCH 001 or 007	Public Speaking
PSYC 001	Psychology
PHYS 010, 011 or 003	General Physics
ZOOL 006	Genetics
ZOOL 108	Animal Histology
ZOOL 110	General Parasitology
MICB 101	Pathogenic Microbiology

Recommended Course Sequence For First Three Years

Freshman Year		Second Semester	
First Semester			
Chemistry 008	4	Chemistry 009	4
Zoology 001	4	Math 011	3
Math 010	3	(or Math 019 = 4)	
(or Math 018 = 3)		Health 005	2
English 001	3	PE 003 (004)	1
PE 001 (002)	1	Elective	5
	15		15

Sophomore Year		Second Semester	
First Semester			
Chemistry 031	3	Chemistry 033	3
(or Chem 035,036 = 4)		(or Chem 037,038 = 4)	
Zoology 014	4	Zoology 015	4
English 003	3	English 004	3
History	3	History	3
Psych 001	3	Speech 001	3
	16	(or Spch 007)	16

Junior Year		Second Semester	
First Semester			
*Chemistry 161	2	*Chemistry 163	3
*Chemistry 162	2	*Chemistry 164	2
Microbiology 001	4	**Microbiology 101	4
Phil 001 (or course in Fine Arts)	3	Soc 001 (or other Soc. Science)	3
**Physics 003	4	Elective	3
	15		15

*Chemistry 019 (Quantitative Analysis) may be substituted here.
 **Not required, but highly recommended.

THE SCHOOL OF NURSING

THE SCHOOL OF NURSING offers a four-year academic program leading to a Bachelor of Science degree in nursing. Students who complete the program are capable of practicing professional nursing in a variety of settings. Graduates are qualified to write the examination for licensure as Registered Nurses. The program is approved by the Maryland Board of Examiners for Nurses and is accredited by the National League for Nursing.

The College Park campus offers the academic courses required for lower division study in the undergraduate program of the School of Nursing.

RECOMMENDED COURSE OF STUDY

It is recommended that all students, including registered nurses, enrolled in or transferring to the program in nursing take the following courses in the suggested sequence:

A 2.0 cumulative grade point average in lower division studies is required in order to be eligible to continue the program in the School of Nursing. Upper division studies are offered on the Baltimore City campus.

Information about the lower division program may be obtained from Room 3, Denton Hall on the College Park campus. Upper division program information may be obtained from the School of Nursing, 655 West Lombard Street, Baltimore, Maryland 21201.

Freshman Year			
English 001	3 credits	Sociology 001	3 credits
Zoology 001	4 credits	Psychology 001	3 credits
Chemistry 008	4 credits	Chemistry 009	4 credits
Math 010 or 018	3 credits	Speech 007	2 credits
Nursing 007	0 credits	Fine Arts or Philosophy	3 credits
Physical Activities	1 credit	Physical Activities	1 credit
	15 credits		16 credits

Sophomore Year			
English 003	3 credits	English 004	3 credits
History	3 credits	History	3 credits
Zoology 014	4 credits	Zoology 015	4 credits
Microbiology	4 credits	Nutrition 080	3 credits
	14 credits	Elective	3 credits
			16 credits

THE SCHOOL OF PHARMACY

THE PURPOSES OF THE SCHOOL OF PHARMACY are to train students for the efficient, ethical practice of all branches of pharmacy; to instruct students in general scientific and cultural subjects so they can read critically, express themselves clearly, and think logically as members of a profession and citizens of a democracy; to guide students into productive scholarship and research for the increase of knowledge and techniques in the healing arts of pharmacy.

ACCREDITATION

The School of Pharmacy is accredited by the American Council on Pharmaceutical Education. The School holds membership in the American Association of Colleges of Pharmacy.

CORRESPONDENCE

All correspondence prior to entrance in the Pre-professional Program of the Five Year Curriculum at College Park should be addressed to the Director of Admissions, University of Maryland, College Park, Maryland 20742.

On the College Park campus, the Pharmacy Student Advisors' office is in the Francis Scott Key building, Rm. 109, telephone number, 454-2560.

THE SCHOOL OF MEDICINE PHYSICAL THERAPY

Physical Therapy is a health profession concerned with the prevention, evaluation and treatment of disease processes and injuries amenable to the effects of certain physical agents (heat, cold, ultrasound, light, electricity, water, massage), exercise and performed with due consideration for the emotional, social and economic facts related to the individual's health maintenance or recovery. Its purposes are affected through individual treatment or

group instruction or by consultation and instruction of others concerned with patient care. Physical Therapy is administered only when the patient is referred by a physician.

The educational program is accredited by the Council on Medical Education of the American Medical Association in collaboration with the American Physical Therapy Association.

For detailed information refer to the Bulletin issued by the Department of Physical Therapy. This can be obtained by writing to the Department of Physical Therapy, School of Medicine, 520R West Lombard Street, Baltimore, Maryland 21201.

DEGREE AND REQUIREMENTS

The University of Maryland offers a four-year curriculum to men and women students leading to a Bachelor of Science degree after the completion of 139 semester hour credits (63 liberal arts and sciences, 72 professional, and four health and physical activities). The freshman and sophomore students are registered on the College Park or Baltimore County campus and the junior and senior students on the Baltimore City campus. Qualified students from other accredited universities or colleges who have successfully completed appropriate courses may be admitted directly to the professional pro-

gram at Baltimore beginning in the Fall semester only.

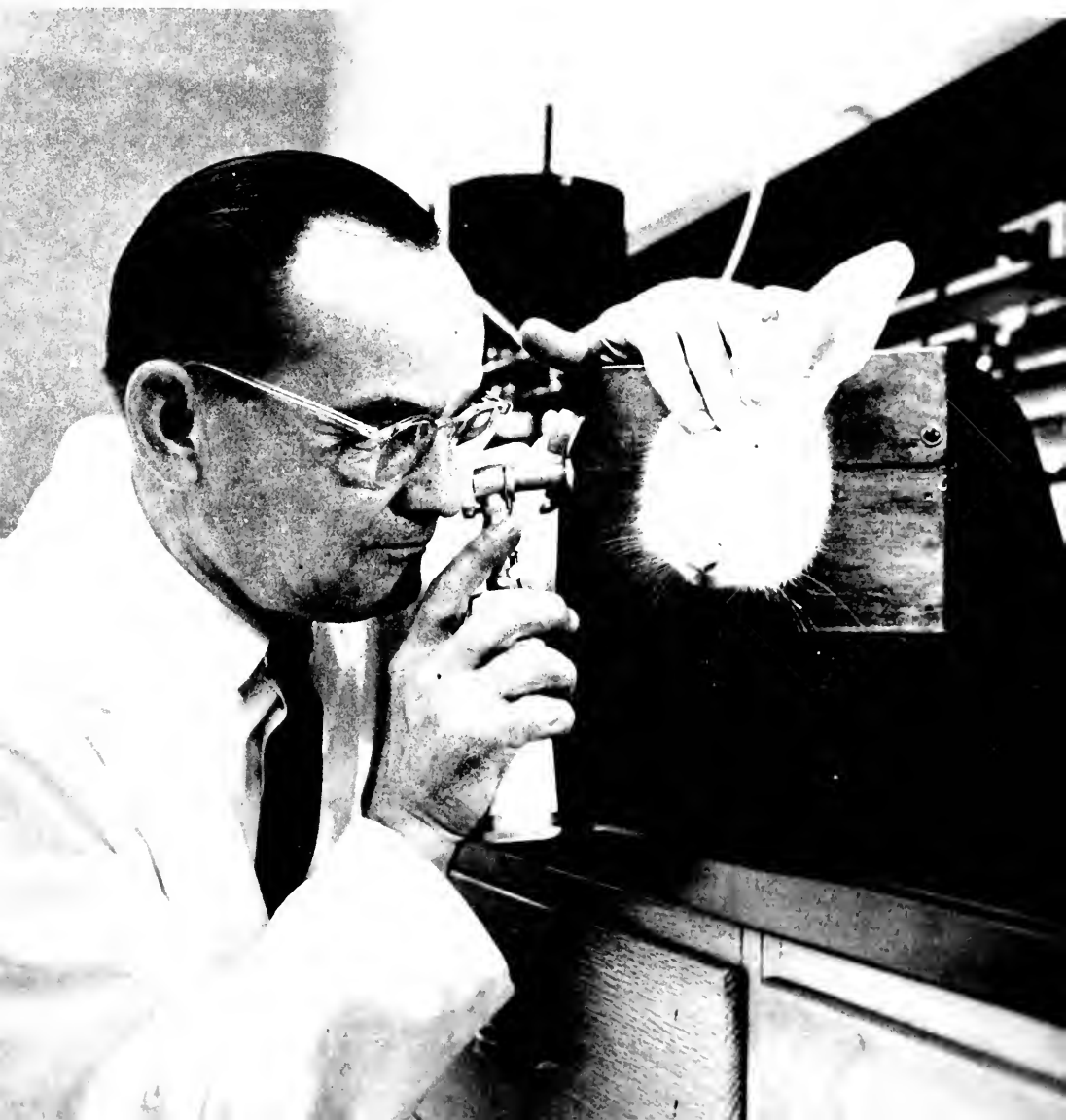
Physical Therapy Curriculum

College Park Campus

Freshman Year Course	Title	Semester Hour Credits	
		First	Second
Engl. 001	Composition.....	3	—
Phil. 001	Introduction to Philosophy..... (for course in Fine Arts)	—	3
Spch. 001	Public Speaking.....	—	3
Chem.	General Chemistry.....	4	4
Math. 010, 011	Introduction to Mathematics.....	3	3
Soc. 001	Introduction to Sociology.....	3	—
Psyc. 001	Introduction to Psychology.....	—	3
P.T. 010, 011	Physical Therapy Orientation.....	1	1
	Academic Hours	14	17
P.E.	Physical Activities.....	1	1
Hlth. 005	Science and Theory of Health.....	2	—
	Total Hours	17	18
Sophomore Year			
Engl. 003, 004	World Literature.....	3	3
Phys. 010, 011	Fundamentals of Physics.....	4	4
Zool. 001	General Zoology.....	4	—
Zool. 002	The Animal Phyla.....	—	4
Psyc.	Choice of 2 psychology courses.....	3	3
Hist.	Choice of 2 history courses other than State.....	3	3
	Total Hours	17	17

*Deleted for student admitted at junior level. Substitute hours required.

Students transferring from a regionally accredited college for admission to the junior year must have completed 65 academic semester hour credits of courses comparable to those listed above with 2 S.H.C. of substitution for P.T. 10.11 and a year of physical education and health (4 S.H.C.)



THE FACULTY

COLLEGE OF AGRICULTURE

Administrative Officers

- BENTZ, Frank L., Jr., Vice President for Agricultural Affairs and Associate Professor of Soils
B.S., University of Maryland, 1942; Ph.D., 1952.
- CAIRNS, Gordon M., Dean and Professor of Dairy Husbandry
B.S., Cornell University, 1936; M.S., 1938; Ph.D., 1940.
- POFFENBERGER, Paul R., Associate Dean and Professor of Agricultural Economics
B.S., University of Maryland, 1935; M.S., 1937; Ph.D., American University, 1953.
- HAUT, Irvin C., Director of Experiment Station and Professor of Horticulture
B.S., University of Idaho, 1928; M.S., State College of Washington, 1930; Ph.D., University of Maryland, 1933.
- WAGNER, Robert E., Director of Extension and Professor of Agronomy
B.S., Kansas State College, 1942; M.S., University of Wisconsin, 1943; Ph.D., University of Wisconsin, 1950.
- ELLINGTON, Charles P., Director of Service and Control Programs and Extension Assistant Professor of Agronomy
B.S., University of Georgia, 1950; M.S., University of Maryland, 1952; Ph.D., Pennsylvania State University, 1964.

Faculty

- ALBERT, Thomas F., Assistant Professor of Veterinary Science
B.S., Pennsylvania State University, 1959; V.M.D., University of Pennsylvania, 1962.
- ANGELL, Frederick F., Associate Professor of Horticulture
B.S., Southern Illinois University, 1960; M.S., 1961; Ph.D., University of Wisconsin, 1965.
- ANGUS, Richard R., Extension Assistant Professor and State Leader, 4-H and Youth
B.S., University of Minnesota, 1953; M.S., University of Minnesota, 1957.
- ARBUCKLE, Wendell S., Professor of Dairy Science
B.S., Purdue University, 1933; M.A., University of Missouri, 1937; Ph.D., 1940.
- AXLEY, John H., Professor of Soils
B.A., University of Wisconsin, 1937; Ph.D., 1945.
- AYCOCK, Marvin K., Jr., Assistant Professor of Agronomy
B.S., North Carolina State University, 1959; M.S., 1963; Ph.D., Iowa State University, 1966.
- BAILEY, Martin G., Extension Assistant Professor and Extension Supervisor, Agriculture
B.S., Hampton Institute, 1937; M.Ed., Cornell University, 1955.
- BAKER, Robert L., Assistant Professor of Horticulture
A.B., Swarthmore College, 1959; M.S., University of Maryland, 1962; Ph.D., 1965.
- BANDEL, V. Allan, Associate Professor of Soils
B.S., University of Maryland, 1959; M.S., 1962; Ph.D., 1965.
- BARNETT, Neal M., Assistant Professor of Botany
B.S., Purdue University, 1959; Ph.D., Duke University, 1966.
- BEAL, George M., Professor of Agricultural Economics
B.S., Utah State College, 1934; M.S., University of Wisconsin, 1938; Ph.D., 1942.
- BEAN, George A., Assistant Professor of Plant Pathology
B.S., Cornell University, 1958; M.S., University of Minnesota, 1960; Ph.D., 1963.
- BEITER, Robert J., Assistant Professor Agriculture Economics
B.S., University of Maryland, 1952; M.S., 1957.
- BENDER, Filmore E., Assistant Professor of Agricultural Economics
B.S., University of California, 1961; M.S., North Carolina State College, 1964; Ph.D., 1965.
- BEZDICEK, David F., Assistant Professor of Soils
B.S., South Dakota State University, 1960; M.S., University of Minnesota, 1964; Ph.D., 1967.
- BICKLEY, William E., Professor and Head of Entomology
B.S., University of Tennessee, 1934; M.S., 1936; Ph.D., University of Maryland, 1940.
- BIGBEE, Daniel E., Associate Professor Poultry Science
B.S., Oklahoma State University, 1956; M.S., 1958; Ph.D., Michigan State University, 1962.
- BORTHWICK, Harry A., Lecturer in Horticulture
A.B., Stanford University, 1921; M.A., 1924; Ph.D., 1930.
- BOUWKAMP, John C., Assistant Professor of Horticulture
B.S., Michigan State University, 1964; M.S., 1966; Ph.D., 1969.
- BRENNAN, Melvin C., Instructor, Visual Aids
B.S., University of Maryland, 1952.
- BRICKER, A. June, Extension Professor and State Leader, Extension Home Economics
B.S., Battle Creek College, 1935; M.A., New York University, 1953; Ph.D., New York University, 1961.
- BRODIE, Herbert L., Extension Instructor of Agricultural Engineering
B.S.A.E., Rutgers State University, 1964.
- BROWN, Russell G., Associate Professor of Botany
B.S., West Virginia University, 1929; M.S., 1930; Ph.D., University of Maryland, 1934.
- BUCKEL, W. Max, Extension Assistant Professor and Extension Supervisor, Agriculture
B.S., University of Maryland, 1951; M.S., Michigan State University, 1959.
- BULL, Leonard S., Assistant Professor of Dairy Science
B.S., Oklahoma State University, 1963; M.S., 1964; Ph.D., Cornell University, 1969.
- BURIC, John, Associate Professor of Animal Science
B.S., West Virginia University, 1948; M.S., University of Maryland, 1952; Ph.D., University of Illinois, 1960.
- BURT, Gordon W., Assistant Professor of Agronomy
B.S., Tennessee Technological University, 1961; M.S., Cornell University, 1964; Ph.D., Washington State University, 1967.
- BUSBICE, Bobby G., Extension Assistant Professor and Extension Supervisor, 4-H and Youth
B.S., Louisiana State University, 1950; M.S., University of Maryland 1961.
- CAIN, Jarvis L., Associate Professor of Agricultural Economics
B.S., 1955; Purdue University; M.S., Ohio State University, 1956; Ph.D., 1961.
- CALDWELL, Billy E., Cooperative Agent and Visiting Associate Professor, Agronomy
B.S., North Carolina State College, 1955; M.S., 1959; Ph.D., Iowa State University, 1963.
- CARON, Dewey M., Assistant Professor of Entomology
B.A., University of Vermont, 1964; M.S., University of Tennessee, 1966; Ph.D., Cornell, 1970.
- CHANCE, Charles M., Extension Associate Professor, Dairy Science
B.S., University of Maryland, 1941; M.S., Virginia Polytechnic Institute, 1948; Ph.D., Michigan State University, 1952.
- CLARK, Neri A., Professor of Agronomy
B.S., University of Maryland, 1954; Ph.D., 1959.
- CORBETT, M. Kenneth, Professor of Plant Pathology
B.S., Macdonald College, McGill University, 1950; Ph.D., Cornell, University 1954.
- COX, Edwin L., Lecturer in Agricultural Biometrics
B.S., Mount Allison University, 1933; M.S., Acadia University, 1940; M.S., Virginia Polytechnical Institute, 1949; Ph.D., North Carolina State University, 1952.
- CREEK, Richard D., Associate Professor of Poultry Science
B.S., Purdue University, 1951; M.S., 1954; Ph.D., 1955.
- CROTHERS, John L., Jr., Extension Assistant Professor, Department of Markets
B.S., University of Maryland, 1949; M.S., 1954.
- CURTIS, Charles R., Assistant Professor of Plant Pathology
B.S., Colorado State University, 1961; M.S., 1963; Ph.D., 1965.
- CURTIS, John M., Professor and Head of Agricultural Economics
B.S., North Carolina State College, 1947; M.S., 1949; Ph.D., University of Maryland, 1961.
- DAVIDSON, John A., Assistant Professor of Entomology
B.A., Columbia Union College, 1955; M.S., University of Maryland, 1957; Ph.D., 1960.
- DAVIS, Richard F., Professor and Head of Dairy Science
B.S., University of New Hampshire, 1950; M.S., Cornell University, 1952; Ph.D., 1953.
- DEAL, Elwyn E., Associate Professor of Agronomy and Assistant Director of Extension
B.S., University of Georgia, 1958; M.S., 1960; Ph.D., Rutgers University, 1963.
- DeBARTH, Jerry V., Assistant Professor of Animal Science
B.S., Iowa State University, 1961; Ph.D., 1966.

- DECKER, Morris A., Jr., Professor of Agronomy
B.S., Colorado A. & M., 1949; M.S., Utah State College,
1950; Ph.D., University of Maryland 1953.
- DOUGLASS, Larry W., Assistant Professor, Dairy Science
B.S., Purdue University, 1964; M.S., 1966, Ph.D., Oregon
State University, 1969.
- EIGENBRODE, David D., Extension Assistant Professor and
Extension Supervisor, 4-H and Youth
B.S., University of Maryland, 1955; M.S., 1961.
- EVANS, James G., Sr., Visiting Professor of Agricultural Eco-
nomics
B.A., Simpson College, 1921; M.A., University of Illinois,
1924.
- FANNING, Delvin S., Associate Professor of Soil Mineralogy
B.S., Cornell University, 1954; M.S., 1959; Ph.D., Uni-
versity of Wisconsin, 1964.
- FARWELL, Sanford, Extension Instructor and Exhibits Spe-
cialist
B.A., Rhode Island School of Design, 1954.
- FELTON, Kenneth E., Associate Professor of Agricultural En-
gineering
B.S.A., University of Maryland, 1950; B.S.C.E., 1951;
M.S., Pennsylvania State University, 1962.
- FERGUSON, James Riley, Extension Professor of Animal Sci-
ence
B.S., Colorado A. & M., 1941; M.S., Cornell University,
1951; Ph.D., 1953.
- FERNOW, Leonard R., Associate Professor of Geology
B.S., Cornell University, 1956; M.S., 1957; Ph.D., 1961.
- FLYGER, Vagn F., Research Professor, Natural Resource
Institute
B.S., Cornell University, 1948; M.S., Pennsylvania State
University, 1952; Sc.D., Johns Hopkins University, 1956.
- FOSS, John E., Associate Professor of Soil Classification
B.S., Wisconsin State University, 1957; M.S., University
of Minnesota, 1959; Ph.D., 1965.
- FOSTER, Phillips W., Professor of Agricultural Economics
B.S., Cornell University, 1953; M.S., University of Illinois,
1956; Ph.D., 1958.
- GALLOWAY, Raymond A., Associate Professor of Plant Physi-
ology
B.S., University of Maryland, 1952; M.S., 1956; Ph.D.,
1958.
- GAUCH, Hugh G., Professor of Plant Physiology
B.S., Miami University, 1935; M.S., Kansas State College,
1937; Ph.D., University of Chicago, 1939.
- GODFREY, Edward F., Extension Professor of Poultry Sci-
ence
B.S., University of New Hampshire, 1949; M.S., Ohio
State University, 1950; Ph.D., 1952.
- GOODWIN, Edwin E., Associate Professor of Animal Science
B.S., Louisiana State University, 1946; M.S., Cornell,
1948; Ph.D., Washington State University, 1955.
- GOUIN, Francis R., Assistant Professor of Horticulture
B.S., University of New Hampshire, 1962; M.S., Univer-
sity of Maryland, 1965, Ph.D., 1969.
- GREEN, Robert L., Professor and Head of Agricultural En-
gineering
B.S.A.E., University of Georgia, 1934; M.S., Iowa State
College, 1939; Ph.D., Michigan State University, 1953.
- GREEN, Willard W., Professor of Animal Science
B.S., University of Minnesota, 1933; M.S., 1934; Ph.D.,
1939.
- GRIGG, Barbara J., Instructor
B.S., Florida Southern College, 1960; M.S. University of
Tennessee, 1963; Ph.D., Duke University, 1968.
- HAMMOND, Robert C., Extension Associate Professor of
Veterinary Science
B.S., Pennsylvania State University, 1943; V.M.D., Uni-
versity of Pennsylvania, 1948.
- HARDIE, Ian W., Associate Professor of Agriculture Eco-
nomics
A.A., Modesto Junior College, 1958; B.S., University of
California, 1960; Ph.D., 1965.
- HARDING, Wallace C., Jr., Extension Assistant Professor of
Entomology
B.S., University of Maryland, 1951; M.S., 1956; Ph.D.,
1961.
- HARRIS, Wesley L., Professor of Agricultural Engineering
B.S.A.E., University of Georgia, 1953; M.S., 1958; Ph.D.,
Michigan State University, 1960.
- HARRISON, Floyd P., Associate Professor of Entomology
B.S., Louisiana State University, 1951; M.S., 1953;
Ph.D., University of Maryland, 1955.
- HARRISON, George K., Assistant Professor of Botany
B.A., Western Maryland College, 1935; M.S., University of
Maryland, 1956; Ph.D., 1958.
- HATZIIOLOS, Basil C., Professor of Pathology
D.V.M., Veterinary School of Alfort, France, 1929; DR.
VET. IN AM. HUS., Veterinary School of Berlin, Germany,
1932.
- HEATH, James L., Assistant Professor of Poultry Science
B.S., Louisiana State University, 1963; M.S., 1968; Ph.D.,
1970.
- HEIMPEL, Arthur M., Lecturer in Entomology
B.A., Queens College, 1947; M.A., 1948; Ph.D., University
of California, 1954.
- HENDEE, Clare W., Lecturer in Horticulture
B.S., Michigan State University, 1930; M.A., George Wash-
ington University, 1960.
- HOECKER, Harold H., Extension Assistant Professor of Agri-
cultural Economics
B.S., Iowa State College, 1941.
- HOFFMAN, Edmund, Associate Professor of Poultry Science
B.S., Cornell University, 1937; M.S., Rutgers University,
1945; Ph.D., University of Maryland, 1949.
- HOFFMANN, Lenat, Assistant Professor of Agronomy
B.S., Wisconsin State University, 1962; M.S., North Da-
kota State University, 1968; Ph.D., North Dakota State
University, 1969.
- HOLMES, A. Stewart, Assistant Professor of Agricultural Eco-
nomics
B.S., Oregon State University 1965; Ph.D., University of
Maryland, 1969.
- HOPKINS, H. Palmer, Assistant Professor of Agricultural and
Extension Education and Director of Student Aid
B.S., Oklahoma State University, 1936; Ed.M., Univer-
sity of Maryland, 1948; Ed.D., George Washington Uni-
versity, 1962.
- HORNSTEIN, Irwin, Lecturer in Food Science
B.Ch.Eng., City College of New York, 1937; M.S., Univer-
sity of Maryland, 1951; Ph.D., Georgetown University,
1960.
- HOYERT, John H., Professor of Agronomy
B.S., University of Maryland, 1943; M.S., 1949; Ph.D.,
1951.
- HUMMEL, John W., Assistant Professor of Agricultural En-
gineering
B.S.A.E., University of Maryland, 1964; M.S., University
of Maryland, 1966; Ph.D., University of Illinois, 1970.
- INGLING, Allen L., Assistant Professor of Veterinary Sci-
ence
B.S.E.E., University of Maryland, 1963; V.M.D., Univer-
sity of Pennsylvania, 1969.
- ISHEE, Sidney, Professor of Agricultural Economics
B.S., Mississippi State College, 1950; M.S., Pennsylvania
State University, 1952; Ph.D., 1957.
- JOHNSON, Carl N., Extension Assistant Professor of Horti-
culture
B.S., Michigan State College, 1947.
- JOHNSON, Robert B., Associate Professor of Veterinary Physi-
ology
A.B., University of South Dakota, 1939.
- JONES Jack Colvard, Professor of Entomology
B.S., Alabama Polytechnic Institute, 1942; Ph.D., Iowa
State College, 1950.
- KANTZES, James G., Professor of Plant Pathology
B.S., University of Maryland, 1951; M.S., 1954; Ph.D.,
1957.
- KARLANDER, Edward P., Associate Professor of Plant Physi-
ology
B.S., University of Vermont, 1960; M.S., University of
Maryland, 1962; Ph.D., 1964.
- KEENEY, Mark, Professor of Dairy Science
B.S., Pennsylvania State College, 1942; M.S., Ohio State
University, 1948; Ph.D., Pennsylvania State College,
1950.
- KILPATRICK, Louise C., Extension Assistant Professor and
Program Leader, 4-H and Youth
B.S., Pennsylvania State University, 1942; M.S., Cornell
University, 1957.
- KING, Raymond L., Professor of Dairy Science
A.B., University of California, 1955; Ph.D., 1958.
- KLARMAN, William L., Associate Professor of Plant Pathology
B.S., Eastern Illinois State College, 1957; M.S., Univer-
sity of Illinois, 1960; Ph.D., 1962.
- KRAMER, Amihud, Professor of Horticulture
B.S., University of Maryland, 1938; M.S., 1939; Ph.D.,
1942.

- KRAUSS, Robert W., Professor of Plant Physiology and Head, Department of Botany
A.B., Oberlin College, 1947; M.S., University of Hawaii, 1949; Ph.D., University of Maryland, 1951.
- KRESTENSEN, Elroy R., Associate Professor of Entomology
B.S., University of Florida, 1949; M.S., 1951; Ph.D., University of Maryland, 1962.
- KUHN, Albin O., Professor of Agronomy and Chancellor, Baltimore Campuses
B.S., University of Maryland, 1938; M.S., 1939; Ph.D., 1948.
- KRUSBERG, Lorin R., Professor of Plant Pathology
B.S., University of Delaware, 1954; M.S., North Carolina State College, 1956; Ph.D., 1959.
- LADSON, Thomas A., Head of Veterinary Science and Director of the Live Stock Sanitary Service
V.M.D., University of Pennsylvania, 1939.
- LANGFORD, George S., Professor of Entomology and State Entomologist
B.S., Clemson College, 1921; M.S., University of Maryland, 1924; Ph.D., Ohio State University, 1929.
- LANGSDALE, Elizabeth, Extension Assistant Professor and Home Furnishing Specialist
B.S., Illinois State University, 1938; M.E., Pennsylvania State University, 1954.
- LAWRENCE, Robert G., Assistant Professor of Agricultural Economics
B.S., University of Oklahoma, 1957; M.B.A., 1961; Ph.D., Texas A & M University, 1969.
- LEFFEL, Emory C., Professor of Animal Science
B.S., University of Maryland, 1943; M.S., 1947; Ph.D., 1953.
- LESSLEY, Billy V., Associate Professor of Agricultural Economics
B.S., University of Arkansas, 1957; M.S., 1960; Ph.D., University of Missouri, 1965.
- LIDEN, Conrad H., Assistant Professor, Administrative Assistant to the Dean
B.S., University of Maryland, 1942; M.S., 1949.
- LEIDENFROST, Charles B., Extension Instructor and Cultural Resource Development Specialist
Agricultural Degree, University of Budapest, 1943.
- LINK, Conrad B., Professor of Horticulture
B.S., Ohio State University, 1933; M.S., 1934; Ph.D., 1940.
- LOCKARD, J. David, Associate Professor of Botany and Education
B.S., Pennsylvania State College, 1951; M.Ed., Pennsylvania State University 1955; Ph.D., 1962.
- LONGEST, James W., Associate Professor of Rural Sociology
B.S., University of Illinois, 1951; M.S., 1953; Ph.D., Cornell University, 1957.
- MACCINI, John A., Assistant Professor in Geology and Secondary Education
B.A., Boston University, 1949; M.A., 1952; Ph.D., Ohio State University, 1969.
- MARASCO, Richard J., Assistant Professor of Agricultural Economics
B.S., Utah State University, 1961; M.S., 1966; Ph.D., University of California, 1969.
- MARQUARDT, Warren W., Associate Professor of Veterinary Science
B.S., University of Minnesota, 1959; D.V.M., 1961.
- MATHIAS, Iola H., Extension Assistant Professor and Clothing and Textiles Specialist
B.S., Mississippi State College for Women, 1936; M.S., Mississippi Southern College, 1955.
- MATTICK, Joseph F., Professor of Dairy Science
B.S., Pennsylvania State University, 1942; Ph.D., 1950.
- McKEE, Claude G., Associate Professor of Agronomy
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- MCLUCKIE, Virginia, Extension Associate Professor and Home Economist
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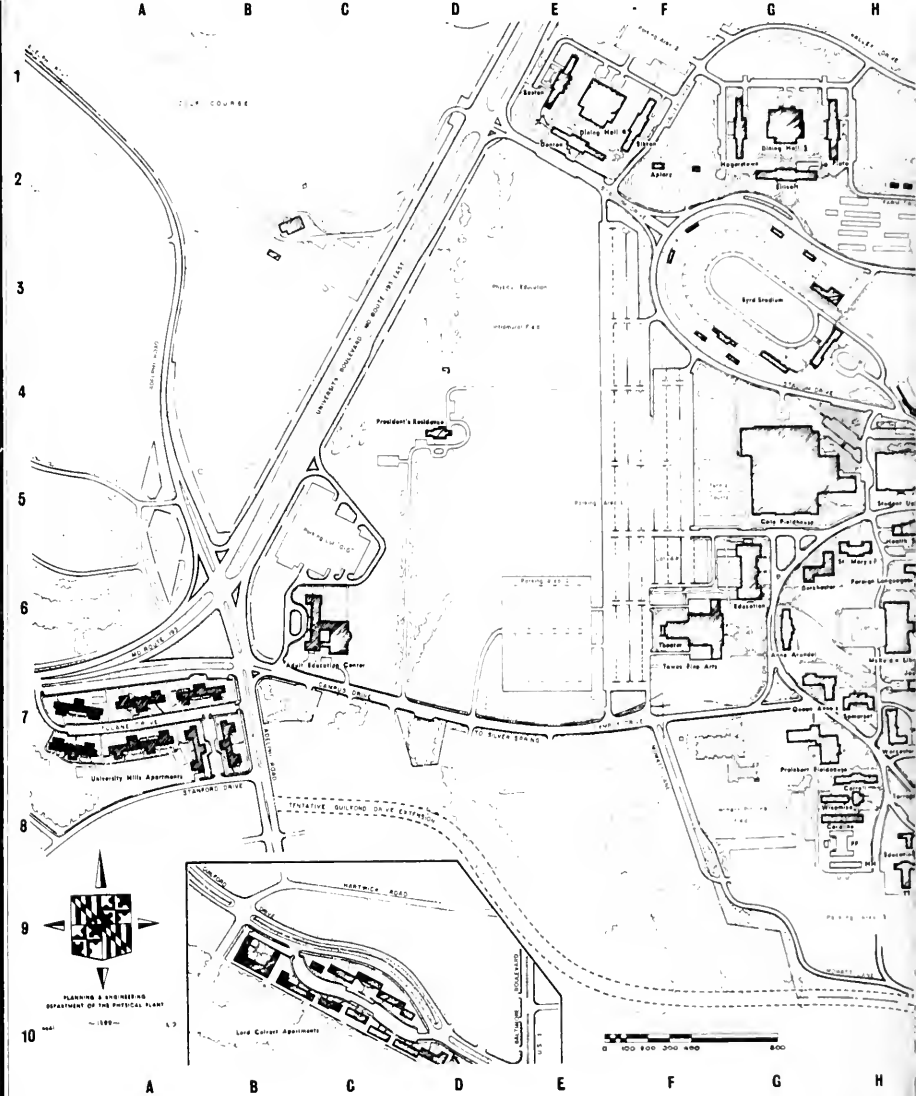
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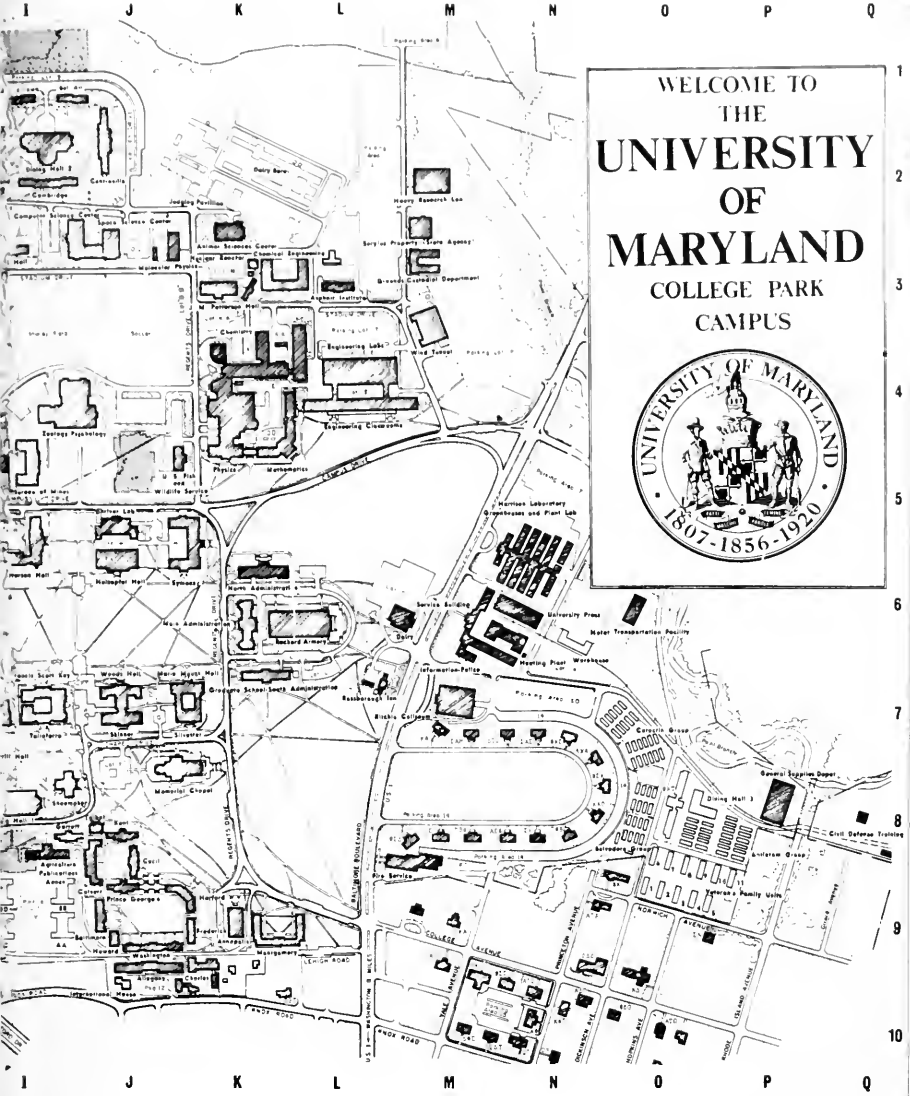
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MARYLAND**
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CAMPUS



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PARKING

Casual visitors, without permits, may park in those parking wells adjacent to major buildings which are clearly marked for visitors. Metered parking is also available around the Student Union and in parking areas L (Administration Building), DD (Computer and Space Sciences Centers) and in areas KK and T (Engineering—Sciences Complex). Visitors participating in University sponsored special activities may through special arrangement with the Campus Police, be assigned temporary parking places.

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