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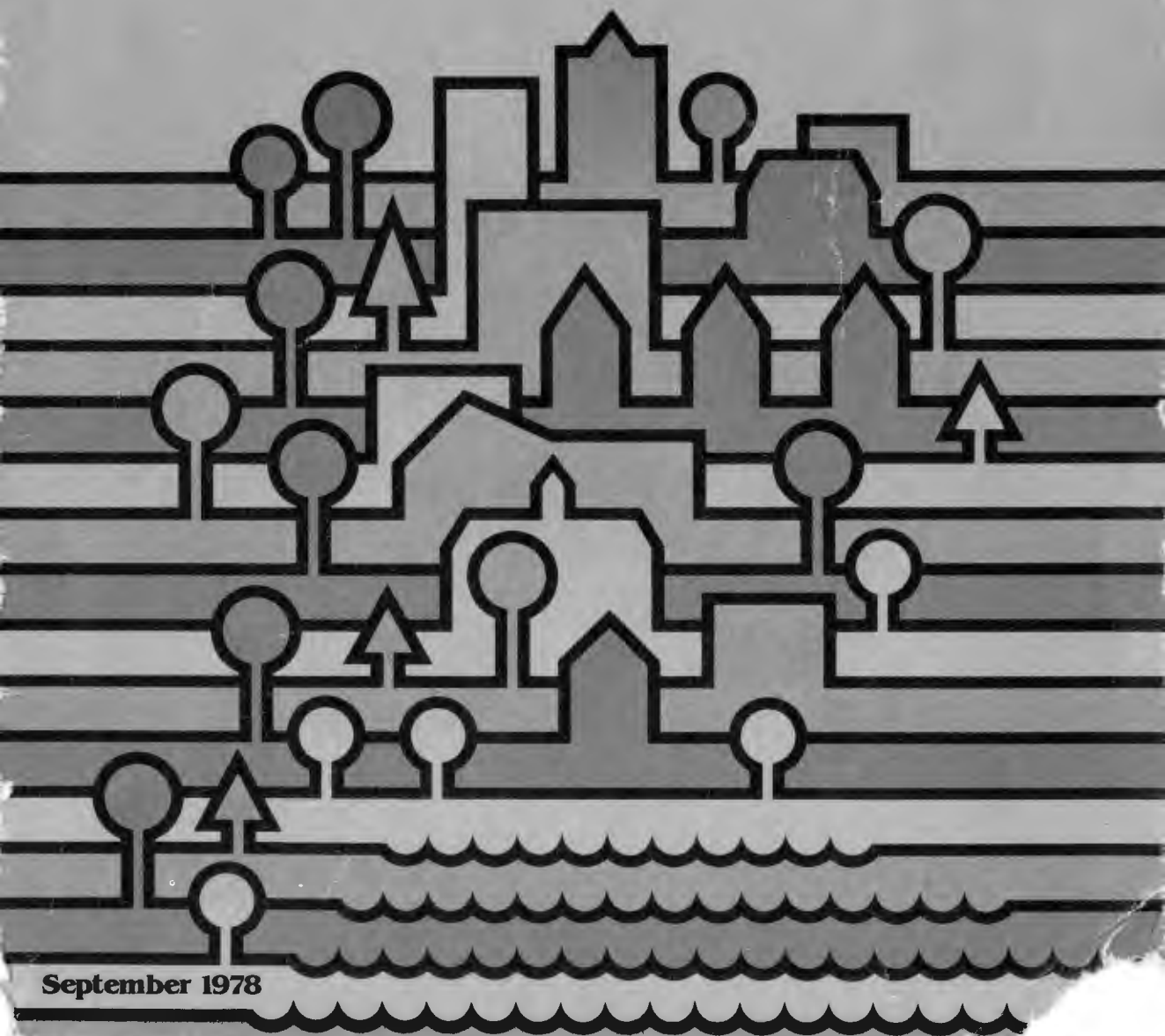
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*Jessie*

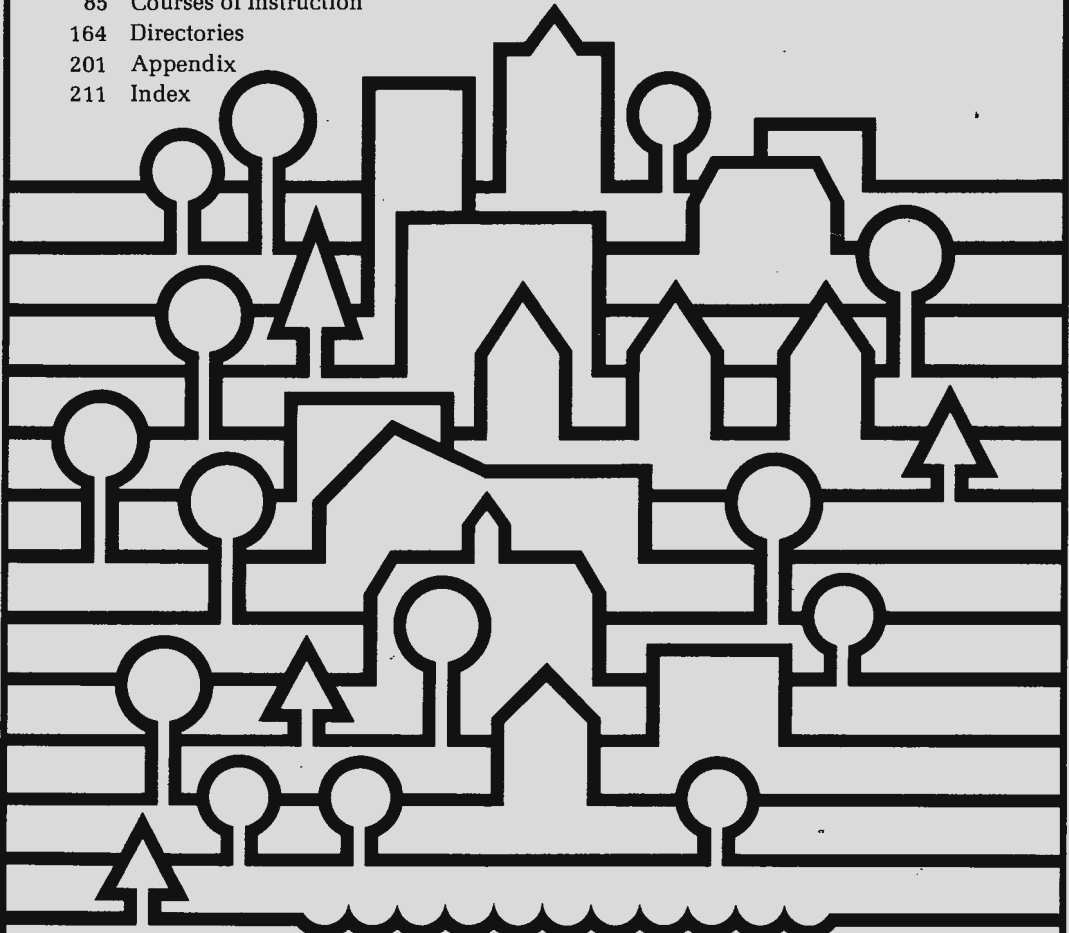
**The  
University of  
Rhode Island  
1978-79  
Undergraduate  
Bulletin**



**September 1978**

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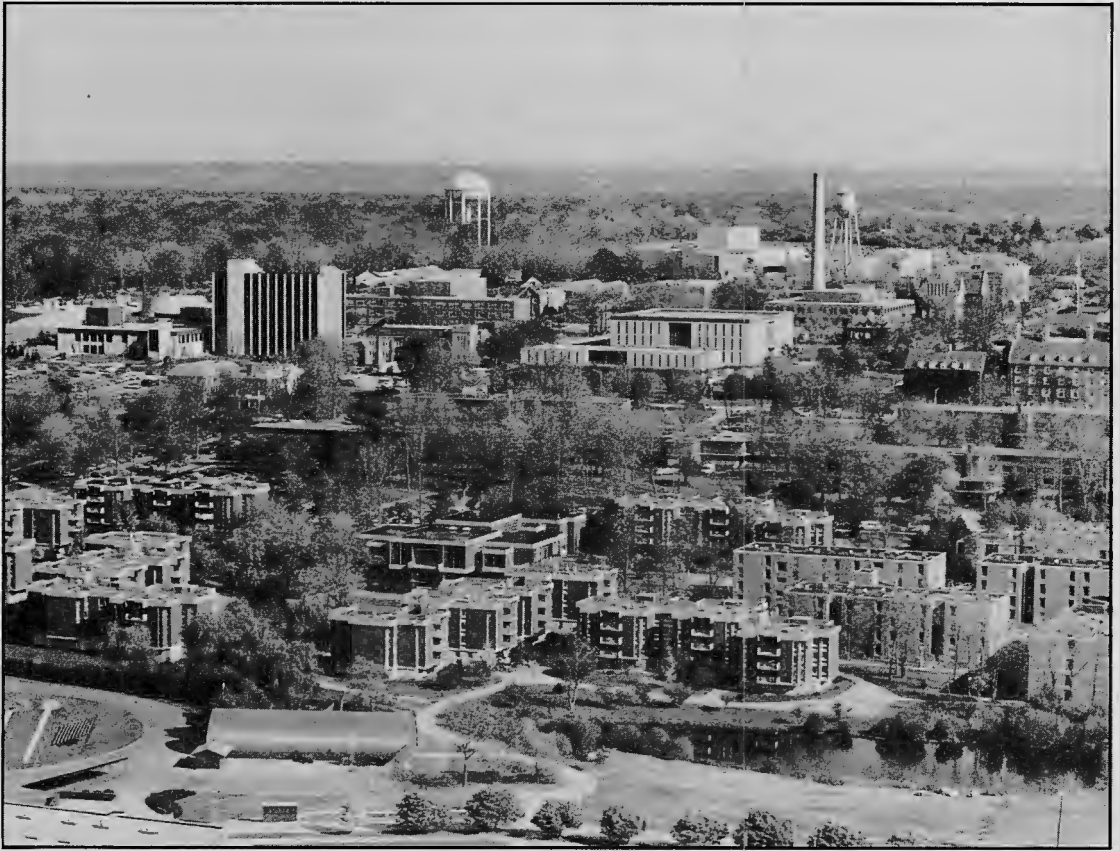
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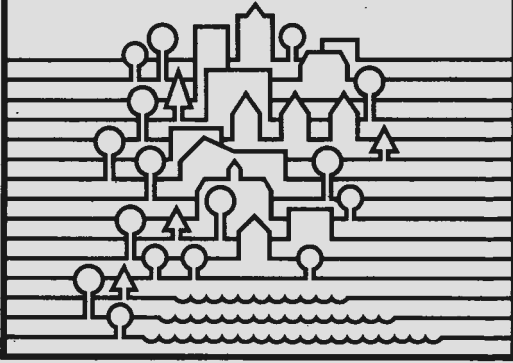
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## The University



The University of Rhode Island is a coeducational state-assisted institution founded in 1892 as one of the land-grant colleges. In 1971 it became one of the first four sea grant colleges in the country. The University is located in the village of Kingston, in historic "South County," 30 miles south of Providence and six miles from the ocean.

The function of a university is the discovery and dissemination of truth. The University of Rhode Island carries out this function through its activities in the three major areas of instruction, research, and extension. To enable it to do so most effectively, the University has given support to the principle of freedom in inquiry and expression for both faculty and students, pointing out, however, that such academic freedom carries with it duties correlative with rights. The University holds that the common good depends upon the free search for truth and its free exposition.

Consistent with the University's land-grant tradition, preparation for a life's work and for intelligent and responsible citizenship is a major goal of instruction.

All programs aim at a balance of studies in the natural and social sciences, the humanities, and professional subjects.

Undergraduate students may earn a Bachelor of Science degree in any one of the seven degree-granting colleges of the University. Study in the College of Arts and Sciences may also lead to the degree of Bachelor of Arts, Bachelor of Fine Arts, or Bachelor of Music. An undergraduate program at the Division of University Extension leads to the Bachelor of General Studies degree. In the two-year programs in dental hygiene and in commercial fisheries, the degree of Associate in Science is conferred.

Study at the graduate level leads to the master's degree in over 60 areas of study and the degree of Doctor of Philosophy in 24.

The full-time teaching faculty numbers about 800, and there are over 11,000 graduate and undergraduate students at the University's main campus.

The University of Rhode Island prohibits discrimination on the basis of race, sex or preference, religion, age, color, creed, national origin or handicap in the recruitment, admission, access to or treatment of students, the recruitment, hiring or treatment of faculty and staff, and the operation of its activities and programs, as specified by State and Federal laws, including Title VI and VII of the Civil Rights Act of 1964 as amended, Title IX of the 1972 Education Amendments to the Higher Education Act, Executive Order 11246, as amended, and Section 504 of the Rehabilitation Act of 1973. Inquiries concerning compliance with anti-discrimination laws should be addressed to the Affirmative Action Officer, University of Rhode Island.

**History.** The University was originally chartered as the state agricultural school in accordance with an act of the Rhode Island legislature on March 23, 1888. The Oliver Watson Farm in South Kingstown was purchased for the site of the school, and the old farmhouse, now restored, still stands on the campus today. The school became the state college by act of the state legislature on May 19, 1892, creating the Rhode Island College of Agriculture and Mechanic Arts, and the first class of 17 members was graduated in 1894.

Funds for the creation of state colleges came from the Morrill Act of 1862 which provided for the sale of public lands, the income from which was to be used to create at least one college in each state with the principal objective of teaching agriculture and mechanic arts. From this grant of land comes the name land-grant colleges, applied to the national system of state colleges.

In 1909 the name of the college was changed to Rhode Island State College. The original program of study in science, engineering and agriculture was revised and expanded. On March 23, 1951, by act of the state legislature, the college became the University of Rhode Island and the various schools became colleges within the University. In July 1970 the Board of Regents for Education succeeded the Board of Trustees of State Colleges as governing body for the state's institutions of higher learning. An historical outline may be found in the appendix.

**The Campus.** The University's main campus encompasses 1200 acres in the village of Kingston just off R.I. Route 138. The center of the University is a quadrangle of handsome granite buildings on Kingston Hill. Surrounding this are other

academic buildings, student residence halls, and fraternity and sorority houses. On the plain below are gymnasiums, athletic fields and tennis courts, and a freshwater pond. Agricultural experiment areas, dairy barns, and greenhouses are nearby.

The University has two other large tracts of land: the 165-acre Narragansett Bay Campus, six miles to the east, where the Graduate School of Oceanography, the Rhode Island Atomic Reactor, and several federal laboratories devoted to the marine sciences are located; and the 2300-acre W. Alton Jones Campus, 20 miles away in West Greenwich, the site of environmental education, research and conference facilities. The Division of University Extension has a building near the State House in Providence which is headquarters for the University's adult education program.

**Accreditation.** The courses and programs of study offered by the University of Rhode Island have been approved by national accrediting agencies and are accepted for credit toward college degrees by other approved institutions of higher learning. The national accrediting agencies which have approved the quality of the course offerings of the University of Rhode Island include the American Association of Universities, the American Association of Collegiate Schools of Business, the American Chemical Society, the American Council on Pharmaceutical Education, the American Dental Association (Council on Dental Education), the American Psychological Association, the American Society of Journalism School Administrators, the Engineers Council for Professional Development, the National Association of Schools of Music, the National League for Nursing, the New England Association of Colleges and Secondary Schools, and the State University of New York.

The University is also an approved member institution of the American Association of University Women, the Council of Graduate Schools in the United States, the North American Association of Summer Sessions, and the National University Extension Association.

**The University Libraries.** The University's Library collection of over 600,000 volumes is housed in the University Library, the Division of University Extension Library in Providence, and the Claiborne Pell Marine Science Library on the Narragansett Bay Campus which was designated the National Sea Grant Depository in 1971.

The University Library, which holds the bulk of the collection, is a four-story, air-conditioned building where open stacks provide direct access to books, periodicals, documents, maps, microforms and audiovisual materials. The Special Collections Department collects and maintains rare books, manuscripts, the University archives and a variety of special interest materials. Service hours at the other libraries vary, but the

University Library provides full reference, bibliographic and circulation services during most of the 90 hours per week it is open. Terminals linked to the University Academic Computer Center are available in the Library during the hours both facilities are operating. Coin-operated copiers are available for reproducing pages from books and journals, and for producing copy from microform. A computer-based bibliographic system makes most books available to users one week after their receipt.

## Academic Instruction

**Undergraduate Programs.** All freshmen who enter the University to earn a bachelor's degree are first enrolled in University College. See page 33.

Undergraduates have a wide choice of programs from which they may select a concentration. The advising program in University College provides assistance in decision-making and in pursuing the curriculum of one's choice.

All programs are listed below and described in detail in the chapters of this bulletin that are devoted to individual colleges. The interdepartmental programs are described in the chapter on University Programs and Requirements.

### College of Arts and Sciences

Anthropology, Art, Biology, Botany, Chemistry, Classical Studies, Computer Science, Dental Hygiene (two or four years), Economics, English, French, Geography and Marine Affairs, Geology, German, History, Italian, Journalism, Latin American Studies, Linguistics, Mathematics, Medical Technology, Microbiology, Music, Philosophy, Physics, Political Science, Psychology, Russian, Sociology, Spanish, Speech Communication, Theatre, Zoology.

### College of Business Administration

Accounting, Business Education, Finance, General Business Administration, Insurance, Management, Management Information Systems, Management Science, Marketing, Office Administration, Production and Operations Management.

### College of Engineering

Biomedical Electronics Engineering, Chemical Engineering, Chemical and Ocean Engineering, Civil and Environmental Engineering, Computer Electronics Engineering, Electrical Engineering, Engineering Science, Industrial Engineering, Mechanical Engineering and Applied Mechanics, Mechanical and Ocean Engineering.

### College of Human Science and Services

Child Development and Family Relations; Edu-

cation (elementary and secondary); General Home Economics; Home Economics Education; Physical Education; Textiles, Clothing and Related Art.

*College of Nursing*

*College of Pharmacy*

Pharmacy (five years), Respiratory Therapy.

*College of Resource Development*

Agricultural and Resource Technology, Animal Science, Fisheries and Marine Technology (two years), Food Science and Technology, Natural Resources, Nutrition and Dietetics, Plant Science.

*Interdepartmental*

Black Studies, Urban Affairs.

**Graduate Study.** Graduate study is offered leading to the degrees of Master of Arts, Master of Science, Doctor of Philosophy, and the Master's degree in several professional fields. Within each college's chapter in this bulletin, the related graduate degrees are listed.

The Graduate Library School which offers study leading to the Master of Library Science degree is located on the Kingston campus. Students in undergraduate and other graduate programs may, with the approval of their advisers, enroll in such library science courses as relate to their studies.

The Graduate School of Oceanography is located on the Narragansett Bay Campus of the University and offers study leading to the Master of Science and Doctor of Philosophy degrees. Instruction is limited to graduate study with the exception of one survey course at the 400 level.

Students holding the baccalaureate degree from this institution or from another having equivalent requirements may be admitted for graduate study providing that their credentials meet the standards set by the Graduate School and by the department in which they wish to study, and that facilities for study are available in their field of interest. Among the standards required for full status admission are an undergraduate average approximating B or better and satisfactory scores on a nationally administered examination. Applicants with somewhat lower undergraduate averages but high examination scores may be admitted on conditional status. Individual departments may, however, apply admission standards which are higher than the general standards just described.

Application forms and a copy of the *Graduate School Bulletin*, which contains the detailed requirements and descriptions of advanced degree programs, are available from the Dean of the Graduate School, University of Rhode Island, Kingston, Rhode Island 02881. The zip code must be included in the applicant's return address. If, after studying the bulletin, the applicant has specific questions concerning particular degree programs or courses of instruction, these should be

addressed to the chairman of the appropriate department. Applications must be returned to the Dean of the Graduate School.

Each applicant must submit (1) completed application forms in duplicate, with a \$12 non-refundable application fee (check or money order payable to the University of Rhode Island); (2) three letters of recommendation from individuals familiar with the applicant's work, preferably in the field for which he or she is applying; (3) two copies of an official transcript sent directly from each college or university attended; and (4) scores from the Graduate Record Examination aptitude tests (see the *Graduate School Bulletin* for those programs which require the GRE advanced tests or which require a different national test).

Applicants from foreign countries must complete the Test of English as a Foreign Language (TOEFL) with minimum scores of 500 for science students and 550 for non-science students. All inquiries from international students concerning applications, fees, housing, etc., should be directed to the Director for International Student Affairs, 4 Taft Hall.

The usual deadlines for receipt of applications are April 15 for September and Summer Session admission, and November 15 for February admission. See the *Graduate School Bulletin* for those programs which have earlier application deadlines.

**Division of University Extension.** The Division of University Extension offers continuing education degree programs designed for adults whose family or work responsibilities have caused interruption in their formal post-high-school education. Academic programs lead to Bachelor of Science degrees in business administration, industrial engineering, and home economics. Bachelor of Arts degrees may be obtained in economics, English, history, psychology, secondary education (with an emphasis in English or history), and speech. The Bachelor of General Studies degree offers a concentration in business or human services. Graduate-level programs include a Master of Arts in English, Master of Business Administration, and Master of Public Administration.

**Providence Center.** Courses are offered in the morning, afternoon, and evening, and students enrolling in a degree program may attend at whatever time is most convenient for them. The Early Learning Center provides nursery education during the week from 9 to 12 p.m. for children at least three years old.

Certification programs for various professions as well as individual credit (CEU) and non-credit courses are offered. In addition, institutes, seminars, conferences, and short courses are planned for business, industry, labor, government, and the professions.

The Office of Psychological Services provides

psychological testing, and group and individual guidance. This office is a center for administration of the CLEP examinations.

The Extension Division faculty is drawn from resident URI faculty as well as specialists in professional and business fields. Headquarters are in the URI Extension Division Building located in Providence and catalogs of credit and certificate courses and programs are available there.

**Community Centers.** The Division of University Extension operates community centers throughout the state. Both credit and non-credit evening courses are offered in Kingston, Middletown, Davisville, and Westerly.

**Summer Sessions.** Two five-week sessions of regular classes in addition to several special workshops are conducted during the summer at both the Kingston and Providence campuses. Educational opportunities in almost every academic department at undergraduate and graduate levels are provided. The Kingston campus has long been a favorite location for summer study with its proximity to outstanding ocean beaches, while the Providence schedule of evening classes is especially attractive to working students. A Preliminary Announcement of all summer courses comes out in January. The *Summer Session Bulletin* which is published in April contains complete information on all courses including registration procedures. Advance registration is available in person or by mail at Providence and Kingston. Students planning to use summer credits to satisfy degree requirements at the University of Rhode Island or another institution should have their programs approved by their academic deans before registering.

## Research and Extension Programs

**Research.** Active programs of research are carried on throughout the University. In addition to the strong research programs in the various departments, the University has established the following programs in specially defined areas. Support comes from foundations, commercial firms, federal and state governments, and the University.

The Coordinator of Research signs, on behalf of the University, applications for research grants, maintains files of funding agencies, keeps a current facilities inventory, and in general acts as a liaison officer for the President, the business manager, the academic deans, the Research Committee and the faculty in matters pertaining to the general research policy.

**The Academic Computer Center.** The Academic Computer Center has an Intel AS/5 computer with 3072K of high speed storage, disk storage units, magnetic tape, card, and printer input/output de-

vices, and an off-line plotter. The system's hardware and software accommodate both remote batch and interactive terminal usage with graphics support as well as normal batch processing. An intermediate-speed remote batch terminal is installed at the Narragansett Bay Campus. The Department of Electrical Engineering has a Data General Eclipse and two PDP-9 computers with a graphics display console linked to the Academic Computer Center's system. Various types of typewriter and display terminals for interactive use or remote job entry are located on the campus in most of the science and engineering departments as well as the College of Business Administration, the College of Pharmacy, the Graduate School of Oceanography, and the Academic Computer Center. Off-campus installations include the Division of University Extension and various high schools in the state.

The staff develops and maintains programming systems and applies programs, conducts short courses and workshops, and provides programming assistance for the University community. Faculty members of the Department of Computer Science and Experimental Statistics consult on numerical methods, statistical analysis, and computational techniques.

**Agricultural Experiment Station.** Established in 1888, the Agricultural Experiment Station within the College of Resource Development is concerned with basic and applied investigation in natural and human resources. This research aims at conserving and managing resources, at improving the quality of environments, at abating pollution and recycling waste materials, at enhancing rural environments, at developing more rewarding home life, and at supporting resource-using industry and business in the region.

Research is conducted in food and resource chemistry, resource economics, plant and soil science, plant pathology and entomology, forest and wildlife management, animal science, and animal pathology. A strong orientation to estuarine and marine problems and an interdisciplinary approach to resource research are station characteristics. The progress of research is reported quarterly in *Rhode Island Resources* and complete results of individual projects are issued in station bulletins. All are available to Rhode Island residents upon request.

**Bureau of Government Research.** The bureau is the research, consulting and training arm of the University in the field of public administration, specializing in state and local government. Organized in 1960, it provides consulting services in the areas of general organization and management, budgeting and finance management systems, position classifications, pay plans and purchasing, and other administrative systems. It publishes monog-



raphs and related reference works in addition to informational pamphlets and research reports, as well as a bi-monthly newsletter. The bureau maintains a reference library in public administration and provides an information service to government officials.

It assists in the administration and operation of the University's graduate program in public administration and has a working relationship with a number of University departments related to state and local problems. It supervises an internship program for graduate students in public affairs. The bureau administers and conducts seminars and in-service training programs for state and local government officials.

**Center for Energy Study.** The Energy Center at the University of Rhode Island was established in 1977. Its purpose is to bring together and expand energy-related research at the University and to support the energy activities of state agencies, commercial establishments and individual citizens of Rhode Island. It offers technical advice and a number of educational programs on the subject of energy conservation.

**Center for Ocean Management Studies.** The Center for Ocean Management Studies (COMS) was established in 1976 in response to a growing realization that the full potential of the coastal and marine environment will not be achieved unless new resource management concepts are developed. Recognizing that such an effort requires an interdisciplinary approach, its associate membership is representative of the various marine programs at the University. The policies and programs of the center are formulated by a steering committee, chaired by the Provost for Marine Affairs, and implemented by the executive director.

The purpose of COMS is to promote effective coastal and ocean management by providing a forum for interdisciplinary research, communication, and education on ocean management issues. The center identifies ocean management issues, holds workshops and conferences to discuss these issues, and develops recommendations and research programs to resolve them. Through its publications, research/communication efforts and educational programs, it provides an opportunity for individuals from government, industry and academic institutions to work together.

**Consortium for the Development of Technology.** The University is the contracting member of the Consortium for the Development of Technology (CODOT) which is based in the College of Resource Development. It is a subsidiary organization of the International Center for Marine Resource Development (ICMRD), described elsewhere. CODOT was organized in 1970 and its membership, in addition to the University, con-

sists of Michigan State University, the University of Wisconsin, the University of California-Davis, and the University of Washington. CODOT was organized for the purpose of assisting in the improvement of food technology in low-income and developing countries, and has programs in several Latin American countries.

**Cooperative Extension Service.** An educational organization within the College of Resource Development involving the federal and state governments and regional agencies (Eastern, Northern, Providence and Southern Rhode Island Cooperative Extension Services), the service's main function is to extend educational resources to the people of Rhode Island.

Extension programs are concerned with the following areas: (1) home economics for contemporary living with emphasis on consumer and management education, clothing, housing and home furnishing, child development and human relations, and nutrition; (2) 4-H and youth programs to assist young people to realize their individual potentials as responsible citizens; (3) resource development information related to home grounds, general or specialized farms, nurseries, orchards, forests, etc., to help groups and individuals enhance the well-being of the community.

Offices of the Cooperative Extension Service are located in Providence, Newport, Greenville, East Greenwich, and Kingston.

**Curriculum Research and Development Center.** Founded in 1969, the Curriculum Research and Development Center conducts sponsored research in the broad field of education. While specializing in curriculum evaluation and development at the elementary and secondary level, its staff also engages in basic research in a variety of areas including learning, measurement and human services. There are specialists in research methodology, science education, bilingual, bicultural, adult and career education, survey and census methods, educational program administration and testing.

The Curriculum Research and Development Center is an integral part of the Department of Education in the College of Human Science and Services and maintains close liaison with the Rhode Island Department of Education.

**Division of Engineering Research and Development.** This division was established in 1942 to coordinate the research activities of the College of Engineering. It disseminates the results of basic or fundamental investigations; conducts fundamental and applied research projects; provides opportunities for graduate students and highly qualified undergraduates to participate in research studies; and offers opportunities for members of the engineering faculty, through research, to keep abreast of advances in the profession.

The division is an integral part of the College of Engineering, and members of the college participate in all division projects. Facilities are available for research in the fields of chemical, civil, electrical, industrial, mechanical, materials, nuclear, environmental and ocean engineering.

**Division of Marine Resources.** The purpose of this division is to develop, package, and deliver information, technology, and research results which can be used by the marine community of the state, region and nation. The division's broadly-based services are provided to units of government at all levels, business and industry and the general public. It conducts specialized applied research investigations in cooperation with the Graduate School of Oceanography and with other URI research faculty who participate in the division's activities on a project-by-project basis. The division is the umbrella unit for the Marine Advisory Service, the Coastal Resources Center, the National Sea Grant Depository and the Regional Coastal Information Center.

**Marine Advisory Service.** The service provides field specialists and information to the marine community of the state and region under the public service responsibility of the URI Sea Grant Program. Projects include work with commercial fishermen, marina and boatyard operators, local and state governments, elementary and secondary schools, seafood processors, and individuals and businesses interested in the management, use, development or understanding of marine resources.

**Coastal Resources Center.** The CRC offers technical assistance in the form of studies and surveys aimed at solving marine and coastal management problems. Since its establishment in 1971, it has served as a primary resource to the state's Coastal Resources Management Council. The center has produced a number of reports and publications and sponsors marine and coastal research projects in cooperation with various departments throughout the university.

**National Sea Grant Depository.** Housed in the Claiborne Pell Marine Science Library, the depository was established in 1971 to ensure that materials published under Sea Grant auspices would be available at a single location. Its subject matter touches such widely diverse areas as aquaculture, law, medicine, geology, chemistry, biology, engineering, mathematical modeling, food technology, information retrieval, recreation, coastal zone management, and market research. The NSGD publishes an annual computer-produced index, makes available loan copies of documents and conducts literature searches.

**Regional Coastal Information Center.** Established in 1977 to provide coastal and marine information and data to planners, managers, legislators,

decision-makers and researchers, the RCIC is sponsored by the National Oceanic and Atmospheric Administration. It is the first of a projected network of nine such centers around the country. RCIC's principal services include selective dissemination of information, literature searches, state-of-the-art compilations, regionally-focused data files, lists of newly-published materials and resources, and newsletters and brochures.

**Graduate School of Oceanography.** The Graduate School of Oceanography is located on the 165-acre Narragansett Bay Campus. The land borders the shore and includes a basin and dock within easy reach of both the bay and the open ocean. The University operates several vessels, the largest of which is a 177-foot ocean-going research ship, *Endeavor*.

A number of buildings make up the Bay Campus shore facilities including laboratories, offices, the Claiborne Pell Marine Science Library, a 12,000-square-foot research aquarium, and a specially designed facility which permits moderate-scale controlled ecosystems experiments. The research program includes basic and applied studies in physical, chemical, geological and biological oceanography including fishery biology.

**International Center for Marine Resource Development.** The University founded the International Center for Marine Resource Development in 1969 specifically to help other countries solve their marine resource problems through education, research, and extension programs. It is based in the College of Resource Development, and the dean is also the director of ICMRD. Its subsidiary organization, the Consortium for the Development of Technology (CODOT) is described elsewhere.

The center's initial mandate from its major sponsor, the Agency for International Development (AID), was to develop expertise to meet marine resource problems posed by other countries and to provide educational experiences for international students and guests. Currently, the center is assisting in several AID-sponsored research projects designed to improve the status of small-scale fishermen and fisheries in less-developed countries to help combat the world's food shortage. ICMRD is also assisting the new University Institute of the Azores to organize and administer fisheries and rural extension services.

ICMRD offers faculty and selected graduate students opportunities to participate in its overseas programs, thereby gaining experience in their fields of interests and furthering the University's international outreach.

**Laboratories for Scientific Criminal Investigation.** These laboratories in the Department of Pharmacology and Toxicology of the College of Pharmacy provide instruction, research, and ser-

vice in the field of scientific criminal investigation. The laboratory staff works closely with the Rhode Island Attorney General's Office and also provides technical consultation for various law enforcement agencies, and special instruction and research in criminalistics, in which faculty members of various departments participate. The program sponsors a special course for police and law enforcement agencies.

**Research Center in Business and Economics.** The research activities of the College of Business Administration are centered in this organization established in 1965. The center initiates, conducts, and services research activities of the faculty in the fields of accounting, business education and office administration, business law, economics, finance, insurance, management science, marketing management, organizational management and industrial relations, and production and operations management. The center publishes *The New England Journal of Business & Economics*, whose main focus is upon the business and economics issues which directly or indirectly concern New England.

**Rhode Island Water Resources Center.** The Rhode Island Water Resources Center, established in 1965, is the state center for research and training in all phases of water resources. There is a similar center or institute in each of the 50 states and Guam, Puerto Rico, the Virgin Islands and the District of Columbia, established through Public Law 88-379 in 1964. The states work cooperatively with the federal government in an effort "to assist in assuring the nation at all times of a supply of water sufficient in quantity and quality to meet the requirements of its expanding population."

Each center currently receives a federal appropriation each year to carry on its work. Congress may appropriate additional sums to match, on a dollar-for-dollar basis, funds made available to the center by the state or other nonfederal sources to meet the necessary expenses for specific water resources research projects.

Principal investigators of projects need not be employed at the University of Rhode Island; in fact centers are encouraged by the act to plan and conduct programs with such other agencies and individuals as may contribute to the solution of the water problems involved.

## Other Organizations

The University is a member of the University Press of New England which publishes manuscripts originating on the six member campuses and elsewhere, as determined by its director and editorial board on which the University of Rhode Island is represented.

**Faculty Government.** The Faculty Senate represents the faculty and was authorized in 1960 by the general faculty to conduct in a responsible and efficient manner the business assigned to faculty jurisdiction by the law or by the Board of Regents. The Graduate Council is the representative body for the graduate faculty in determining the academic policies for graduate study.

**University Ombudsman.** The office of the ombudsman was created in 1972 to investigate complaints from members of the University community — students, faculty, or administrative personnel — that they have been unfairly dealt with in the normal channels of administrative process. The ombudsman office does not replace normal channels, but is used when the normal channels do not adequately respond.

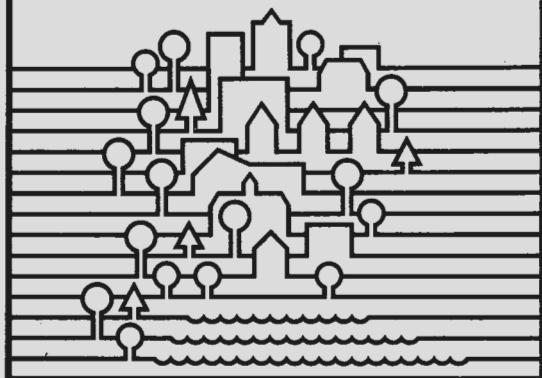
The ombudsman is a tenured member of the faculty who is elected by the general faculty. He or she is assisted by a student who has been nominated by the Student Senate and appointed by the President of the University.

**Administrative Staff Association.** A representative body for all full-time employees who are neither in the state classified service nor ranked members of the faculty, its purpose is to provide for the general welfare and equitable representation of administrative personnel in the government of the University.

**The Alumni Association.** Anyone who has attended the University for at least two semesters is automatically a member of the Alumni Association. The organization exists to promote the interests of the University and maintain the ties of alumni with their alma mater. The association offers many services, publishes an *Alumni Bulletin* and has an annual fund drive.

**University of Rhode Island Foundation.** The University of Rhode Island Foundation was created in 1957 to encourage and administer gifts from private sources, with the primary purpose of building a substantial endowment, the income from which would assure continuing support to the University. The foundation is particularly concerned with activities of the University, its students and faculty for which adequate provision is not ordinarily made by appropriations from public funds.

## Programs and Requirements



Consistent with its policy of allowing the greatest latitude possible in course selection, the University offers a wide choice to fill its general education requirements and encourages students to select free electives that cross departmental and college lines. This section deals with academic requirements, regulations and opportunities that are University-wide rather than college related.

**Students must check the curricular requirements of the colleges in which they plan to earn their degrees (pages 34-84).**

Each curriculum at the University is designed primarily as a learning experience for the student. The University attempts to provide the successful student with a range of knowledge and skills which can, with appropriate motivation and initiative, be used in a variety of ways after graduation. Study options vary from the traditional liberal education to programs which are heavily vocationally oriented. Successful completion of any course of study at the University, however, does not guarantee that the student will find either a specific kind or level of employment.

Students interested in the career opportunities related to particular programs of study are encouraged to consult University College advisers, the appropriate department chairman, and/or the staff of the Office of Career Planning and Placement. For students who are uncertain about their career choices, the Counseling Center offers help.

### General Education Requirements

All undergraduate students in baccalaureate degree programs at the University and in its Division

of University Extension are required to select and pass 45 credits of course work from Divisions A, B, and C. Of these, 18 credits shall be taken in one division, 15 credits in a second, and 12 credits in a third. For exceptions to these requirements, see Division D and the ROTC exception below.

**Division A.** Any course for which the prerequisites have been met in art; English (except 110, 112, 120, 122); languages (except 101 and 102); linguistics; literature in English translation; music (literature and history); Plant and Soil Science 242; philosophy (except 101); Theatre 100, 216, 281, 282, 381, 382, 383, 483; and Speech 231, 331, 332. Only one studio course in art may be applied to this requirement.

**Division B.** Any course for which the prerequisites have been met in astronomy, biochemistry, biology, biophysics, botany, chemistry, climatology (Geography 404), all courses in computer science (except 220), earth science, genetics, geology, mathematics, meteorology (Geography 403, 405, 406), microbiology (bacteriology-virology), oceanography, physics, statistics and zoology.

**Division C.** Any course for which the prerequisites have been met in Accounting 201; anthropology; Business Education 110; Computer Science 220; economics; Education 102, 312, 403; Engineering 204; geography (except 104, 403, 404, 405, 406); history, Journalism 434, 435, 438; political science; psychology (except 210, 381, 410, 434); Resource Development 100; sociology; Speech 210, 310, 374; and Theatre 205, 206.

**Division D.** Students may elect up to nine credits in communications but may not reduce any other divisional requirements by more than three credits. Courses that will fulfill requirements in Division D include: Business Education 227; English 110, 120; foreign languages, including Latin and Greek 100, 101, 102, 111, and 112; Journalism 212, 324; Philosophy 101; Scratch OOOW, OOOX, OOOY, OOOZ; and Speech 101, 102, 215, 220.

**Exception.** If necessary to eliminate academic loads above degree requirements, students enrolled in the advanced ROTC program may apply to the appropriate academic dean for permission to substitute a maximum of six hours of advanced ROTC credit for the same number of credits, A, B or C of the divisional requirements. Only three credits may be substituted in any one division.

### Other Academic Requirements

Certain basic courses are required in many curriculums for transfer from University College into

the degree-granting colleges at the junior-year level. These are listed in the individual colleges' curriculums.

The responsibility for meeting all course and credit requirements for the degree must rest with each individual student.

Students who desire to accelerate their programs and receive credit for courses taken at other institutions or during Summer Session or in the Division of University Extension must have prior approval from their academic deans.

## Program in Gerontology

This is a University-wide, interdisciplinary program because problems of aging are interdisciplinary. Its purpose is to develop within University teaching a clear recognition of the aging process and its implications, to promote the scientific and humanistic study of gerontological problems, and to relate the development of gerontology at the University to the larger community. The program, which is administered by a director and an advisory committee, maintains a consulting relationship with both the Rhode Island Institute of Mental Health and the Medical Center General Hospital. This alliance affords opportunities for research and direct practicum experience to graduate students interested in problems of aging. Financial support may be available to graduate students who are committed to applying their training to the aged or to age-related issues.

Undergraduate students in the College of Arts and Sciences (p. 34) and Human Science and Services (p. 73) can declare gerontology as an area of interest and must then complete 18 credits of relevant course work. Specific gerontology courses include: CDF 250, 375, 403, 451; EDC 451, RCR 416, SOC 438, and SPE 425. Interested students should contact the director of the program and are advised to do so as early as possible, preferably not later than the beginning of the senior year.

## Interdepartmental Study

Students are encouraged to develop interests across departmental lines and several interdepartmental programs have been developed.

**Black Studies.** Students who declare Black Studies as an area of interest (see page 35) may use the following courses to fulfill the requirements. BST 101, 102 (6 credits) are required. Elective courses (12 credits) may be selected from APG 313; ENG 345, 346, 444; HIS 150, 175, 345, 379, 384, 388, 580; PSC 495, 510; REN 595; SOC 340, 434. Permission may be obtained on ad hoc basis to use

other courses that have as their central focus one or another aspect of the Black experience.

**Textile Marketing.** This new undergraduate interdepartmental option may be pursued through the College of Human Science and Services (Department of Textiles, Clothing and Related Art) or through the College of Business Administration (Department of Marketing). The programs are: Textile Marketing or Marketing-Textiles.

Textile marketing managers are responsible for planning and directing the flow of textile products from the manufacturer to the consumer. The concentration, which provides a strong background in both textiles and marketing, is designed to give students the opportunity to explore the areas of styling and design, manufacturing, market research, consumer behavior, advertising, promotion, fashion and sales. The specific requirements of the curriculum may be found on pages 58 and 76.

**Urban Affairs.** The undergraduate program in Urban Affairs consists of seven different interdisciplinary degree concentrations, three in the College of Arts and Sciences and four in professional colleges. They aim to provide students with a general understanding of contemporary urban society and the opportunity to pursue specialized study of urban problems and prospects from the perspective of varied disciplines, whatever may be the students' interests and career objectives.

The seven concentrations are: (1) Urban Social Processes, (2) Policy Formation, and (3) Spatial Development in the College of Arts and Sciences; (4) Business in the Urban Environment in the College of Business Administration; (5) Urban Engineering in the College of Engineering; (6) Home Economics in the Urban Environment in the College of Human Science and Services, and (7) Resource Development in the Urban Environment in the College of Resource Development.

The curriculum in each area of concentration consists of a common core of courses and specialization courses. All students are required to take URB 210 and URB 498 or 499. In addition, they have to select three courses from the following: CPL 410, PSC 460, GEG 411, ECN 402, SOC 434 and HIS 363. The specialization courses are detailed in the appropriate college section under each area of concentration in this bulletin.

The Urban Affairs Program is coordinating its offerings with the Department of Social Sciences at Rhode Island Junior College. Students at the junior college are encouraged to consult with their advisers if they wish to transfer to any one of the concentrations in the College of Arts and Sciences.

The Urban Affairs Program Coordinating Committee (see page 198) includes faculty members from departments throughout the University and supervises the operation of the program. With the endorsement of the faculty of the college con-

cerned, the committee certifies completion of the concentration requirements for the appropriate undergraduate degree. A member of the committee serves as adviser for each of the seven concentrations and provides interested students with information.

## Preprofessional Preparation

Competition for places in graduate professional schools is keen, and a superior academic record throughout college is necessary for admission to these schools. Since requirements for the professional schools vary in their "essential" and "recommended" subjects, the student should consult the catalog of the professional school and then plan his or her undergraduate program accordingly. Those seeking careers as social workers may enroll as majors in sociology, including in their curriculum the social welfare courses. A basic foundation for graduate study, whether directed toward college teaching or research careers, can be provided through any of the liberal arts or science majors. The Bachelor of Arts curriculum provides specific majors for those planning to become journalists or public school teachers.

**Prelaw Studies.** For students who plan professional study of law, guidance and program advice are provided by departmental advisers assigned in University College and by concentration advisers within various departments and colleges.

Students interested in law school should consult the *Prelaw Handbook*, prepared by the Association of American Law Schools and the Law School Admissions Council. The association finds it inappropriate, given the wide range of a lawyer's tasks, to prescribe either a set of prerequisite courses for prelaw students or preferred major departments. Rather it recommends that students choose their majors dependent upon their own individual intellectual interests and upon "the quality of undergraduate education" provided by various departments and colleges. "Shortly stated, what the law schools seek in their entering students is ... accomplishment in understanding, the capacity to think for themselves, and the ability to express their thoughts with clarity and force." The association emphasizes that "the development of these fundamental capacities is not the monopoly of any one subject-matter area, department or division."

**Premedical Studies.** For students who plan professional study in medicine, dentistry, podiatry, or optometry, guidance and program coordination is provided by the adviser for the health professions and the faculty Premedical, Predental, Preveterinary Advisory Committee.

The student should consult the prerequisites for professional schools to which he or she may expect to apply for admission. These are listed in *Medical School Admission Requirements*, published annually by the Association of American Medical Colleges.

Medical schools generally require a 3.3 to 4.0 grade point average and high scores on the required Medical College Admission Test (MCAT), taken preferably in the spring semester of the third undergraduate year.

The new MCAT was given for the first time in the spring of 1977. From an evaluation of the distribution of scores after this first administration of the test, it is reasonable to assume that successful applicants to medical schools will rank in the intervals above 10 in the 15-interval scoring system.

All candidates must have a personal interview with the Premedical, Predental, Preveterinary Advisory Committee. Normally this interview will take place during the spring semester of the third undergraduate year.

Since only about 27 of each 100 applicants to medical schools are admitted, it is wise to plan for an alternative career.

**The University of Rhode Island-Brown University Early Identification Program for Rhode Island Residents.** This is a plan for the early identification and acceptance into the program in medicine at Brown University of highly motivated, exceptionally qualified and interested students at the University of Rhode Island and at Providence College. The plan offers virtual assurance of a position in Brown's program in medicine, so long as the student completes the required courses and maintains a good academic performance. The program is designed to encourage a few of the most highly motivated students, who are Rhode Island residents, to make an early commitment to the study of medicine at Brown by providing them with acceptance assurance similar to that afforded students entering Brown's medical education program directly from high school.

URI students with cumulative averages of 3.5 and above are interviewed and evaluated by the URI Premedical, Predental, Preveterinary Advisory Committee after the completion of their freshman year. Certain of these students are then recommended by the URI Premedical Adviser on the basis of an *excellent academic record, exceptional promise as a premedical student, apparent suitability for the profession of medicine, Rhode Island residency* and a desire to study medicine at Brown. At the beginning of their sophomore year, these nominated students are interviewed and their applications are evaluated by the Medical Education Program Undergraduate Affairs Committee of Brown University.

Upon acceptance, they have the same status as their Brown counterparts, while continuing their



studies at the University of Rhode Island. Like the Brown students, they are free to major in the arts or humanities, if they wish, as long as they complete the required premedical courses. As undergraduates they are also invited to take one or two of their premedical courses on the Brown campus with their future classmates, and are invited to colloquia and various social events sponsored by the Brown Medical Student Society.

After the students in the Early Identification Program have been graduated from URI, at the point of entering the first year of the program in medicine, they go through the same promotions process required of all medical education program students. Academic performance, interviews with members of the Admissions Committee, Medical College Admission Test (MCAT) scores, and faculty recommendations are all reviewed. Upon promotion they become full-fledged first-year medical students at Brown University.

**Predental Studies.** The recommendations for premedical preparation also apply to predental students, who are counseled by the same advisory committee.

The student should consult the course requirements for each dental school to which he or she may expect to apply for admission. These are listed in *Admissions Requirements of American Dental Schools*, published annually by the American Association of Dental Schools.

The Dental College Admission Test (DAT) is required, and normally this test is taken in the spring of the third undergraduate year. Competition for admission into dental schools is nearly as keen as that experienced by premedical students. Thus, an excellent academic record, along with a 5 or 6 in each section of the test, usually is required.

Each candidate must have a personal interview with the Premedical, Predental, Preveterinary Advisory Committee. Normally this interview will take place during the spring semester of the third undergraduate year.

**Premedical and Predental Curriculum.** A premedical or predental student may choose to study in any liberal arts or science curriculum, so long as the courses that are required by medical schools are included. Most students major in one of the biological or health sciences or in a related field, such as pharmacy or chemistry.

A recommended course of study is outlined below. *Italicized items are indispensable for admission to any medical or dental school. Ideally, these courses should be substantially completed before the MCAT or the DAT are taken.*

**Chemistry.** At least 16 semester-hour credits, including general inorganic, qualitative and quantitative analysis, and organic; physical chemistry is sometimes required and is frequently recommended: *CHM 101, 102, 112, 114, 212, 227, 228,*

*226; and in some cases 431 and 432, each with the associated laboratory.*

**Biology.** At least 11 credits, including general animal biology, embryology, physiology or anatomy, genetics: *ZOO 111, 316, 321 or 345, BOT 352.*

**Physics.** At least 8 credits, including *PHY 111, 112.*

**Mathematics.** At least 6 to 9 credits, through calculus, *MTH 141, 142.*

**English and Communications.** At least 12 credits, including *ENG 101, 102 or ENG 110, 120 and a year of literature.*

**Modern Foreign Language or Greek or Latin.** Through the intermediate level.

**Social and Behavioral Studies.** At least 6 credits. Psychology: *PSY 113.* Sociology: *SOC 202.*

**Preveterinary Studies.** Students who are interested in preparing for a professional career in veterinary medicine are counseled by the Premedical, Predental, Preveterinary Advisory Committee. Requirements for admission into the study of veterinary medicine vary and the catalogs of veterinary schools should be consulted for specific requirements early in a student's undergraduate years. Many schools require the Veterinary Aptitude Test (VAT) or the Graduate Record Exam (GRE). Ordinarily, either test should be taken in the spring semester of the third undergraduate year. Moreover, experience in agriculture and animal husbandry is expected by some veterinary medical schools.

A preveterinary student may choose to follow the Bachelor of Science curriculum in Animal Science (described elsewhere in this *Bulletin*), or he or she could be guided by the course of study recommended above for premedical and predental students.

Each candidate must have a personal interview with the Premedical, Predental, Preveterinary Advisory Committee. Normally this interview will take place during the spring semester of the third undergraduate year.

Competition for admission into schools of veterinary medicine is extraordinary. Therefore, evidence of high motivation and an outstanding academic record are essential.

## Honors Program

The purpose of the Honors Program is to enable superior students to realize their intellectual potentialities. Sophomore and junior students who rank in the upper ten percent (by quality point average) of students in each concentration are eligible to participate in the program. Honors stu-



dents take part in the Honors Colloquium, a series of lectures and discussions on topics which change annually. Departmental requirements include the opportunity to participate in an honors project involving independent study.

Students who are not in the top ten percent but who are especially well qualified may be nominated by a faculty member to the Honors Program Committee for admission to the program.

Successful completion of departmental requirements, including an independent project and six credit hours in the Honors Colloquium, is recognized on diplomas and transcripts.

### Dean's List

Full-time undergraduate students who have achieved certain levels of academic excellence in any semester are honored at the end of that semester by inclusion of their names on the Dean's List. The Registrar will publish lists of students who have attained the required quality point average.

A student may qualify for the *Dean's List* if he or she has completed 12 or more credits for letter grades in a semester. Freshmen and sophomores shall qualify by achieving a 3.0 quality point average; juniors and seniors, a 3.2 quality point average.

### Intellectual Opportunity Plan

This "pass-fail" plan encourages undergraduate matriculated students to increase their intellectual breadth and discover aptitudes in new areas of knowledge. A student above the freshman level who is not on probation may register under this plan for courses considered by the college in which he or she is enrolled as free, unattached electives. Courses that are stipulated in the student's curriculum as degree requirements, general education requirements, and military science courses may not be included.

A student choosing to take a course under this plan must notify his or her adviser, academic dean and the Registrar's Office in writing, prior to the end of the add period of each semester. The instructor is not informed.

Grades will be S (satisfactory) or U (unsatisfactory). The S grade is credited toward degree requirements, but not included in the quality point average. The U grade is not credited and is the equivalent of an F grade in calculation of quality points. If a student has selected the S/U option for a course, then decides not to use the S/U option, he or she may change by notifying the Registrar before the last date for dropping courses.

A student may elect not more than three S/U courses each semester and not more than two S/U courses during a summer.

### Reserve Officers Training Corps

The Military Science Department offers the ROTC Program which enables any college student to earn a commission in the United States Army while simultaneously earning a college degree. A four-year program exposes the military science student to military history, international relations, leadership, management and the principles of effective organization. A laboratory period allows students to put into practice the theory presented in academic instruction. Credit toward graduation is received for all classroom instruction and, for the final two years of instruction, each student receives a monthly stipend of \$100. Those enrolled in military science courses are also eligible to compete nationally for full Army ROTC scholarships.

A modified two-year program is available to sophomores and graduate students which substitutes a six-week summer training period for the first two years of study. A ROTC graduate has the option to serve as a career officer in the active Army or in the Reserve force after a period of active service which may vary from three months to two years depending upon his desires.

### Grades and Points

All grades are reported as A, superior; B, good, above average but not superior; C, average; D, low grade, below average, passing; F, failure; S, satisfactory; U, unsatisfactory.

Grades are given quality point values as follows: A, 4 points; B, 3 points; C, 2 points; D, 1 point; F, S and U, 0 points.

A grade may be reported as "incomplete" only when course work has been passing but has not been completed due to illness or to some comparable reason not within the control of the student. Incomplete grades that are not removed from an undergraduate student's record by the following mid-semester will remain on the student's permanent record. Incomplete grades for graduate students that are not removed within one calendar year will remain on the student's permanent record.

Removal of failures in elective courses is not required, but removal of failures in required courses is. The course should be repeated when next offered. No limit is placed on the number of times a course may be repeated, but the credit requirement for graduation is increased by the number of credits repeated.

Certain courses do not lend themselves to precise grading and for these courses, only S (satisfactory) or U (unsatisfactory) shall be given to all students enrolled. S/U courses shall be labeled as such in the University catalogs and bulletins. S/U courses are not counted as courses taken under the Intellectual Opportunity Plan.

**Probation and Dismissal.** A student shall be placed on scholastic probation when his or her cumulative scholastic average falls below 2.0 after completing 23 or more credits, or when he or she has a deficiency of four (4) or less quality points below a 2.0 average after completing 22 or less credits.

A student shall be dismissed for scholastic reasons when he or she has a deficiency of eight (8) or more quality points below a 2.0 average after being on probation the previous semester. A freshman student who earns less than a 1.0 average in his/her first semester shall be automatically dismissed. A student subject to dismissal shall be so notified by the dean, after which he or she shall have five days to file a written appeal with the dean. These rules are fully explained in the *University Manual*.

Students are expected to be honest in all academic work. A case of cheating or other form of academic dishonesty shall be reported by the academic dean of the college or school in which the student is enrolled to the Director of Student Relations and Research who shall arrange for a hearing by the University Board on Scholastic Integrity. Procedures for such a hearing are described in the *University Manual*.

Copies of the *Manual* are available in the Library and in deans' offices.

## Withdrawal from College

An undergraduate student wishing to withdraw from the University at any time other than at the end of semester is required to secure a "withdrawal form" from the University Counseling Service. This form, when completed, is taken to the Office of the Bursar for settlement of account.

A student who leaves the University during the course of a semester without officially withdrawing is held responsible for his registration for the semester.

If a student withdraws from the University after mid-semester, a symbol of "W" shall be recorded for each course in which he or she was registered.

## Undergraduate Graduation Requirements

To graduate, a student must have completed the work for, and must have achieved the minimum quality point average established by, the curriculum in which he or she is enrolled. Total quality points earned must equal at least twice the total number of credits for which the student has registered in that curriculum.

A transfer student who has met the requirements for two degrees and has taken an additional 30

hours (24 of which must be taken at the University of Rhode Island) beyond the minimum requirements for the initial degree may be granted an additional bachelor's degree.

Any student who has met the requirements for a second bachelor's degree and has completed an additional 30 hours of credit beyond the minimum requirements for the initial degree may be granted two bachelor's degrees.

Students who have met the requirements for two separate concentrations within any single bachelor's degree curriculum have earned a double major and may have both fields listed on their permanent records.

A maximum of ten full semesters in one four-year curriculum will be allowed any student for graduation.

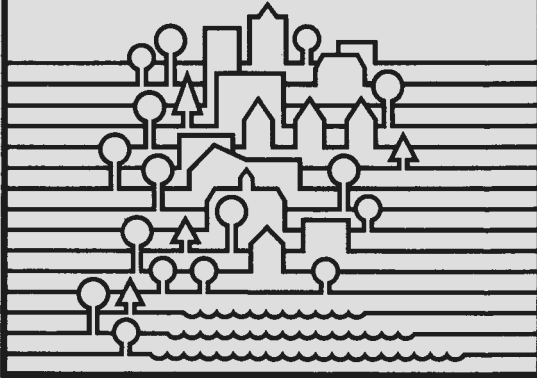
Exceptions to the requirements in the above paragraphs may be made upon recommendation by the college concerned.

Except in special cases, which shall be considered by the faculty of the college in which the student is registered, the work of the senior year must be taken in residence.

Students who complete at least sixty (60) credits of their work at the University are eligible to graduate with distinction. Those who attain a cumulative quality point average at the time of graduation of at least 3.30 will be recognized as graduating "with distinction." Those who achieve a quality point average of 3.50 will graduate "with high distinction" and those who attain a 3.70, "with highest distinction."

A student who has successfully completed six semesters at the University in the curriculum in which he or she is registered, and then enrolls in an accredited professional college and receives a recognized professional degree, may apply for the degree of Bachelor of Science from the University of Rhode Island. The award, if approved, will be made at the next regular commencement. For veterans, only four semesters in residence are required. The other two may be fulfilled by his record in the service, evaluated in terms of University credit.

## Admission and Registration



### Admission to the University

Ideally, admission to the University is a mutual selection process. It is hoped that those students who seek admission will also be the kinds of students sought by the University: those who will benefit from the educational opportunities afforded by the University, those who will be stimulated and challenged by doing undergraduate work in an environment that includes scholarly research and graduate study; those who are committed to becoming contributing members of the University. Students are selected for enrollment primarily on the basis of their academic competence and without regard to age, race, religion, color, sex or preference, creed, national origin, or handicap.

Candidates must meet the unit requirements of the University College as listed below for entrance to the University. Furthermore, to meet the requirements for entry to any of the other colleges in the University at the sophomore or junior level, applicants must complete the additional units recommended by the particular college to which transfer is intended. See page 33 for description of the University College.

Applicants are given individual consideration, but it is expected that all candidates will offer 16 units of college preparatory work as outlined below. If these requirements are not fully satisfied by secondary school certificate, they may be met wholly or in part by successful performance on appropriate examinations administered by the College Entrance Examination Board, the University, or State Departments of Education.

### Unit Requirements

*University College* requires 4 units in English, 2 in Algebra and/or Plane Geometry, 1 in Physical or Natural Science, 1 in History or Social Science, and 8 additional units as specified below for individual colleges.

*Arts and Sciences* requires 4 units in English, 2 in Mathematics (2 in algebra or 1 in algebra and 1 in plane geometry), 1 in Physical or Natural Science, 1 in History or Social Science, 2 in any single Foreign Language, and 6 additional units. Majors in Chemistry and Physics require 4 units of Mathematics.

*Business Administration* requires 4 units in English, 3 in Algebra and Plane Geometry, 1 in Physical or Natural Science, 2 in History or Social Science, and 6 additional units.

*Engineering* requires 4 units in English, 4 in Mathematics (algebra, plane and solid geometry, and trigonometry), 2 in Physics and Chemistry, 3 in History, Social Science and/or Foreign Language, and 3 additional units.

*Human Science and Services* requires 4 units in English, 2 in Algebra and/or Plane Geometry, 1 in Physical or Natural Science, 3 in History, Social Science, and/or Foreign Language, and 6 additional units.

*Nursing* requires 4 units in English, 2 in Algebra and/or Plane Geometry, 2 in Physical or Natural Science, 1 in History or Social Science, and 7 additional units.

*Pharmacy* requires 4 units in English, 2 in Algebra and/or Plane Geometry, 1 in Physical or Natural Science, 1 in History or Social Science, and 8 additional units.

*Resource Development* requires 4 units in English, 2 in Algebra and/or Plane Geometry, 1 in Physical or Natural Science, 1 in History or Social Science, and 8 additional units.

It is strongly recommended that additional units be selected from languages, history, mathematics or science.

**Application Procedures.** Students should discuss their plans for study at the University with their academic counselors as early as possible to establish realistic goals and program selections. Admissions counselors at the University will be glad to correspond with students on individual problems. Requests for application forms and information should be directed to the Office of Admissions, University of Rhode Island, Kingston, Rhode Island 02881.

Applications and requests for admissions information from foreign students should be addressed to the Director for International Student Affairs

in Taft Hall at the University.

Students are enrolled at the beginning of the fall semester in September and at the beginning of the spring semester in January. High school seniors are urged to submit applications early in their final year of preparatory study as the University subscribes to a "rolling" admissions policy, reviewing folders as rapidly as complete credentials are submitted. However, some applicants find it to their advantage to hold their forms until senior mid-year grades are available so that their progress in the last year may be assessed by the Selection Committee. Closing date for fall term applications is March 1, and most decisions are reported in February, March and April. Closing date for spring term application is December 1.

*Early decision* is made on the application of any freshman candidate who has established a superior academic record, who has achieved above-average scores on the CEEB Scholastic Aptitude Test, and whose potential as a superior student is reflected in the secondary school endorsement. Applications which meet these qualifications and which are clearly labeled "Early Decision Candidate" are considered on a priority basis if filed prior to November 1.

Applicants to the Bachelor of Music degree program must audition and must contact the music department for specific requirements.

**Entrance Tests.** All candidates for admission are required to take the Scholastic Aptitude Test, which measures developed verbal and mathematical reasoning abilities. This test is administered by the College Entrance Examination Board.

Applicants are encouraged to take the SAT as early as may be practicable; delay beyond the January date materially reduces a candidate's prospects for approval. Full information concerning this test may be obtained from local high schools or by writing to CEEB Headquarters at P.O. Box 592, Princeton, New Jersey 08540.

Applicants for the curriculum in Dental Hygiene are required to take the SATs and the Dental Hygiene Aptitude Test in lieu of three achievement tests. Full information concerning this test may be obtained from the University Office of Admissions or from the American Dental Hygienists' Association, 211 East Chicago Avenue, Chicago, Illinois 60611.

International students who are not immigrants must take an English proficiency test administered by the American Consulate or the Test of English as a Foreign Language (TOEFL) administered by the Educational Testing Service, Princeton, New Jersey 08540 U.S.A. Additionally the Scholastic Aptitude Test is required as outlined above.

**Interviews.** Personal interviews are not part of the normal admissions procedure. It would be impos-

sible for the admissions staff to interview all candidates, and individual conferences are arranged only if a unique problem requires personal discussion.

Group conferences are scheduled several afternoons each week during the fall and early winter months, and students and their parents are invited to participate in these meetings to get acquainted with the University. Visitors are requested to phone ahead (401-792-2164) to be scheduled for these meetings.

**Campus Tours.** The Office of Community Relations provides daily tours of the campus for visitors. The tours are conducted by students. Group tours for high schools and other organizations may also be arranged. For more information about this service phone (401) 792-2116.

**Early Admission.** Students who have completed their junior year of high school with superior records are eligible for early admission. A part-time study program may be arranged for students who wish to begin college study in their senior year while continuing their high school work. A full-time program may be arranged for those recommended for college admission without completion of the standard preparatory program.

Early admission students would normally have completed: 3 years of English, 3 years of mathematics, 2 years of foreign language, 2-3 years of social studies or history. Students should be academically competitive within their high school class, have corresponding scores on the College Board PSAT, SAT or equivalent tests, and the endorsement of their school.

Interested persons should discuss their plans with high school counselors early in their junior (11th) year and direct further inquiries to the University Admissions Office.

### Advanced Standing

*Advanced placement* for freshmen is granted candidates who have completed college-level courses in high school as participants in the Advanced Placement Program. Decision in each case is based on a review of the candidate's record and scores on the Advanced Placement Tests of the College Entrance Examination Board. Entrance with advanced standing can accelerate the completion of degree requirements, or it can enrich the undergraduate program with greater scope for elective or advanced courses.

*Transfer students* who have attended, or are attending another college or university, are required to submit official transcripts of all work completed in addition to the usual high school record. Most successful applicants offer a cumulative grade point average above 2.5. Except in very unusual



circumstances, candidates incurring academic or disciplinary dismissal from other colleges are not eligible for admission. Candidates accepted with transfer credit are classified as freshmen, sophomores, juniors, or seniors according to the number of credits accepted for transfer.

**CLEP Examinations.** Students who have not been pursuing formal studies for at least three years and have developed a meaningful competence in basic subject areas may demonstrate their mastery by completing the College Level Examinations sponsored by the College Entrance Examination Board. Advanced placement and a credit allowance are based on a review of the candidate's test scores and preparatory experience.

**Proficiency Examinations.** Students who show evidence of advanced knowledge or who have taken "enriched" programs in high schools may be exempt from certain courses and requirements if they take departmental proficiency examinations. A student who successfully passes such an examination earns credits as well as exemption from the course.

Upperclassmen interested in taking these exams should contact their academic dean. New students may obtain further information during orientation or from their assigned adviser in University College.

**Readmission.** Students formerly enrolled at the University and seeking reentry may obtain applications for readmission at the Office of the Registrar. Readmitted students are subject to a \$12 application fee and must make a \$50 advance deposit.

**Health Questionnaire.** Every newly entering student is provided a health questionnaire from University Health Services. It is expected that these questionnaires will be completed and returned promptly. This questionnaire provides University Health Services with basic information prior to the student's arrival on campus. Questionnaires are distributed only after admission to the University and therefore play no part in the process of acceptance to the University.

**New England Regional Student Program.** Under the cooperative plan of the New England Board of Higher Education (NEBHE), students from other New England states are admitted to certain curriculums at the University of Rhode Island which are not offered in their own states. Certain programs at other New England state universities are open to Rhode Islanders on a reciprocal basis. Regional students at the University will be charged the general fee plus a surcharge of 25 percent. However, if the student transfers out of the program of study that qualifies under the New

England Student Program, out-of-state fees will apply. Details on the operation of this program are available on request from the New England Board of Higher Education, 40 Grove Street, Wellesley, Massachusetts 02181, or your high school Guidance Office.

**Special Program for Talent Development.** The University encourages the application of economically and socially disadvantaged individuals from Rhode Island and has instituted a prematriculation program designed to assist such applicants whose education is below college preparatory level. There is special financial provision for students in this program. Interested individuals should apply to Special Programs for Talent Development, 210 Ballentine Hall, as early as possible in their senior year in high school.

## Registration

All students must register for courses at the Registrar's Office in order to be properly enrolled.

**Preregistration.** The University preregisters matriculated (official degree-seeking) students who meet eligibility requirements as defined in the *Schedule of Courses*. Preregistration generally occurs in March and October for the following semester. However, transfer students, readmitted students and freshmen entering in the fall semester preregister at specified dates during the summer. Additional information is available from the Office of the Registrar.

**Registration Day.** This is held the day before classes begin for both the spring and fall semesters. All matriculated students who did not preregister (or who did not receive a final schedule) must register at Keaney Gymnasium on this day.

**Late Registration.** Students who are unable to register at Keaney will be required to register late, beginning on the first day of classes and continuing no later than the end of the published add period. Such students must pay a \$15 late registration fee and register at the Office of the Registrar.

**Non-Matriculated Students.** Such students must apply each semester to the Admissions Office for permission to enroll and for registration instructions. Registration takes place during the first week of classes.

**Payment of Fees.** Arrangements must be made with the Bursar for complete payment of tuition and/or fees. If, at any time during the semester, it becomes apparent that a student has not met his

financial responsibilities with the University, the registration for that semester is subject to immediate and irrevocable deletion. Class schedules will be issued only for those students who have registered for courses and satisfied payment requirements with the Bursar by the announced due date. Students who have not satisfied payment requirements by the announced due date will have their preregistration class schedules irretrievably cancelled and will be required to register on registration day and pay a \$15 late fee. New students who register on registration day are not subject to the late fee.

**Drop and Add.** Students are permitted to add courses during the first two weeks of classes.

Any course may be dropped, by official procedures determined by the Registrar, during the first two weeks of the semester without fee. Courses officially dropped after the first two weeks of the semester and up to seven weeks prior to the last day of classes incur a fee of \$5 per course. If the student has not dropped a course by the last seven weeks before the last day of classes, the instructor must submit a grade.

It is the student's responsibility to notify the instructor and/or the department by the second class meeting if he or she intends to remain enrolled. Otherwise, the seat may be assigned to another student.

The final day to drop courses is seven weeks before the last day of classes. A student may drop a course later than the announced deadline if, at midterm, the student has requested but received no evaluation of his or her work in the course. Such action requires the consent of the department chairman, or if the chairman is the instructor, the student may drop the course with the consent of the dean of the college.

**Audit.** An auditor may be admitted to class with the consent of the instructor and a card of admission from the Registrar, provided he or she takes no part in the exercises of the class, such as recitations, discussions, or tests. No record of an audit registration will be maintained by the Registrar. No additional fees are assessed for an audit registration.

**Full-time to Part-time.** Students who wish to continue their education as matriculated part-time students must obtain an application from the Registrar's Office prior to the beginning of each semester. The signature of the student's academic dean is required.

A non-matriculated part-time student must obtain an application from the Admissions Office prior to the beginning of each semester. The signature of the Director of Admissions is required for these students. Non-matriculated students may not register until the first day of classes.

**Off-campus Study.** A full-time student who wishes to study at another college or university and use that course work to satisfy graduation requirements at the University of Rhode Island must register for "off-campus study" with the Registrar to ensure that grades and credits will be accepted. The student must obtain signed approval for the off-campus courses from the dean of his/her college. Off-campus study includes summer sessions, one or two semesters at another American university, or study abroad. A student may not ordinarily study off-campus during the senior year. Students who wish to maintain registered status and preregistration eligibility while studying off-campus, must register for "off-campus study" for each semester of absence from the University of Rhode Island campus.

**Student Exchange Program.** Any full-time student matriculated at one of the public institutions of higher education in Rhode Island may enroll for a maximum of seven (7) credit hours of his or her full-time schedule per semester for study at one of the other public institutions at no additional expense. Students will be subject to the course selection process applicable to the receiving institution. Summer session and continuing education registrants are not covered under this program.

Information regarding this program is available at the Office of the Registrar.

**Veterans' Educational Benefits.** Information describing these benefits may be obtained from the Office of the Registrar in the Administration Building or from the Veterans Administration representative in Roosevelt Hall.

All veterans who are eligible and who wish to receive VA educational benefits must notify the Office of the Registrar, veterans' section, in person with proof of registration and payment. In order to satisfy Veterans Administration regulations, the University of Rhode Island requires that all students who receive VA educational benefits report any and all changes in their academic status to the veterans' section of the Office of the Registrar.

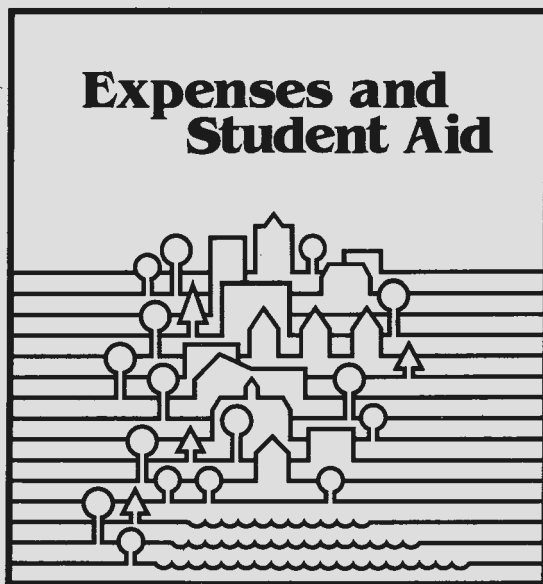
URI enrollment/attendance verification forms are mailed monthly to all GI Bill recipients and should be returned to the veterans' section of the Office of the Registrar. Failure to complete and return the monthly verification form by the due date will result in an automatic suspension of educational benefits for a period of at least thirty days.

Recipients of VA educational benefits are also governed by the same University policies as all other students and are, therefore, responsible for completing those procedures described in the *Schedule of Courses* for effecting changes of status (adding and dropping courses, changing address, withdrawing from the University, etc.).

The *University Manual*, the *Graduate Student Manual*, and the *Students' Guide to URI* further

explain the University's policies and procedures concerning the following: 1) the grading system and standards of progress required of the student by the University and the conditions for dismissal for unsatisfactory grades; the allowed probationary period, and the conditions of reentrance for academically dismissed students (See: *University Manual*, Chapter 8; *Graduate Student Manual*, Appendix A; *Students' Guide to URI*, Section 2). 2) the records of academic progress maintained by the University and furnished to the student (See: *University Manual*, Chapter 8; *Graduate Student Manual*, Appendix C; *Students' Guide to URI*, Section 2). 3) the policies and regulations relating to student conduct and conditions for dismissal for unsatisfactory conduct (See: *University Manual*, Chapters 5 and 6; *Graduate Student Manual*, Appendix A; *Students' Guide to URI*, Section 2).

**Change of Address.** It is the responsibility of the student to complete a change of address form in the Office of the Registrar whenever a change is made in his or her local, campus, or mailing address.



*Charges and fees set forth in this bulletin are subject to change without notice.*

The total cost for a year of resident study at the University is about \$3730 for citizens of Rhode Island and about \$5100 for out-of-state residents. These figures include \$175 for books and supplies, \$460 for miscellaneous personal expenses, and \$66 for in-state and \$126 for out-of-state travel.

Students commuting to the University from their homes in Rhode Island should anticipate expenses of approximately \$3200 a year. This figure includes \$175 for books and supplies, and \$1956 for miscellaneous personal expenses, transportation and board at home.

All charges are payable by the semester and are due and payable on receipt of the bill or by the due date indicated on the bill. Checks or money orders should be made payable to the University of Rhode Island.

#### *Full-time Students Pay Per Year*

General Fee	\$815
Memorial Union Fee	80
Student Activity Tax	34
Accident and Sickness Insurance	49.50
Student Health Fee	90.25

#### *Students Living in University Residence Halls Add*

Room Rent	\$937 to \$1037
Board — Monday Breakfast through Friday Dinner (15 meals) or Monday Breakfast through Sunday Noon (20 meals)	827
	973

#### *Students Living in a Fraternity or Sorority Add*

Average Room Rent plus Social Fee	\$840
Average Board	742



**Out-of-State Students Add<sup>1</sup>**

Tuition	\$1310
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**Part-time Students**

Part-time students, who register for up to 11 credit hours per semester, pay an \$8 registration fee each semester. Residents of Rhode Island pay \$38 per credit hour, and out-of-state students pay \$88.

**Resident Student Status.** A student who is a resident of the state of Rhode Island does not pay the tuition fee of \$1310, but a student from another state or a foreign country who is in Rhode Island primarily for educational purposes, even though he or she remains in the state during vacation periods, is considered a non-resident and pays the \$1310 tuition fee.

The parents or legal guardian of a minor student must have been residents of the state for one year immediately preceding the first class day of the first term of a student's registration for that student to claim resident student status.

An "emancipated student" must establish the same bona fide residency for in-state tuition exemption. An emancipated student shall mean a student who has attained the age of 18 years, and whose parents have entirely surrendered the right to the care, custody and earnings of the student and who are no longer under legal obligation to support or maintain him or her. If any of these tests is not met, he or she is presumed to be an unemancipated student. A non-resident student who reaches 18 years of age while a student does not by virtue of that fact alone become a resident student.

Dependents of members of the armed forces, as well as members of the armed forces, stationed in the state on military orders are entitled to classification as resident students.

The Director of Admissions classifies each student admitted to the University as a resident or non-resident student on the basis of all relevant information available to him. A student may appeal the decision to the Board of Residence Review. The above information is merely a summary of the regulations governing student classifications for tuition purposes. The complete text of the regulations adopted by the Board of Regents may be obtained from the Office of Admissions.

**New Student Fees.** A nonrefundable fee of \$12 must accompany each application for admission. See page 17 for application procedure.

An advance deposit of \$50 is required from every accepted student. The advance deposit, which is applied on the first term bill, will be forfeited if the applicant later withdraws his or her name.

Students returning after an absence of one or more semesters are subject to the same application fee and advance deposit as entering freshmen.

All new students, both freshmen and transfer students, also pay a nonrefundable matriculation fee of \$25.

**General Fee.** All students, both resident and non-resident, pay a general fee of \$815 per year. This fee covers the cost of benefits enjoyed by all students such as use of library, testing services, guidance, personnel supervision, placement, athletics, etc.

**Student Assessments.** Each student is assessed \$34 per year which is distributed by the Student Senate to support a wide variety of student programs and activities. A Memorial Union fee of \$80 per year is also assessed.

**Late Fees and Special Fees.** A late registration fee of \$15 for the first day and \$5 for each succeeding day (not including Sundays or holidays) is charged; new students are not assessed a late registration fee.

Each course dropped after the end of the second week of classes incurs a \$5 charge unless the student withdraws from the University.

Expenses for class trips in all courses and those incident to practice teaching in vocational education courses are charged to the students concerned.

**Applied Music Fees.** Students taking performance courses in music are charged an additional fee each semester of \$20 for 0 credit, \$35 for 2 credits, and \$50 for 3 and 4 credits.

**Student Nurses' Fees.** Beginning in the sophomore year, student nurses will be charged for uniforms and nursing equipment. The approximate cost is \$150.

**Transcripts.** Each student is entitled to one official transcript without charge. For each additional official transcript, the charge is \$2. Copies will be mailed in response to written requests only, which should be addressed to the Office of the Registrar.

Transcripts will not be issued to students who have any unpaid financial obligation to the University.

**Health Service Fees.** The health fee of \$90.25 is mandatory for all full-time undergraduates, all international students, and all full-time graduate students. The University requires that all such students be insured through the University's Student Sickness and Accident Insurance unless evidence of comparable coverage in another plan is provided and the student completes, signs and returns a waiver card to the Bursar's Office by the

<sup>1</sup>See page 20 for exception to this under NEBHE interstate program.

announced term bill due date. Part-time students and spouses of students will be eligible to participate in the health and insurance plan on an optional basis.

**Refunds.** Refunds of payments made or credits against amounts due to the University shall be made to students who officially withdraw according to the following scale: during the first two weeks, 80 percent; during the third week, 60 percent; during the fourth week, 40 percent; during the fifth week, 20 percent; after five weeks, none. For part-time students who are dropping courses or credits, the above policy pertains only to tuition.

The attendance period in which withdrawal occurs is counted from first day of registration, and includes weekends and holidays.

Where the student claims that the application of the above policy causes extraordinary hardship, the student may apply in writing to the respective department head requesting a review of his or her claim. The claim will be referred to a committee made up of the Directors of Student Life, Residential Life, Dining Services, Financial Aid and Health Services. All circumstances relating to the request for a variance from the general uniform University policy must be fully documented in the written claim.

The premium for the University Student Sickness and Accident Insurance is not refundable. Coverage extends through August 31 even though the student is no longer enrolled.

**Housing Rates.** Following are the rates for University housing for the year 1978-79. For complete information write to the Director of Residential Life, Roger Williams Commons. All rates quoted are for double rooms. For single rooms, where and when available, \$60 per year is added to the double rate. Board is mandatory for students living in residence halls.

#### Residence Halls

- \$ 937 Adams, Barlow, Bressler, Browning, Hutchinson, Mellow, Peck, Tucker, Wel-din
- \$ 987 Butterfield
- \$1037 Aldrich, Burnside, Coddington, Dorr, El-lerly, Fayerweather, Gorham, Heathman, Hopkins

The average projected room rate (including social fees) for fraternities and sororities for 1978-79 is \$840. The average projected board rate for fraternities and sororities is \$371 per semester.

**Housing and Dining Contract.** University housing is contracted for the entire academic year. A deposit of \$100 is required at the time of filing application for a room in the residence hall. This deposit will be applied on the first semester bill. A

cancellation of the housing application will result in a pro rata credit on the semester bill according to the following schedule: from date of deposit to June 15, \$100; from June 16 to the opening of the residence halls for the academic year, \$62; after that time, no refunds will be made.

All residence hall rates are quoted for the period specified in the contract. Payments are due in full by the published term bill due date each semester or upon receipt of bill from the Office of Residential Life. Checks and money orders are payable to the University of Rhode Island and should be remitted to the Office of the Bursar.

A student vacating his or her assigned quarters before the end of the period under contract will be held responsible for the total charges for the entire period. No refund will be given when a student moves from University quarters to a private home or decides to commute.

All students living in University residence halls are required to purchase a 15-meal contract for three meals a day, Monday through Friday, for \$413.50 per semester. A 20-meal contract at \$486.50 per semester for three meals a day, Monday through Saturday; brunch and dinner on Sunday are available at the student's option.

Dining contracts begin on registration day and expire the last day of final examinations. They apply each day on which the University schedules classes or examinations according to the meal plan purchased. Meals are not served on holidays.

Students who require diets for health reasons must have their local physician submit a request for the special diet, with the diet prescribed, to the Director of Clinical Services, University Health Services, each semester. Special diets for other than health reasons cannot be provided.

Parents and guests of students, faculty and staff members, alumni, and guests of the University may purchase guest meal tickets at the dining rooms, or may use student guest coupons from student meal books. Various meal plans are available for commuting students on a semester contract basis. Information is available at the Dining Services Office.

Meal books are issued at registration and billed according to the contract signed. Only students withdrawing from the University will receive Dining Services refunds. Please refer to scale in the preceding column.

## Student Financial Aid

Financial aid to students is awarded without regard to age, race, sex or preference, creed, or national origin.

The University offers financial aid so that students are not denied the opportunity to pursue higher education because of a lack of funds. All financial aid is administered on the basis of finan-



cial need, which is figured as the cost of attendance at the University minus the contribution expected from the family unit.

The University of Rhode Island makes use of the services of the College Scholarship Service. This service analyzes the financial condition of the student's family and determines how much it can afford to contribute toward the cost of university attendance. Using this information, the Financial Aid Office attempts to meet the financial needs of all students who apply.

There is a large variety of financial aid programs. The Student Financial Aid Office determines which programs the student is eligible for and the amount of assistance that will be offered. In all cases, both loans and jobs will be considered. Grants are awarded only after the student has applied for a Basic Educational Opportunity Grant and has submitted a Basic Grant Student Eligibility Report to the Student Financial Aid Office.

A list of the scholarships and loans that are available may be found on page 201.

**Application Procedure.** All entering students seeking financial aid should obtain a Financial Aid Form (FAF) from their high school guidance counselor, or from the Student Financial Aid Office at the institution they are presently attending. The FAF should be completed and mailed to the College Scholarship Service, Princeton, New Jersey after January 1 and no later than March 1.

Students currently enrolled at the University may pick up forms at the Student Financial Aid Office, Roosevelt Hall. The FAF will be used to apply for the Basic Grant and the Rhode Island Higher Education Grant and Scholarship Programs.

There is no other application for financial aid except where specified for named scholarships listed on page 201.

### University Aid Available to Students

**University Grants-in-Aid.** The University provides grants to several hundred students. To be awarded a University grant, the student must have demonstrated financial need, and a satisfactory academic record.

**University Employment.** Jobs funded by the University are available to several hundred students. Job listings and application forms are available at the Student Financial Aid Office.

**University Loans.** Emergency loans of from \$10 to \$100 are available to students. These loans are designed to meet only financial emergencies. They are short-term in nature (15-90 days), and can be made only when there is a means of repayment. All emergency loans must be repaid by May 15. Application forms are available at the Student Financial Aid Office.

**State Aid Available to Students.** Many states offer scholarship and grant assistance. A student should ask his or her high school counselor for information regarding state student assistance programs or write or call the state department of education for information.

**Rhode Island State Student Assistance.** In the state of Rhode Island, the Higher Education Assistance Authority offers two types of assistance, the Rhode Island State Grant and the Higher Education Scholarship Program. These programs are available to Rhode Island residents who have financial need as determined through the filing of the Financial Aid Form. The stipend is a minimum of \$250 and a maximum of \$1500 per year. The grant is given to a student based only on financial need, whereas the scholarship is based on financial need and the CEEB Scholastic Aptitude Test scores. For more information, please write the Rhode Island Higher Education Assistance Authority.

### Federal Aid Available to Students

**Basic Educational Opportunity Grant (BEOG).** Basic Educational Opportunity Grants are made to students in amounts up to \$1600, but never exceed half the cost of attending the University. The amount that is awarded is determined by the need of the student and the level of federal funding for the year.

**Supplemental Educational Opportunity Grant (SEOG).** These grants are made to students in great financial need. Only those students who would be unable to pursue their course of study without this additional assistance are awarded a SEOG grant.

**National Direct Student Loans (NDSL).** National Direct Student Loans are funded by the federal government and the University. The amount of the loan is determined by the student's need, and by the amount of federal money received by the University. During the following period, no interest is charged and repayment is not expected: While the borrower is a "half-time" student or better in college or graduate school, and for nine months after the completion of studies. Repayment may be deferred for up to three years while the borrower is in the Peace Corps, VISTA, or in military service. When repayment becomes due, there is an interest charge of three percent per year. If necessary, repayment may be made over a ten-year period; the minimum repayment rate, however, is \$30 per month. There are provisions in the loan for cancelling all or part of the repayment if the student performs certain types of teaching, or military service in a combat zone.

**Nursing Student Loan/Scholarship Programs.** The Nursing Student Loan Program is available to students enrolled in the College of Nursing. The loan program contains repayment-cancellation features

— for service as a nurse — similar to those for teachers in the National Direct Student Loan Program. This loan becomes due and payable should the student leave the nursing program for any reason. When repayment becomes due, there is an interest charge of three percent per year.

Federal Nursing Scholarships are available to students in great financial need.

*Health Professions Loan Program.* This loan is restricted to students in the College of Pharmacy. Loans are available to all such students in financial need. There is an interest charge of seven percent per year. This is charged only when the student is in repayment status that is, when the student is no longer pursuing advanced professional training.

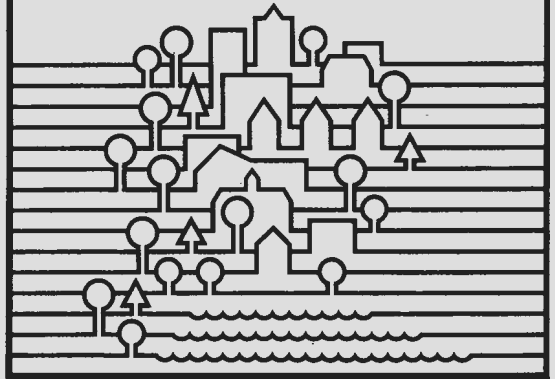
*College Work-Study Program (CWSP).* This federally supported program provides part-time employment during the academic year and full-time employment during vacation periods. The jobs may be either with University departments, or with off-campus, non-profit, non-sectarian, non-political agencies. Other institutionally funded employment is also available. A list of these jobs is available in the Student Financial Aid Office. (Limited funding could curtail the summer employment program.)

*Guaranteed Student Loan Program.* Guaranteed Student Loans are made to students by participating lending institutions in their home areas. Program particulars vary from state to state. The maximum amount available ranges from \$1500 to a possible \$2500 per year, depending on the state of residence and year in college. Repayment is not expected until after graduation, unless the borrower ceases to be enrolled on at least a "half-time" basis.

Under most circumstances, the federal government will pay the interest on a Guaranteed Student Loan. The federal government pays the seven percent interest while the student is in school, provided that (1) the family's adjusted income is less than \$25,000 (with no "needs analysis" necessary); or (2) the family's adjusted income is above \$25,000, but a "needs analysis" indicates financial need.

For other information on named scholarships see page 201. For veterans' benefits see page 21.

## Student Life and Services



An enriching collegiate experience results from a wise balance of academic and extracurricular activities. The University is fortunate in its country location, which allows space and opportunity for all sorts of outdoor activities and for a homogeneous campus life. The University has a strong student government and recognizes a wide variety of student organizations which offer to every undergraduate an opportunity to pursue his or her special interests and to develop qualities of leadership, character and personality. As far as possible, these organizations are operated by students and supported from a student activities fee, voted and expended by students.

Upon registration at the University of Rhode Island, a student automatically becomes a member of the University community with all the rights, privileges, and responsibilities that go with membership. Such rights and privileges include full use of the educational opportunities offered, the extensive physical facilities found on the campus, the opportunity to belong to student organizations, and to participate in social, recreational, cultural and spiritual activities, and the privilege of making decisions within the scope of the University's goals as an educational institution. As in any democracy, these rights and privileges are accompanied by responsibilities: the responsibilities to progress educationally, to respect the rights of others, and to know and obey the rules and regulations developed by the University community for the good of the total membership.

Rules and regulations for undergraduate students are explained in full in *Rampages*, the student handbook, available at the office of Student Relations and Research or the Student Senate Office.

**Confidentiality of Student Records.** Procedures for the release and disclosure of student records maintained by the University are in large measure governed by state and federal laws. Where the law is silent, the University is guided by the principle that the privacy of an individual is of great weight and that as much information in a student's files as possible should be disclosed to the student upon request. A current or former University of Rhode Island student has the right to inspect and review official records, files and data directly related to that student. This right does not extend to applicants, those denied admission to the University or those who were admitted but did not enroll.

Some records not available to students are: letters of recommendation obtained or prepared before January 1, 1975; employment records of students as University employees; clinical, medical, counseling or psychiatric records; parents' financial aid records and campus law enforcement records.

A student may challenge the factual and objective elements of the content of student records, but not the qualitative and subjective elements of grading. If the student objects to certain items included in his or her personal records, a grievance procedure has been established. Ultimately, a Hearing Board on Student Confidential Records could render a decision.

Third parties do not have access to personally identifiable records or information pertaining to students without the written consent of students who specify that the records be released. Parents are considered third parties.

Detailed guidelines for the release and disclosure of information from student records are available from the Department of Student Relations and Research. These guidelines comply with the legal requirements of the Family Educational Rights and Privacy Act of 1974.

**Student Life.** The staff of Student Life has overall responsibility for the formal and informal activities and co-curricular functions that constitute the major portion of a student's life outside the classroom. Student Life coordinates and is responsible for the four departments: Memorial Union, Student Activities, Student Relations and Research, and International Student Affairs.

The Student Life staff is concerned with the cultural, social and academic climate which encourages the students' personal growth.

**Student Relations and Research.** The staff of the Department of Student Relations and Research helps students become responsible participants in their own growth and development by helping them to identify their common concerns, to integrate their educational experiences, and to become involved in University decision making.

The staff works with and advises fraternity and

sorority students, at-home and "down-the-line" commuters, minority students, graduate students, "older-than-average" students, women students, and the organizations which represent these groups. As new student needs are identified, new subgroups may be formed and encouraged.

This department coordinates and administers the campus judicial system, the University Opinion Index (a topical Gallup-like survey system utilizing a stratified random sample of undergraduate students), provides problem-solving assistance to individual students, sponsors Family Day, and coordinates the University response to crisis situations.

**International Students.** The Director for International Student Affairs consults with and advises foreign students and exchange visitor faculty on academic, financial, housing, and social problems. All communications from foreign students concerning applications for admission to undergraduate or graduate programs are handled by the office. Information concerning United States laws and regulations governing non-immigrant visas, including employment practices, is available from the office.

**Counseling and Student Development.** The Office of Counseling and Student Development assists students to relate their personal paths of development to the intellectual and interpersonal experiences they encounter in the University setting. The staff of this office works to keep education at a personal, individual level by offering assistance to students in choosing a field of study; developing effective study habits; coping with situational crises; building satisfying relationships with faculty, staff, and other students; making the transition to the University environment; solving emotional problems, or planning for graduate school or a career.

The staff is made up of counselors, psychologists, psychiatrists and educational specialists who have a wide variety of experience working with students, both individually and in groups. In addition to direct counseling services, the staff offers a variety of human development programs designed to develop essential life skills, to examine crucial life themes, or to make successful life transitions.

The Office of Counseling and Student Development also provides consultation services to individuals, groups, faculty members and departments to enhance the quality of life and general mental health of the University community.

**New Student Orientation Programs.** The University offers orientation programs to facilitate the students' entry into the campus community, administered by the Office of Counseling and Student Development. New students are taxed a

nominal amount to cover such expenses as room, meals and materials associated with their orientation program.

**Summer Orientation Workshops.** All students who are beginning university careers are expected to attend a two-day workshop to plan their academic programs, to register for fall classes, to learn what to expect of the University, and to begin to acquire the skills essential to successful transition from high school and home to the University community. These programs are planned to personalize the student's first experience with the University by allowing each one to work with a group of approximately 15 classmates as they participate in workshop projects. Admitted students receive workshop registration materials in May.

Special programs are planned for parents of new students to coincide with one of the workshop dates.

**Transfer Orientation Programs.** Students transferring to the University from another institution are encouraged to attend workshops planned especially to acquaint them with some of the unique features and procedures of this University. These workshops differ substantially from beginning student programs. They are designed to help students cope with the issues and problems associated with transferring from another educational institution to the University of Rhode Island. Students admitted with Advanced Standing receive orientation information and reservation materials in May for the June and July workshops, and in early January for midwinter orientation.

**Initial Orientation for International Students.** Programs just prior to the formal beginning of the academic year assist the international student to function effectively, comfortably, and with reasonable initial success in the new environment. Because successful transition to American culture, values, and institutions as well as to American academic life is crucial, new international students are required to attend the program. Full information regarding arrival dates and orientation program costs are mailed to students in the spring. In planning educational budgets, international students should set aside \$75.00 to cover cost of room, meals and program expenses. This expense is in addition to University fees specified in this bulletin.

**Career Planning and Placement.** The Office of Career Planning and Placement offers a program to help students to understand themselves, to understand the relationship between academic and vocational choices, to discover and develop alternatives, and finally to help them make the transition from the world of education to the world of work. It provides for counseling individually, in

groups and in career seminars and workshops. The reference library includes information on careers and career development, employers and employment and graduate school. The office schedules on-campus interviews, and makes referrals and other employer listings available to all registrants including alumni.

**Health.** The University Health Services, located in the Potter Building, provides health services to all students who have paid the health fee. Services include outpatient care, limited emergency services, special clinics in gynecology, birth control, vaginitis, urology, internal medicine, surgery, wart removal, allergy, nutrition, and mental health. There are laboratory, X-ray and pharmacy facilities. Those who have allergies can receive allergy injections provided the vaccines are supplied.

Potter Building is staffed 24 hours a day by registered nurses and by physicians on weekdays from 9 a.m. to 5 p.m. On-call medical service is available for emergencies during hours when the physician is not on duty.

Services not provided at the Potter Building, including consultations in various specialties and hospital care, are available in the local community. All medical expenses incurred outside the University's Health Services are the responsibility of the student. Students who choose their own private physician must assume responsibility for expenses incurred.

**Housing.** Residence halls and boarding facilities are available to students during both the regular academic year and the Summer Session. There are 19 residence halls on the campus offering a variety of living accommodations including coeducational housing.

Undergraduate study-bedrooms are furnished with desks, chairs, dressers, drapes, and single beds. Automatic laundry facilities are available in each residence hall.

Students registering for rooms in the residence halls will have their applications filed in order of receipt. Room assignments will be made to the extent of facilities, and roommate requests will be granted when possible. For rates and contracts, see page 24.

Applications for all University housing should be made to the Director of Residential Life.

Freshmen interested in living in fraternities and sororities should contact the Fraternity Managers Association, the Interfraternity or Panhellenic Council, or the Department of Student Relations and Research.

**Project 70** is an innovative educational program. A living-learning community is developed within a residence hall and students integrate residence hall life with intellectual pursuits. A number of accredited courses are taught in the living unit

each semester. The class atmosphere is informal with small group discussions and close student-teacher relationships. Classes are combined with planned social and cultural events. All programs are organized by the students and they change according to student involvement.

**Dining.** The three University dining halls are operated for the convenience of resident students, and provide wholesome food well served at reasonable prices. The dining halls were constructed with private bond funds. To guarantee payment, the University requires all students living in dormitories to purchase a 15- or 20-meal dining contract as described on p. 24. Parents and guests of students, faculty and staff members, alumni, and guests of the University may be served in the dining halls or the Memorial Union.

**Commuting and Alternate Living Styles.** About 40 percent of undergraduate students commute to classes from home or from off campus housing. If circumstances require an occasional overnight stay, they may use the commuters' hostel at the edge of the campus.

Juniors and seniors at the University often choose to move off campus and live "down-the-line." Down-the-line refers to communities within a ten-mile radius of the campus where summer homes are rented to students for the school year. Typically, a student will pay approximately \$65 a month, plus utilities, for each bedroom in a furnished house.

The majority of winter residents in these down-the-line summer communities are students and they patronize nearby supermarkets, laundromats, restaurants, shopping centers and recreational facilities. Many commute by car-pool or bus. The Commuter Information and Referral Center (a service of the Department of Student Relations and Research) in the Memorial Union can provide quick and accurate answers to questions concerning any aspect of University life.

**Memorial Union.** A student board of directors working with the Director of the Memorial Union determines policy for the Union and plans a full program of social, cultural, intellectual and recreational activities. The Union building, which is a memorial to the men of the University who died in two world wars, is governed by a student Board of Directors. It houses a wide variety of educational, social, cultural and recreational services and facilities. These include meeting and conference rooms, lounges, browsing room, study rooms, dark rooms, student video center, radio station, campus newspapers, games room, offices for student organizations, student technical services, craft center, cafeteria, snack bar, restaurant, pub, private dining rooms, ballroom and party room.

Among the services provided are a full service bank, travel agency, unisex hair salon, credit union and a center where copying facilities and typewriters are available. Student cooperatives under the direction of the Student Senate include a record shop, photography lab, housing directory, book exchange and a student hostel. There are substantial facilities for commuting students.

**Student Activities.** The Student Activities Office provides consulting services to approximately 120 student organizations and to individual students. It is also responsible for providing an information center for students and for scheduling non-academic activities on campus. The office encourages students to develop new ideas and provides them with technical expertise and resources to turn those ideas into successful programs.

**Lectures and Arts Programs.** Lectures and arts programs are presented throughout the year to enrich the more formal academic program of the University. Lectures of general and specialized interest are presented by visiting scholars. The Arts Council, on which faculty, students, and administration are represented, plans programs that include music and dance concerts, film programs, and theatre presentations. Student organizations sponsor a popular entertainment series and bring speakers of national or international prominence to campus. These are supported by student funds.

**Religion.** The University encourages the practice of religion on campus and gives the widest latitude to all creeds and religious beliefs. University chaplains and religious advisers of various faiths are available, as are facilities for religious services. In addition to offices and facilities in the Memorial Union, the Roman Catholic Center, the Episcopal Center and the Hillel Center are open to all members of the University community. Synagogues and churches of various denominations in the area welcome students to their services.

Religious organizations meet for worship and study, and sponsor other activities throughout the academic year.

**Student Government.** The Student Senate is a legislative body which represents the students to the administration and faculty and supervises extracurricular activities. It also distributes the activities tax among the various student organizations through its tax committee.

The University Board on Student Conduct hears alleged violations of non-academic rules and regulations. The University Board on Scholastic Integrity hears allegations of cheating or plagiarism. Both Boards include students and faculty members. If students wish to appeal the decision of either Board, they may do so to the University Appeal Board on Student Conduct and Scholastic





Integrity. All disciplinary action is considered confidential.

Individual residence halls form their own governments.

The Interfraternity Council supervises fraternity affairs and passes regulations governing fraternity life. The Panhellenic Council does the same thing for sororities.

The Commuters Association is an organization that provides social programs and other assistance to commuter students.

**Honor Societies.** The University has chapters of a number of national honor societies, election to which is a recognition of accomplishment. The Society of the Sigma Xi is the scientific honor society, Phi Beta Kappa, is a national liberal arts honor society, Phi Kappa Phi is the honor society for general scholarship and Mortar Board recognizes scholarship and leadership. In more specialized areas are the following: Alpha Kappa Delta (sociology), Alpha Zeta (agriculture), Beta Alpha Psi (accounting), Beta Gamma Sigma (business), Kappa Delta Pi (education), Delta Pi Epsilon (business education), Eta Kappa Nu (electrical engineering), Lambda Tau (medical technology), Omicron Delta Epsilon (economics), Omicron Nu (home economics), Phi Alpha Theta (history), Phi Sigma (biological science), Pi Delta Phi (French), Pi Mu Epsilon (mathematics), Pi Sigma Alpha (political science), Pi Tau Sigma (mechanical engineering), Rho Chi (pharmacy), Sigma Delta Pi (Spanish), Sigma Pi Sigma (physics), and Tau Beta Pi (engineering).

**Fraternities and Sororities.** There are approximately 1400 fraternity and sorority members living either in University residence halls or in the 22 houses privately owned by alumni corporations. The organizations are service as well as social groups serving the University and individual fraternity and sorority members by promoting scholarship, citizenship and small-group living. Within the last ten years, ten new houses have been built in a newly opened section of the campus.

The fraternities, all of which are nationally affiliated, are Alpha Epsilon Pi, Chi Phi, Lambda Chi Alpha, Phi Gamma Delta, Phi Kappa Psi, Phi Mu Delta, Phi Sigma Kappa, Sigma Alpha Epsilon, Sigma Chi, Sigma Nu, Sigma Phi Epsilon, Tau Epsilon Phi, Theta Chi, Theta Delta Chi, and Zeta Beta Tau.

The sororities, all nationally affiliated, are Alpha Chi Omega, Alpha Delta Pi, Alpha Xi Delta, Chi Omega, Delta Delta Delta, Delta Zeta, Sigma Delta Tau, and Sigma Kappa.

**Athletics.** The University offers an extensive program of athletics, sufficiently varied to provide an opportunity for every student to participate. The

Tootell Physical Education Center and the Keaney Gymnasium provide excellent facilities, including three pools and three gymnasiums for recreation and competitive programs.

Men's intercollegiate teams participate in baseball, basketball, football, golf, riflery, sailing, soccer, swimming, tennis, cross country, indoor and outdoor track and wrestling.

In addition to membership in the New England Conference of State Universities (Yankee Conference), the University holds membership in the National Collegiate Athletic Association and the Eastern College Athletic Conference.

The women's intercollegiate teams participate in basketball, fencing, field hockey, gymnastics, lacrosse, softball, swimming and diving, tennis, volleyball, cross country, golf, track and field, and sailing. URI holds membership in the Association of Intercollegiate Athletics for Women, the Eastern Association of Intercollegiate Athletics for Women, two women's affiliate associations of the Amateur Fencing League of America, the New England Women's Intercollegiate Sailing Association and the college divisions of the United States Field Hockey and Lacrosse Associations. The expansion of women's athletic programs provides increased opportunities for a high level of competition for exceptional female athletes on both the regional and national level.

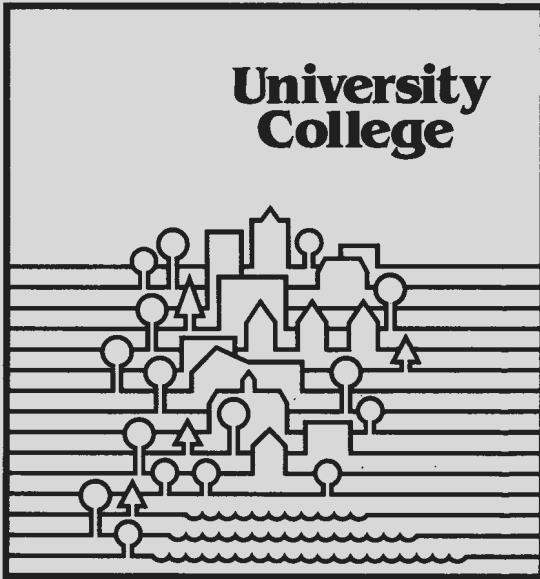
Intramural programs for men and women combine the values of competitive athletics and informal sports, and are in operation all year.

Those with sports interests may join the several clubs identified with particular sports.

**Other Organizations.** In addition to intercollegiate athletic teams, a number of organizations represent the University in competition, exhibitions, and public performances. The University Band, Chorus, and Orchestra are under music department direction, and students may receive credit for participation in any one of these. The University Theatre, under theatre department direction, presents several plays each year. The URI Debate Council is directed by members of the speech department and participates in intercollegiate debates. The Cheerleaders are active at varsity football and basketball games and rallies.

On campus there are about 30 professional organizations related to the students' academic interests and concentration areas and there are a number of groups serving social, recreational, cultural and political interests.

Students publish a newspaper four times a week, a weekly gazette, a yearbook, and a literary publication and operate WRIU, a campus radio station.



Lena L. Lucietto, *Acting Dean*  
 Alice D. Gross, *Assistant Dean*

All entering students are enrolled in University College except those students in special two-year programs such as Dental Hygiene and Commercial Fisheries and registered nurses wishing to earn a bachelor's degree.

University College grants no degrees but offers all incoming students an opportunity to explore the variety of courses and programs open to them at the University before committing themselves to one program of concentration in a degree-granting college. Those students who have a clear educational or professional objective when they enter the University are encouraged to pursue that objective as directly and rapidly as possible.

The University College experience is based on a strong academic advising program. Advisers, who have regular office hours at the College, are drawn from the faculties of each of the degree-granting colleges. Each student has an adviser chosen from a subject area in which interest has been expressed. All students are assisted by their advisers to select courses of study that will satisfy the entrance requirements of the degree-granting college and curriculum of their choice.

When students have completed at least 45 credit hours and have met the course requirements of the curriculum they wish to pursue, they may transfer into a degree-granting college. It is the responsibility of University College to advise students of specific courses required for transfer. No degree-granting college may require a quality point average higher than 2.0.

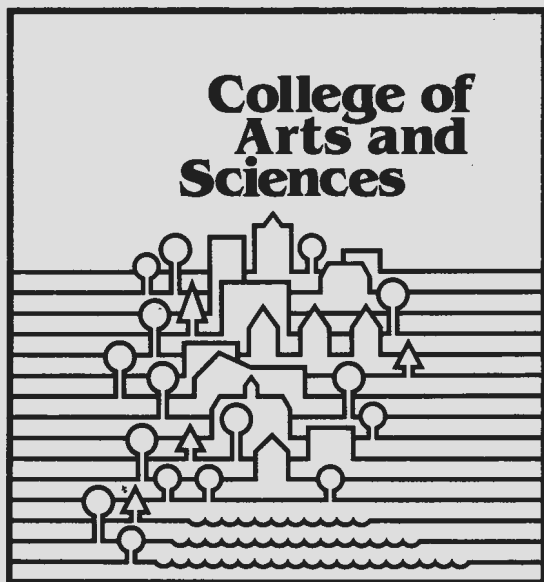
If more students seek access to a program than can be accommodated due to limited faculty or facilities, those students who have shown the highest promise for academic success in the program will be admitted first. This applies only to programs which have been declared "oversubscribed" by the Vice President for Academic Affairs. Students who cannot be admitted to the program of their first choice may request entry into another program for which they have satisfied entrance requirements, or spend up to one additional year in University College preparing to qualify for another program.

**Advanced Placement and Transfer Students.** Students admitted to the University from an advanced placement program in high school must complete a minimum of 45 credit-hours in University College including their advanced placement credits. Students from other institutions who are transferring to the University of Rhode Island with less than 45 credits will first enter the University College. If they have earned 45 transfer credits and have met all the requirements for admission to a specific degree-granting college at the University, they may be admitted directly to that college, or they may elect to enter University College providing not more than 60 transfer credits are offered.

Requirements for admission with advanced standing are described on page 18.

**Special Program for Talent Development.** This program, administered by University College, has as its primary concern young people who could not go to the University without the program's assistance. For further information about it see page 20.

**Study Abroad Office.** The Study Abroad Office is under the auspices of University College. Its function is to assist students in planning courses of study in foreign countries, as well as travel and living arrangements.



Barry A. Marks, *Dean*  
 Margaret D. Robb, *Associate Dean*  
 Gerry S. Tyler, *Assistant Dean*  
 Edward G. Benson, *Assistant Dean*

The objective of the College of Arts and Sciences is to enable students to understand our intellectual and spiritual heritage, the physical and biological world in which we live, and man's social, economic, and political development. Beyond this, the College provides several programs of professional training and a strong foundation for graduate study. In all its functions the College is dedicated to fostering a spirit of inquiry and independent thought. Emphasis is placed upon intellectual growth and the deep satisfaction derived from knowledge for its own sake.

The College has programs of study leading to the following degrees: *Bachelor of Arts*, *Bachelor of Science*, *Bachelor of Fine Arts*, and *Bachelor of Music*. The Department of Dental Hygiene provides programs leading to both the *Bachelor of Science* and the *Associate in Science* degrees.

For information about preprofessional preparation, see pages 12-14.

## HONORS PROGRAMS

Comprehensive honors programs are available for especially qualified junior and senior students. Eligibility depends on the quality of academic achievement during the previous two years. Qualified students may assist in research projects related

to their major interests, enjoy graduate student privileges from the University libraries, and take graduate courses during their senior year. Honors programs are available in anthropology, biology, botany, chemistry, economics, English, geography, geology, history, journalism, languages, mathematics, microbiology, music, philosophy, physics, political science, psychology, sociology, speech and zoology.

## Curriculum

**Distribution Requirements.** The 45 distribution credits are earned in Division A, humanities; Division B, natural sciences and mathematics; Division C, social sciences. At the student's option, 18 credits are taken in one of the divisions, 15 in another and 12 in a third.

The fourth area, Division D, communications, is optional. A student may take up to nine credits in Division D as part of the 45-credit total, but may not reduce any other divisional requirement by more than three credits.

Within each of the four divisions, no more than two courses may be taken for distribution credit in one department (discipline) or subject matter area.

To eliminate academic loads above the degree requirements, students in the advanced ROTC program may, with the approval of the dean of the college, apply a maximum of six credits of military science courses to reduce the distribution requirements.

Courses offered in the student's concentration department may not be used for distribution credits, except that students presenting a double concentration may apply courses from one concentration towards the College distribution requirements.

### Division A

**Art.** Any art course for which prerequisites have been met, not more than one of which may be a studio course.

**Comparative Literature.** Any course for which the prerequisites have been met.

**English.** Any course for which the prerequisites have been met, except ENG 110, 112, 120 and 122.

**History.** HIS 358.

**Language.** Any course for which the prerequisites have been met, except 100, 101, 102, 111, 112, 191, 192 and POR 311 and 312.

**Linguistics.** Any course for which the prerequisites have been met, except LIN 330.

**Literature in English Translation.** CLA 391, 392 and 393; FRN 391, 392, 393, and 394; GER 391, 392 and 393; ITL 391, 392, 393 and 395; SPA 391 and 392; RUS 391 and 392.

**Music.** MUS 101, 102, 111, 221, 222, 305 and only those courses for which these are prerequisite.

**Philosophy.** Any course for which the prerequisites have been met, except PHL 101.  
**Speech.** SPE 231, 331, 332, 333 and 433.  
**Theatre.** Any course for which the prerequisites have been met, except THE 111-112, not more than one of which may be a laboratory, studio or practicum.

#### Division B

**Astronomy.** AST 108 and 408.  
**Biochemistry and Biophysics.** Any course for which the prerequisites have been met.  
**Biology.** BIO 101 and 102.  
**Botany.** Any course for which prerequisites have been met.  
**Chemistry.** Any course for which prerequisites have been met.  
**Computer Science.** Any course for which prerequisites have been met, except 220.  
**Earth Science.** ESC 104, 105 and 106.  
**Experimental Statistics.** Any course below 500 level.  
**Geography.** GEG 104, 403, 404, 405 and 406.  
**Geology.** Any course for which the prerequisites have been met.  
**History.** HIS/ZOO 373.  
**Mathematics.** MTH 107, 108, 109 and 141, and any course for which these are prerequisites.  
**Microbiology.** Any course for which prerequisites have been met.  
**Oceanography.** OCG 401.  
**Physics.** Any course for which prerequisites have been met.  
**Psychology.** PSY 382.  
**Zoology.** Any course for which prerequisites have been met.

#### Division C

**Anthropology.** Any course for which prerequisites have been met.  
**Computer Science.** CSC 220.  
**Economics.** Any course for which prerequisites have been met.  
**Education.** EDC 102, 279, 312 and 403.  
**Geography.** Any course for which prerequisites have been met, except GEG 104, 403, 404, 405, and 406.  
**History.** Any course for which prerequisites have been met, except HIS 358 and 373.  
**Journalism.** JOR 434, 435 and 438.  
**Linguistics.** LIN 330.  
**Political Science.** Any course for which prerequisites have been met.  
**Portuguese.** POR 311 and 312.  
**Psychology.** Any course for which prerequisites have been met, except PSY 300, 381, 382, 410 and 434.  
**Sociology.** Any course for which prerequisites have been met.  
**Speech.** SPE 210, 301, 310, 315, 374 and 425.

#### Division D

**Business Education.** BED 227.  
**English.** ENG 110 and 120.  
**Journalism.** JOR 212 and 324.  
**Languages.** Foreign languages 100, 101, 102, 111, 112, 191 and 192.  
**Philosophy.** PHL 101.  
**Scratch.** Any course.  
**Speech.** SPE 101, 102, 201, 215, 220 and 319.

**Concentration.** Any student who has met the requirements for two separate concentrations within any single bachelor's curriculum has earned a double concentration and may have both fields listed on the transcript.

The students must maintain a 2.0 quality point average (QPA) in their concentration to meet graduation requirements. One half of the total number of credits needed in a given concentration must be earned at the University of Rhode Island.

**Curricular Modifications.** In exceptional cases, and subject to the approval of their department and of the dean, students may modify any curricular requirement except those for distribution, course level, minimum grade point average, and total credits. These may be modified only by the appropriate committees of the College.

**Area of Interest—Optional.** Students may elect to declare an area of interest which will appear on their transcripts as a category separate from their concentration. Credits may be drawn from any combination of concentration, distribution, electives, and course-level categories. An area of interest may be defined as (1) the completion of 18 or more credits offered within a department and approved by the department chairperson, or (2) the completion of 18 or more credits of related studies offered by more than one department and approved by a member of the faculty competent in the area of interest and the dean of the College.

Examples of such interdisciplinary areas of interest are Child Psychology, Public Relations, Renaissance Civilization and Women's Studies. It is the responsibility of the student to declare his or her area of interest no later than the beginning of the semester he or she expects to graduate. Students need not declare an area of interest.

**Electives.** The student will elect courses sufficient in credits to complete the 120 required for graduation. Courses may be taken in any college of the University.

**Course Load.** No student may take more than 19 credits per semester without permission from the adviser and the dean.

**Graduation Worksheet.** It is the responsibility of the student to submit a graduation worksheet, signed by his or her adviser, no later than the beginning of the semester he or she expects to graduate.

## Bachelor of Arts

The Bachelor of Arts curriculums provide a general cultural background and an opportunity for the student to concentrate in any one of 31 fields of study.

**Curriculum Requirements.** Each candidate for a Bachelor of Arts degree must meet certain minimum curriculum requirements having to do with quantity and quality. These requirements include the completion of at least 120 passed credits averaging, at graduation, C or better. On the University's grading system, that represents a cumulative quality-point average of 2.0 or higher. Of the 120 passed credits, at least 42 must be in upper-level courses, numbered 300 or above.

In addition to meeting the College distribution requirements, each candidate must complete a concentration and a number of elective courses. The concentration totals 27 to 30 credits.

**B.A. Concentration.** The concentration is the discipline or subject area in which the degree is granted. It may include not only required courses within the concentration department but also courses in related subjects offered by the student or required by the department. The student should declare this concentration before the end of the fourth semester.

The concentration comprises no fewer than 27 nor more than 30 credits. These, however, are exclusive of any credits outside the concentration department but which may be required by that department as prerequisites. Including such prerequisites, the concentration may not exceed 36 credits.

The student may earn up to 45 credits in course work offered by the concentration department, counting as electives those credits earned in excess of the concentration requirements. Any credits in excess of 45 earned in the concentration department increase correspondingly the minimum number of credits required for graduation.

Concentration areas include: Anthropology, Art (history and studio), Biology, Chemistry, Classical Studies, Economics, English, French, Geography and Marine Affairs, Geology, German, History, Italian, Journalism, Latin American Studies, Linguistics, Mathematics, Music, Philosophy, Physics, Political Science, Psychology, Russian, Sociology, Spanish, Speech, Theatre, Urban Af-

fairs (urban social processes, policy formation, and spatial development).

**Modified Concentration.** In consultation with his or her adviser, and with the approval of the dean, a student may be permitted to modify the normal requirements of the department in which the student is concentrating. With such approval, the program, consisting of no fewer than 27 nor more than 30 credits, will constitute the student's concentration.

## Bachelor of Science

The Bachelor of Science curriculums are professionally oriented and, in general, meet the accreditation standards of national professional associations.

**Curriculum Requirements.** The general curriculum for the Bachelor of Science degree consists of the College distribution requirements, 12 credits of free electives, and a major of 30-45<sup>1</sup> credits within a department. In addition, a department may require for its concentration certain courses in other departments, with the stipulation that this will not preclude their application to the distribution requirements. Courses in the concentration department cannot be used to satisfy the distribution requirements. No more than 130 credits can be required in a program.

Each concentration within the B.S. curriculum has certain more specific requirements, as given on the following pages.

Concentration areas include: Botany, Chemistry, Computer Science, Dental Hygiene, Geology, Mathematics, Medical Technology, Microbiology, Physics, Zoology.

## Bachelor of Fine Arts

The curriculums provide the opportunity to discover and develop creative capacities in the fine arts. The emphasis is on richness of program and quality of experience rather than the development of isolated skills. Applicants registering for work toward the Bachelor of Fine Arts degree must receive permission of their concentration department. Students concentrating in theatre specializing in scene design must submit portfolios. Theatre students who wish to specialize in acting must arrange for an audition with the Department of Theatre. Others must arrange for an interview with a departmental representative. Further details and appointments may be obtained through the University Admissions Office.

<sup>1</sup>The student concentrating in chemistry, for ACS accreditation purposes, will be allowed 48 credits.

**Curriculum Requirements.** All candidates for the Bachelor of Fine Arts degree are required to select and pass 45 credits in distribution.

Concentration areas include: Art, Theatre.

## Bachelor of Music

The Bachelor of Music degree is designed to prepare qualified students for careers in the field of music. The student may select one of seven areas of concentration dependent upon his or her aims and abilities.

Concentration areas include: Classical Guitar, Voice, Piano or Organ, Orchestral Instrument, Music History and Literature, Theory and Composition, Music Education.

All areas provide for a good background in academic subjects and each curriculum contains basic courses for the development of sound musicianship. An audition conducted by members of the music department staff is required for permission to register for work toward the Bachelor of Music degree.

Concentration in the music education curriculum includes courses in educational psychology, methods, and a teaching internship which leads to state certification for teachers.

The total number of credits for graduation is 125 (126 for music education majors).

**Curriculum Requirements.** All candidates for the Bachelor of Music degree are required to select and pass 45 credits in distribution.

Students concentrating in music education may include six credits in music to meet Division A requirements, and three credits in psychology and six credits in education to meet Division C requirements.

Students are encouraged to attend department-sponsored events each semester.

## Associate in Science

The Department of Dental Hygiene offers a two-year program leading to the Associate in Science degree. The student in this curriculum is not required to meet distribution requirements but must complete 71 credit hours in a prescribed program outlined in the department offerings.

## Anthropology

The Department of Sociology and Anthropology offers the degree of bachelor of arts (B.A.) in anthropology.

**Faculty:** Associate Professor Gelles, chairman. Professor Poggie; Associate Professor Pollnac; Assistant Professors Guthrie, Lynch, Loy and Turnbaugh.

Students desiring to concentrate in anthropology must complete a total of 30 credits in that subject. This total must include at least one course (3 crs.) from each of the sub-disciplines of anthropology as follows: *Cultural Anthropology* includes APG 203, 309, 321, 322, 323, 324, 326, 405, 407 and 411; *Culture Areas* include APG 305, 311, 313, 315, and 319; *Physical Anthropology* includes APG 201, 301 and 412; *Archaeology* includes APG 202, 303 and 317; *Anthropological Linguistics* include APG 200 and 409.

In addition, each student majoring in anthropology must complete APG 401 (3) and 402 (3). The remaining 9 credits may be selected from course offerings in anthropology.

It is recommended that the first course in each sub-discipline be at the 200-level. These 200-level courses are prerequisites for upper division courses in the sub-disciplines, although prerequisites may be waived by the instructor.

It is strongly recommended, but not required, that anthropology majors take at least one course in statistics and a foreign language up to the intermediate level.

## Art

The Department of Art offers a bachelor of arts (B.A.) degree with a concentration in either art history or art studio and a bachelor of fine arts (B.F.A.) degree in studio.

**Faculty:** Professor Fraenkel, chairman. Professors Klenk, Leete and Rohm; Associate Professors Calabro, Ketner and Parker; Assistant Professors Cordes, Hansell, Holmes, Kampen, Keller, Onorato, Richman and Roworth.

## BACHELOR OF ARTS

**Art History.** It is recommended that students intending to concentrate in art history plan to complete a minimum of 6 credits in the history of art by the end of the sophomore year. For graduation students must complete 30 credits in art history, including ART 251 and 252 (6), 354 (3), 356 (3), 359 (3), 361 or 362 (3) and 365 (3). An additional 3 credits are taken from any 200 or 300 level course in art history. An additional 6 credits must be selected from ART 461, 462, 469, 470, 480 or 484. Studio courses in art are not to be considered part of the art history concentration and may be used as free electives.

It is recommended that students concentrating in art history achieve intermediate level pro-

iciency in at least one foreign language. Students are also encouraged to enroll in courses in history, literature, music and philosophy.

**Art Studio.** It is recommended that students intending to concentrate in art studio plan to complete a minimum of 9 credits in studio by the end of the sophomore year. For graduation, students must complete 30 credits in art, including: ART 101 and 103 (6), 251 and 252 (6), 207 (3), an art history elective (3).

An additional 6 credits must be selected from ART 213, 314, 215, 216, 221, 322, 231, 332, 233, 334, 243, 344. These credits may be taken in the same subject or in two different subjects. Art history credits taken in addition to the 9 required are not to be considered part of the art studio concentration and may be taken as free electives.

An additional 6 credits must be selected from ART 403, 404, 405, 406.

ART 120 may not be counted toward degree requirements if ART 251 and 252 have been previously completed. A minimum of 9 credits of non-studio study in art is required. It is recommended that art majors elect at least 3 credits in the allied fields of music or theatre.

## BACHELOR OF FINE ARTS

It is recommended that students intending to enter the B.F.A. program in art plan to complete ART 120 in the freshman year and to have completed a minimum of 12 credits in studio by the end of the sophomore year.

Students in the B.F.A. program must complete a minimum of 48 credits in art. Studio courses required of all majors include: ART 101 (3), 103 (3), 207 (3), 208 (3), 403 (3), 404 (3), 405 (3) and 406 (3).

An additional 15 credits must be selected from studio courses numbered below 400.

ART 120 is required of all students and an additional 6 credits must be selected in art history. Students anticipating graduate study in art should note that some graduate schools require 12 credits in art history for entrance.

Outstanding entering students may, upon recommendation of their adviser and approval of the art faculty, be excused from certain required 100 and 200 level art courses and substitute upper level courses for those credits.

Student work accomplished as part of a course may, with the consent of the student, be retained by the Department of Art for teaching or exhibition purposes. When this work is no longer needed, the student will be notified. After notification, the work must be reclaimed within 60 days. Student works selected by the art faculty for inclusion in the permanent collection of the University may be purchased through negotiations with the student.

Students enrolled in the B.F.A. program may use the electives remaining after completion of the

distribution and concentration requirements to increase their credits in art without increasing total graduation requirements.

A total of 120 credits is required for graduation, distributed as follows: distribution requirements (45), major requirements in studio (39) and art history including ART 120 (9), electives (27).

## Biological Sciences

Programs in biological sciences are administered by the Departments of Botany, Microbiology and Zoology. A student may earn either the bachelor of arts (B.A.) degree in biology or the bachelor of science (B.S.) degree in botany, microbiology or zoology. The master of science (M.S.) and doctor of philosophy (Ph.D.) degrees, also offered by these departments, are described in the *Graduate School Bulletin*.

**Botany Faculty:** Professor Goos, chairman. Professors Albert, Hauke, Palmatier, and Smayda; Associate Professors Halvorson, Hargraves, Harlin, Mottinger and Swift; Assistant Professor Sheath; Adjunct Professor Simmons; Emeritus Professors Caroselli and Lepper.

**Microbiology Faculty:** Professor N.P. Wood, chairman. Professors P.S. Cohen, H.W. Fisher, C.W. Houston, Sieburth and Traxler; Assistant Professors Hufnagel, Laux and Sperry; Adjunct Professors Cabelli, and P.J. Chapple; Adjunct Associate Professors Levin and Prager; Adjunct Assistant Professor Dufour.

**Zoology Faculty:** Professor Wilde, chairman. Professors Chipman, Goertemiller, Hammen, Hill, K.E. Hyland, Saila, Shoop and Winn; Associate Professors Bibb, Bullock, Cobb, Heppner, Kass, Krueger and Mottinger; Assistant Professors Hairston and Surver; Adjunct Professors Dowling, Gibbs and Tilly.

## BACHELOR OF ARTS

Students selecting a concentration in biology must complete a minimum of 28 credits in biological sciences including the following basic courses: BIO 101 and 102 or BOT 111 and ZOO 111 (6-8), MIC 211 (4), BOT electives (6), ZOO electives (6).

The remaining 4-6 credits may be selected from courses in botany, microbiology or zoology. Students in this concentration must elect a year of chemistry. Those wishing to prepare for a career as a professional botanist, microbiologist, or zoologist should enroll in the bachelor of science curriculum in biology described below.

Students must declare their major when leaving University College.



## BACHELOR OF SCIENCE

This curriculum provides specialization in the fundamental principles of botany, microbiology, or zoology, and is concerned with the application of biological science to problems of modern life. It also provides preparation for graduate work in biological fields and for admission to professional schools of medicine, dentistry, and veterinary medicine.

Students who know their professional goals are encouraged to declare their major as soon as possible in order to take advantage of skilled advising in botany, microbiology, or zoology. Students must declare their major when leaving University College.

### Freshman Year

First semester: 17 credits

BOT 111 or ZOO 111 (4), CHM 101, 102 or 103, 105 (4), MTH 109 or 141 (3), modern language<sup>2</sup> or elective (3), and general education requirement or free elective (3).

### Freshman Year

Second semester: 17 credits

BOT 111 or ZOO 111 (4), CHM 112, 114 (4), MTH 141 or 142<sup>3</sup> (3), modern language<sup>2</sup> or elective (3), and general education requirement or free elective (3).

### Sophomore Year

First semester: 16 credits

MIC 211 (4)<sup>4</sup>, CHM 227 (3), and 9 credits of general education requirements or free electives<sup>5</sup> for a total of 17 credits.

### Sophomore Year

Second semester: 17-18 credits

Curriculum requirements (3-4), general education requirements or free electives (9), and the remaining chemistry requirements CHM 226<sup>6</sup>, 228 (5).

Each concentration requires a total of 130 credits.

**Botany.** A minimum of 30 credits in botany is required and must include BOT 111, 221, 245, 262, 311, 323, 352 and one of the following: BOT 332, 418, 419, or 432. In addition, the student must take MIC 201; CHM 101, 102 or 103, 105, 112, 114, 226<sup>6</sup>, 227 and 228; PHY 213, 285, 214, 286 or 111 and 112; ZOO 111; ENG 110; SPE 101 or 102; MTH 141 and 142; a modern language is recommended.

<sup>2</sup>Not required of botany majors.

<sup>3</sup>MTH 142 is required of botany and zoology majors.

<sup>4</sup>Not required of zoology majors.

<sup>5</sup>Zoology majors are strongly advised to begin taking required zoology courses at this time.

<sup>6</sup>CHM 229, 230, which is offered in summer only, may be substituted for CHM 226.

**Microbiology.** A minimum of 30 credits in microbiology is required, including MIC 411 and 495 or 496. The student concentrating in microbiology may include any course in microbiology; APA 534, 536, and 538; BOT 352, 354, 418 or 419, 432, 534, 542; OCG 567; PCG 536; ZOO 323, 331, 441 and 512. A student who plans to attend graduate school is advised to take MTH 141 and 142, and BCP 435. In addition the student must take BOT 111; ZOO 111; CHM 101, 102 or 103, 105, 112, 114, 226<sup>6</sup>, 227, 228, and 212; BCP 311, PHY 213, 285, 214 and 286 or 111 and 112; MTH 109 or 141 and 141 or 142; and a modern language through the intermediate level. Courses offered at the Alton Jones Cell Science Center, Lake Placid, New York, may be used for major credit. Prior permission of the department is required.

**Zoology.** A minimum of 30 credits in zoology is required and must include ZOO 221, 254, 262, 345 and 395; ASC or BOT 352; ZOO 111 is not required for a concentration in zoology but may be applied toward the 30 hours required. In addition, the student must take BOT 111; CHM 101, 102 or 103, 105; CHM 112, 114, 226<sup>6</sup>, 227, 228; MTH 142; PHY 111, 112 or PHY 213, 285, 214, 286; and a modern language through the intermediate level.

Students are strongly urged to consult the zoology advisers and obtain from them detailed programs of the various sub-disciplinary paths through the department.

## Chemistry

The Department of Chemistry offers a bachelor of arts (B.A.) degree and a bachelor of science (B.S.) degree. The master of science (M.S.) and doctor of philosophy (Ph.D.) degrees in chemistry are described in the *Graduate School Bulletin*.

**Faculty:** Professor Cruickshank, chairman. Professors Abell, C.W. Brown, Gonzalez, Goodman, S. MacKenzie, W.H. Nelson, Rosie and Vittimberga; Associate Professors P.R. Brown, Cheer, Fasching, Kirschenbaum, Petersen and Rosen; Assistant Professors Freeman and Forcé.

## BACHELOR OF ARTS

Students selecting this field of concentration must complete 28-30 credits in chemistry by taking either 12 credits as CHM 101 and 102, 112 and 114, 212; or 10 credits as CHM 191 and 192; and 18 credits as CHM 227 and 228, and 226, 431 and 432, 335 and 336. CHM 229, 230, which is offered in summer only, may be substituted for CHM 226. CHM 291, 292 may be substituted for the CHM 226, 227, 228 sequence.

MTH 141 and 142 are required; one year of physics (PHY 111 and 112 or 213 and 214, 285 and

286) and one semester of English composition (ENG 110 or 120) are strongly recommended.

#### BACHELOR OF SCIENCE

Designed to prepare the student for a career in chemistry, this curriculum provides a thorough training in both theories and practices in the fields of analytical, physical, organic and inorganic chemistry. Those who complete this curriculum are prepared to continue with graduate study leading to an advanced degree, to follow the teaching profession, and to enter specialized fields in development, control, technical sales, and research either in the chemical industry or in industries involving chemical processes.

The curriculum has been approved by the American Chemical Society Committee on the Professional Training of Chemists. Graduates receive a certification card issued by the Society and are eligible for senior membership after two years of experience in the field of chemistry. It is strongly recommended that ENG 110 or 120 be taken in the freshman year. CHM 412, 414 should be taken in the junior year by students planning research or advanced course work in analytical chemistry. CHM 425 should be taken in the junior year by students planning research or advanced course work in organic chemistry.

The Bachelor of Science program requires 130 credits.

##### Freshman Year

First semester: 17 credits

CHM 191 (5), MTH 141 (3), language<sup>7</sup> or free elective (3), general education electives (6).

##### Freshman Year

Second semester: 17 credits

CHM 192 (5), MTH 142 (3), language<sup>7</sup> or free elective (3), general education electives (6).

##### Sophomore Year

First semester: 16 credits

CHM 227 (3), MTH 243 (3), PHY 213 (3) and 285 (1), language<sup>7</sup> or general education elective (3), general education elective (3).

##### Sophomore Year

Second semester: 18 credits

CHM 227 (3) and 226 (2), MTH 244 (3), PHY 214 (3) and 286 (1), language<sup>7</sup> or general education elective (3), general education elective (3).

##### Junior Year

First semester: 14 credits

CHM 431 (3), 335 (2), physics elective (3), general education elective (3), free elective (3).

##### Junior Year

Second semester: 17 credits

CHM 432 (3), 336 (2), general education electives (6), free electives (6).

##### Senior Year

First semester: 16 credits

CHM 401 (3), 425 (4), curriculum<sup>8</sup> requirements (3-6), free electives (6-3).

##### Senior Year

Second semester: 15 credits

CHM 392 (1), 412 (3), 414 (2), curriculum<sup>8</sup> requirement (3-0), free electives (6-9).

### Classical Studies

The Department of Languages offers the bachelor of arts (B.A.) degree with a concentration in classical studies.

*Faculty:* Associate Professor Dornberg, *chairman* (Department of Languages); Associate Professor Cashdollar, *section head*; Assistant Professor Sussman.

Students selecting classical studies as a concentration complete a minimum of 30 credits: (a) 18 credits from either LAT 301, 302, 497, 498 or GRK 301, 302, 497, 498; (b) 6 credits from the other language at any level; (c) and 6 additional credits from any courses offered by the Classics Section. Either LAT 101, 102 or GRK 101, 102 sequence may count toward the concentration; the other 100-level sequence, not counting toward the concentration, will serve as a prerequisite for advanced courses.

### Computer Science and Experimental Statistics

The Department of Computer Science and Experimental Statistics offers the bachelor of science (B.S.) degree in computer science. The master of science (M.S.) degree programs in computer science or experimental statistics are described in the *Graduate School Bulletin*.

*Faculty:* Professor Hemmerle, *chairman*. Professors Carney, Merenda and L.T. Smith; Associate Professors Bass, Carrano, Hanumara, Lawing and Weideman; Assistant Professors Heltshe, Lamagna and Tetreault.

<sup>7</sup>Students planning to attend graduate school should take Russian or German through the intermediate level.

<sup>8</sup>CHM 353, 354 or, with permission of department, any 500-level chemistry course.

The curriculum is designed to provide a broad introduction to computer science fundamentals. Emphasis is on computer software and applications. The required mathematics preparation provides a basis for advanced work. Students will be well prepared for graduate study in computer science or for careers in computer-related areas.

Students in this curriculum must complete a minimum of 42 credits as follows: MTH 141 (3), 142 (3), 215 (3), 243 (3); CSC 201 (3), 202 (3), 311 (3), 350 (3), 382 (1), 383 (1), 385 (1), 411 (3), 412 or 413 (3); EST 220 or 409 (3) and 6 additional credits selected from computer science and/or experimental statistics courses. In addition, students are strongly recommended to complete 3 credits of SCRATCH.

Total credits required are 130.

The following courses are possible electives for the student who wishes to gain some insight into or experience with various applications: ELE 405; IDE 432, 433, 435; MGS 383, 445, 476; MTH 244, 471, 472.

## Dental Hygiene

The Department of Dental Hygiene offers a four-year program leading to the bachelor of science (B.S.) degree and a two-year program leading to the associate in science (A.S.) degree. Both are accredited by the Commission on Accreditation of Dental and Dental Auxiliary Education Programs.

Faculty: Professor B. Wilson, *chairman*. Instructors B. Brown and S. Saunders; Adjunct Professor J. Yacovone; Clinical Instructors F. Bliss, J. Bush, A. Carlotti, Jr., L. England, J. Feldman, R. Girasole, T. Giuliano, A. J. Kershaw, M. Knapp, E. Nelson, D. Persechino, S. Ross, S. Sack, J. Schwab and J. Tompkins.

## BACHELOR OF SCIENCE

This curriculum offers maximum flexibility in providing professionally oriented study and a foundation in general education. It is designed to prepare the student to assume responsible positions in education, such as in schools of dental hygiene, hospital programs, and school systems as well as private practice. Students who complete this curriculum are prepared to continue with graduate study.

Upon completion of the required 71 credits in dental hygiene, the student is awarded the Associate in Science degree. A total of 125 credits is required for the Bachelor of Science degree. At the completion of the first clinical year, students are placed in private dental offices for one month of field training experience.

The required professional courses are made up of the elements which contribute directly to the

skill and understanding of dental hygiene and are required in the professional sequence.

A concentration of 30 credits in dental hygiene includes: DHY 101 (1), 125 (3), 135 (1), 141 (1), 126 (3), 128 (1), 136 (2), 227 (3), 231 (2), 237 (2), 238 (2), 244 (1), 246 (1), 250 (2), 252 (2), 254 (1), 260 (2).

In addition, candidates for the Bachelor of Science degree are required to take the following: CHM 101, 102 or 103, 105 (4), 124 (4), ENG 110 (3), 120 (3), ZOO 121 (4), 242 (3), 244 (1), HLT 172 (1), MIC 201 (4), SOC 202 (3), 304 (3), FNS 207 (3), PCL 221 (2), PSY 113 (3), 232 (3), SPE 101 (3), EDC 102 (3), 312 (3), 372 (3), MTH 107 (3).

## ASSOCIATE IN SCIENCE

This two-year curriculum of 71 credits is designed to prepare the student to perform ancillary clinical services which contribute to the maintenance of good oral health, educate both children and adults in oral hygiene, and assist the dentist to allow him more time for the treatment of patients.

The program is designed to allow transfer students from other colleges and curriculums to attain the Associate in Science degree. Two months of experience as a dental assistant is recommended for all students entering the dental hygiene program. At the completion of the first clinical year, the student is placed in a private dental office for one month of field training experience.

### Freshman Year

First semester: 17 credits

CHM 101, 102 or 103, 105 (4), ENG 110 (3), ZOO 121 (4), DHY 101 (1), 125 (3), 135 (1), and 141 (1).

### Freshman Year

Second semester: 18 credits

ENG 120 (3), CHM 124 (4), ZOO 242 (3), 244 (1), HLT 172 (1), DHY 126 (3), 128 (1), and 136 (2).

### Sophomore Year

First semester: 19 credits

MIC 201 (4), SOC 202 (3), FNS 207 (3), PCL 221 (2), DHY 227 (3), 231 (2), and 237 (2).

### Sophomore Year

Second semester: 17 credits

PSY 113 (3), SPE 101 (3), DHY 238 (2), 244 (1), 246 (1), 250 (2), 252 (2), 254 (1), and 260 (2).

## Economics

The Department of Economics offers a bachelor of arts (B.A.) degree and a master of arts (M.A.) in economics. Students who want to design a special program combining economics with an applied area of interest are encouraged to consult the chairman of the department.

**Faculty:** Professor Sabatino, *chairman*. Professors Dirlam, Haller, Hellman, Rayack and Schurman; Associate Professors Brown and Starkey; Assistant Professors Barnett, Latos, Mead, Suzawa and Ramsay.

Students selecting this field of concentration must complete a minimum of 27 credits in economics, including ECN 123 or 125 (students may not take both) and 126 (6), 361 (3), and 327, 328 (6).

In addition, at least 12 credits must be completed from economics courses numbered 300 or above; or from MGT 321 (3), MGS 201, 202(6), EST 408 (3), 409 (3) or 412 (3).

Students interested in a specialized applied area may, with the permission of their advisers, substitute such courses for some or all of the above 12 credits.

Students planning to do graduate work in economics are strongly advised to take ECN 375, 376, and a semester of statistics.

## English

The Department of English offers a bachelor of arts (B.A.) degree. The master of arts (M.A.) and doctor of philosophy (Ph.D.) programs in English are described in the *Graduate School Bulletin*.

**Faculty:** Professor J.Y. Miller, *chairman*. Professors Goldman, Gullason, MacLaine, Mathews, Neuse, Petrie, Potter, Seigel, W.D. Smith, Sorlien, Steeves and S. White; Associate Professors Barker, Campbell, Cane, M. Hills, Kunz, Malina, J.M. Marshall, McCabe, C.M. Murphy, Reaves, D. Stineback Towers, R.H. Tutt, and R.M. Tutt; Assistant Professors Arakelian, S.F. Burke, R. Clark, B. Collins, Donnelly, Dvorak, Jacobs, Leo, Mensel, Ryan, Schoonover, and K. Stein; Adjunct Professor Feldman.

Students selecting this field of concentration must complete a minimum of 30 credits in English. The following requirements pertain only to these first 30 credits:

Three courses (9 cr.) from the following: ENG 103 or any 200-level course, the maximum from this group being four courses (12).

Balance of courses on the 300-, 400- or 500-level, including minimum of three courses (9) on the 400-level or above. Freshmen are not admitted to 300-level courses; and neither freshmen nor sophomores are admitted to 400-level courses. Undergraduates wishing to take 500-level courses must secure permission of the instructor.

## French

The Department of Languages offers the bachelor of arts (B.A.) degree with a concentration

in French. The master of arts (M.A.) program in French is described in the *Graduate School Bulletin*.

**Faculty:** Associate Professor Dornberg, *chairman* (Department of Languages); Associate Professor Kuhn, *section head*. Professors Porter, Rothschild and Waters; Associate Professors Hyland, Rogers and Toloudis; Assistant Professors Chartier, Driver, and Morello.

Students selecting this field of concentration are required to complete at least 30 credits in French courses numbered 103 or higher. They can elect either a Language-Civilization option requiring 6 credits in civilization and a minimum of 6 credits in literature or a Language-Literature option with a minimum of 9 credits in literature. Courses in literature may be selected from among FRN 325, 326, courses at the 400-level, and, with permission of the instructor, courses at the 500-level. FRN 391, 392, 393, 394 may not be taken for concentration credit.

Additionally, students of proven competence in French language and literature, with permission of the adviser, the section head, the department chairman and the dean of the college, may take courses in related fields such as history, linguistics, art or philosophy toward their concentration.

## Geography and Marine Affairs

The Department of Geography and Marine Affairs offers the bachelor of arts (B.A.) degree. The master of arts (M.A.) program in geography and the master in marine affairs (M.M.A.) and master of arts in marine affairs (M.A.M.A.) programs are described in the *Graduate School Bulletin*. Students must complete 29 credits in one of the two concentration options.

**Faculty:** Professor Alexander, *chairman*. Professor Michel; Associate Professors Havens and West; Assistant Professors Cameron, Juda, Krausse and Nixon; Instructor Hayuth.

Geography option — students selecting this field of concentration must complete a minimum of 29 credits, including 9 credits selected from: GEG 100 (3), 102 (3), 103 (3), or 131 (3); and all of the following: GEG 421 (3), 481 (3), 482 (3); ESC 104 (4), 105, 106 (4), and one upper-level geography elective (3).

Marine Environmental Policy option — students selecting this field of concentration must complete a minimum of 29 credits including 9 credits selected from: GEG 100 (3), 102 (3), 103 (3), or 131; and all of the following: GEG 482 (3); MAF 210 (3), 410 (3); and OCG 401 (3); and ESC 104 (4), 105 (3), 106 (1).

## Geology

The Department of Geology offers a bachelor of arts (B.A.) degree and a bachelor of science (B.S.) degree. The master of science (M.S.) degree in geology is described in the *Graduate School Bulletin*.

*Faculty:* Professor Cain, chairman. Professor Hermes; Associate Professors J.J. Fisher and Tynan; Assistant Professors Boothroyd and Frohlich; Lecturer Sage.

### BACHELOR OF ARTS

Students selecting this field of concentration must complete a minimum of 30 credits in geology, including GEL 103 (3), 106 (1) and 104 (3). GEL 105 (ESC 105), normally may not be included.

The B.A. curriculum provides more flexibility than the B.S. program in the choice of courses and offers the possibility of highly individualized programs in consultation with the faculty adviser. The B.A. curriculum can provide an appropriate background for geology-related fields dealing with resources, environmental studies, conservation, management, and others. Students intending to pursue graduate studies in the geosciences should consider the B.S. curriculum in geology.

Students interested in earth science teaching should contact the Department of Geology for details of a cooperative program with the Department of Education.

### BACHELOR OF SCIENCE

This curriculum is designed as a basic foundation in the earth sciences. It offers preparation for further work in areas such as sedimentology, coastal geology, petrology, geochemistry, geophysics, paleontology, paleoecology, mineral and energy resources, engineering geology, environmental geology and oceanography.

An emphasis in marine geology is possible by taking, in addition to marine-oriented geology courses, approved geology-related courses offered by the Graduate School of Oceanography and the Department of Ocean Engineering as science electives. Information about this and other similar options can be obtained from the chairman of the department.

Students concentrating in geology should note the requirement for field experience. An approved summer field camp for a minimum of 4 credits normally is undertaken following the junior year and related costs are the responsibility of the student. Minimum background for field camp normally includes GEL 320, 370 and 450. (Field camp is not required under the B.A. curriculum.)

A total of 126 credits is required for graduation. Following is the suggested sequence of courses for

the first four semesters. Completion of these courses fulfills Division B requirements and satisfies prerequisites for upper-division geology courses. Late concentrators, transfer students and others wishing to modify this schedule should consult their geology faculty adviser.

#### Freshman Year

First semester: 16-17 credits

MTH 141 (3), GEL 103 (3), 106 (1), BOT 111 or BIO 101 (4-3), and general education requirements (6).

#### Freshman Year

Second semester: 16-17 credits

MTH 142 (3), GEL 104 (3), ZOO 111 or BIO 102 (4-3), ESC 104 (4), and general education requirement (3).

#### Sophomore Year

First semester: 16 credits

CHM 101, 102 or 103, 105 (4), PHY 213, 285, or 111 (4), GEL 320 (4), and general education requirement or elective (4).

#### Sophomore Year

Second semester: 16 credits

CHM 112, 114 (4), PHY 214, 286 or 112 (4). GEL 330 (4), and GEL 370 (4).

#### Junior and Senior Years

In addition to the remainder of the general education requirements and free electives, the following 4-credit courses are required: GEL 410, 440, 450; approved summer camp (between junior and senior years).

Students must also take an approved course in statistical methods or computer science and 12 credits of science electives (including additional geology courses) which constitute an integrated group in earth science. These are selected in consultation with the faculty adviser.

## German

The Department of Languages offers the bachelor of arts (B.A.) degree with a concentration in German.

*Faculty:* Associate Professor Dornberg, chairman (Department of Languages) and section head. Professor B.A. Woods; Associate Professors Kalinke and Grandin.

Students selecting this concentration complete at least 30 credits in German not including GER 101, 102, 391, 392, or 393.

## History

The Department of History offers a bachelor of arts (B.A.) degree. The master of arts (M.A.) program in history is described in the *Graduate School Bulletin*.

**Faculty:** Professor Gutchen, *chairman*. Professors Briggs, Findlay, Klein, Metz and Weisbord; Associate Professors Bryan, Cohen, Kim, Strom and Thurston; Assistant Professors Brown, Costigliola, Daniel, Honhart, Quinney, Roughton, Schach and Silvestri; Adjunct Assistant Professor Klyberg.

Students selecting this field of concentration must complete a minimum of 30 credits in history, including a minimum of 6 and a maximum of 12 credits in courses numbered 100 to 299.

The balance of required credits is in courses numbered 300 or above, including one undergraduate seminar, HIS 395. Under unusual circumstances, with permission of the chairman of the department, a student may substitute, in place of the seminar, HIS 391 leading to a substantial research paper.

Undergraduates wishing to take courses on the 500-level must secure the permission of the department.

## Italian

The Department of Languages offers the bachelor of arts (B.A.) degree with a concentration in Italian.

**Faculty:** Associate Professor Dornberg, *chairman* (Department of Languages); Associate Professor Viglionese, *section head*. Professor Capasso; Associate Professor Trivelli.

Students selecting this field of concentration complete at least 30 credits in Italian not including ITL 101, 102, 391, 392, 393, or 395. ITL 325, 326 are required for the concentration.

## Journalism

The Department of Journalism offers the bachelor of arts (B.A.) degree.

**Faculty:** Associate Professor Doctor, *acting chairman*. Associate Professors Batroukha and Thompson; Assistant Professor Nwankwo.

Students selecting this field of concentration must complete a minimum of 30 credits in the print or broadcast journalism sequence, including JOR 210 (3), 212 (3), 434 (3), 438 (3).

Those following the print sequence must complete JOR 325 (3) and one from the group JOR 324 (3), 326 (3), or 436 (3).

Those following the broadcast sequence must complete JOR 371 (3) and 372 (3).

Additionally, all students must complete four other courses offered by the journalism department. All journalism students are required to type.

## Languages

In addition to the bachelor of arts (B.A.) degree concentrations in Classical Studies, French, German, Italian, Linguistics, Russian and Spanish, described in alphabetical order, the Department of Languages provides courses in Portuguese.

**Faculty for these courses:** Associate Professor Dornberg, *chairman*. Assistant Professor McNab; Lecturer Aica.

## Latin American Studies

The Departments of Art, History, Languages, and Sociology and Anthropology offer a bachelor of arts (B.A.) degree in Latin American Studies.

Students selecting this field of concentration must complete a minimum of 30 credits in at least three of the four principal areas of art, history, languages, sociology-anthropology, and participate in an interdisciplinary seminar. Enrollment in relevant courses in other disciplines, such as political science, is encouraged. There is a committee on Latin American Studies which will assist students in the formulation and approval of the program of concentration. Chairman of the Committee: Assistant Professor Thomas D. Morin (Department of Languages).

## Linguistics

The Department of Languages offers the bachelor of arts (B.A.) degree with a concentration in Linguistics.

**Faculty:** Associate Professor Dornberg, *chairman* (Department of Languages); Professor Rogers, *section head*.

Students selecting this field of concentration must complete a minimum of 27 credits, as follows: at least 12 credits from LIN 201, 202, 302, 330, 497, 498; and the remaining credits necessary to complete the minimum requirement from APG 200, 409; ENG 330, 332, 430, 530, 536; FRN 503, 504; GER 409; ITL 408; LIN 414; PHL 440; SPA 409; SPE 373, 375, 410.

They must also attain competence in at least one language other than English equivalent to the terminal level of 206.

## Mathematics

The Department of Mathematics offers a bachelor of arts (B.A.) degree and a bachelor of science (B.S.) degree. The master of science (M.S.) and doctor of philosophy (Ph.D.) degrees in mathematics are described in the *Graduate School Bulletin*.

*Faculty:* Professor Roxin, chairman. Professors Driver, Fraleigh, Ladas, Sine, Shisha and Suryanarayan; Associate Professors Beauregard, Datta, Finizio, Grove, Levine, Lewis, P.T. Liu, Montgomery, Pakula, Papadakis, Schwartzman, and Verma; Assistant Professors Barron and R. Caldwell.

### BACHELOR OF ARTS

Students selecting this field of concentration must complete 30 credits in mathematics, including: MTH 141 (3), 142 (3), 215 (3), 243 (3), 316 (3), 335 (3), and 336 (3). Six credits are to be selected from MTH 322 (3), 353 (3), 425 (3), 444 (3), 451 (3), and 462 (3).

It is strongly recommended that students considering graduate study in mathematics take MTH 425 and 462.

MTH 107, 108, and 109 are not open to students majoring in mathematics.

### BACHELOR OF SCIENCE

Students in this curriculum may follow the four-year general program in mathematics or select the option in applied mathematics during the junior and senior years.

The general program is designed to include the basic theories and techniques of mathematics. The required courses introduce the student to the principal areas of mathematics, and they provide a foundation for advanced study at the graduate level.

The applied mathematics option is intended for the student who anticipates a career as an applied mathematician or mathematical consultant with an organization such as an industrial or engineering firm or a research laboratory. The student learns the mathematical ideas and techniques most often encountered in such work, and is trained to solve mathematical problems. Although a theoretical foundation is developed, the emphasis is practical.

The following courses, totaling 12 credits, are required for students in both the general program and the option in applied mathematics: MTH 141, 142, 215, 243. These courses normally should be taken in the freshman and sophomore years. MTH 107, 108 and 109 are not open to students majoring in mathematics.

A student selecting the general program must

complete, in addition to the courses listed above, 27 credits in mathematics, including MTH 316, 335, 336, 425, 462. Furthermore, the student in the general program must complete a minor concentration of 18 or more credits in one of the following four areas: Biological Sciences (biology, botany, microbiology, zoology); Physical Sciences (astronomy, chemistry, geology, physics); Social Sciences (economics, geography, political science, psychology, sociology); Computer Science. Six credits in computer science may be counted toward the minor concentration in any of the first three areas. The program must include PHY 213, 285, and 214, 286.

Students selecting the applied mathematics option must complete, in addition to the 12 credits listed above, 30 credits as follows: MTH 437, 438, CSC 201, and 202 (12); 9 additional credits selected from MTH 143, 217, 244, 335, 418, 441, 444, 451, 452, 462, 471, 472; and 9 additional credits<sup>9</sup> from CSC 411, 413, ELE 210, EST 409, IDE 432, 433, MCE 162, 263, MGS 365, 366, 375, 445, PHY 213-285, 214-286, 322, 331, 341.

A student who intends to do graduate work in mathematics is advised to also take MTH 316 and 425.

A total of 130 credits is required for graduation.

## Medical Technology

This curriculum, leading to the bachelor of science (B.S.) degree, prepares men and women for work in a hospital or other medical laboratory. During the first three years, the emphasis is on general education and basic courses in biology, chemistry, mathematics, and physics necessary as background in the applied sciences. The senior year is a 12-month course of study and is taken in a hospital school of medical technology. This clinical program includes didactic and laboratory instruction in the various areas of medical technology and prepares the student for a national certification examination.

Applicants to this curriculum must have completed 65 credits by June of the sophomore year and have taken all courses listed below for the first two years of the curriculum. Students are selected for the clinical program by the staffs of affiliated hospital schools of medical technology during the junior year. Although acceptance into a hospital school cannot be assured, every effort is made to place students in this final year of instruction. Flexibility in the curriculum permits the student who is not accepted to fulfill requirements for the Bachelor of Science degree in another concentra-

<sup>9</sup>To gain experience using mathematics in a variety of applications the student is encouraged to select, in addition to the required nine credits, as many electives from this list as possible.

tion such as microbiology, zoology, or certain related health sciences.

*Director:* Professor C.W. Houston.

#### Freshman Year

First semester: 14 credits

CHM 101, 102 or CHM 103, 105 (4), BOT 111 or ZOO 111 (4), MTH 109 or 141 (3), and general education requirement (3).

#### Feshman Year

Second semester: 17 credits

CHM 112, 114 (4), ZOO 111 or BOT 111 (4), MTH 141 or 142 (3), general education requirement (3), and language<sup>10</sup> or free elective (3).

#### Sophomore Year

First semester: 16 credits

CHM 227 (3), PHY 111 (4), and general education requirements (9).

#### Sophomore Year

Second semester: 18 credits

CHM 226 (2), CHM 228 (3), PHY 112 (4), general education requirements (6), and free elective (3).

#### Junior Year

First semester: 18 credits

MIC 211 (4), CHM 212 (4), MTC 301 (1), general education requirements (6), and free elective (3).

#### Junior Year

Second semester: 15 credits

MIC 432 (3), biology elective (3), and free electives (9).

#### Senior Year

The hospital clinical program provides 32 credits.

A total of 130 credits is required for graduation.

## Military Science

The Department of Military Science offers the Reserve Officers Training Corps (ROTC) program described on page 15.

*Faculty:* Professor Riley, *chairman*. Assistant Professors Dale, Landers, Martell and Morand.

## Music

The Department of Music offers a bachelor of arts (B.A.) degree and a bachelor of music (B.Mus.) degree.

*Faculty:* Professor Giebler, *chairman*. Professors Abusamra and Motycka; Associate Professors Burns, Ceo, Dempsey, Fuchs, Gibbs, Kent, Pollart and Rankin; Special Instructors Chapple, DiNunzio, Hunt, Immonen, Langdon, Marinaccio, Norman, Radnovsky, Ricci, and Zuckerman.

## BACHELOR OR ARTS

Students selecting music as a concentration will complete 30 credits as follows: MUS 113, 114 (6), 215, 216 (6), 221, 222 (6), 251 (6), 317 (3) and upper division music history and literature (3).

The equivalent of MUS 101 is required as a prerequisite to MUS 221, 222. This may be met either by a placement examination or by taking the course as an elective. Transfer credits in music theory and performance must be validated by placement examination.

To conform with the requirements of the National Association of Schools of Music of which the department is a member, it is strongly recommended that at least 6 and up to 15 elective credits be taken in upper-level music courses. No more than 6 elective credits will be allowed in any one area: theory and composition, history and literature, and performance. An audition is required for the study of performance.

## BACHELOR OF MUSIC

Students can be admitted to the bachelor of music degree program only by audition and should contact the music department for specific requirements.

All students in this degree program must take the following music courses: MUS 113, 114 (6), 215, 216 (6), 221, 222 (6), 250 (0), and 317 (3) for a total of 21 credits. Seven semesters of MUS 250 in conjunction with studio performance is required of all bachelor of music students. Attendance is required at a minimum of seventy-five percent of all scheduled afternoon student recitals.

The equivalent of MUS 101 is required as a prerequisite to MUS 221, 222. This may be met either by a placement examination or by taking the course as an elective. Transfer credits in music theory and performance must be validated by placement examination.

All bachelor of music students will take the piano proficiency examination at the conclusion of one year of study or by the end of the second semester of the sophomore year. Failure to pass the proficiency examination or any portion of it requires reexamination in succeeding semesters. No one will graduate with a degree in music until it is passed.

In addition, each student selects one of the following areas of concentration.

<sup>10</sup>Students are required to complete a modern language at the intermediate (104) level or demonstrate equivalent proficiency by examination.



**Classical Guitar.** Students selecting classical guitar must complete a total of 59 credits, including MUS 261 (12), 312 (2), 393 or 395 (4), 399H (4), 441-tablature (3), 461 (16), 465 (0), upper division theory, composition and/or music history (9) and electives (9).

**Voice.** Students selecting voice must complete a total of 59 credits, including MUS 261 (12), 242 (8), 311 (2), 393 or 395 (8), 461 (16), 465 (0), and electives (13).

Students concentrating in voice must also take 15 credit hours of foreign language in any three or more languages at any level. The requirement may be modified or satisfied by advanced placement.

**Piano or Organ.** Students selecting piano or organ must complete a total of 59 credits, including MUS 261 (12), 393 or 395 (4), 399A (4), 418 (3), 420 (3), 461 (16), 465 (0), 481, 482 or music electives for organ major (4), and electives (13).

**Orchestral Instrument.** Students selecting orchestral instrument must complete a total of 59 credits, including MUS 261 (12), 312 (2), 321 (3), 391, 392 or 394 (8), 393 or 395 (4), 418 (3), 420 (3), 461 (16), 465 (0), and electives (8).

**Music History and Literature.** Students selecting music history and literature must complete a total of 59 credits, including MUS 251 (8), 391, 392, 393, 394 or 395 (4), 393 or 395 (4), 407 (3), 408 (3), 418 (3), 420 (3), 431 (3), 432 (3), 433 (3), 434 (3), 441 (3-6), 451 (8), and electives (8-5).

Students concentrating in music history and literature must have 15 credit hours of foreign languages with intermediate level proficiency in at least one language. The requirement may be modified or satisfied by advanced placement.

**Music Theory and Composition.** Students selecting music theory and composition must complete a total of 59 credits, including MUS 251 (8), 241 or 173, 175, 177, 179 and 4 elective credits for piano concentrators (8), 321 (3), 391, 392, 393, 394 or 395 (4), 393 or 395 (4), 418 (3), 420 (3), 423 (3), 441 (3), 451 (8), and electives (12).

Students concentrating in composition must take MUS 117, 419 and 422.

**Music Education.** Students majoring in music education must complete a total of 66 credits with specific requirements as follows:

For all students: MUS 171, 172 pianists exempt (2), 251 (8), 311, 312 (4), 321 (3), 446 (2), 451 and/or 452 (8), 455 (0), EDC 102 (3), 312 (3)<sup>11</sup>, and 484 (6).

In addition students must select one of the following options:

A. For general preparation: MUS 173, 174 vocalists exempt (2), 169, 170, 175, 176, 177, 178, 179, 180 (8)<sup>12</sup>, 341 or 342 (2), 343 or 344 (2), 391, 392, or 394 (2), 393 or 395 (2), and 4 additional credits selected from 391-395 (4).

B. For vocal specialization: MUS 170 guitarists exempt (1), 173, 174 vocalists exempt (2), 181, 182 pianists exempt (2), 242 pianists exempt (2), 341, 342 (4), and 393 or 395 (8).

C. For instrumental specialization: MUS 169, 175, 176, 177, 178, 179, 180 (7)<sup>12</sup>, 343, 344 (4), 391, 392, or 394 (wind and percussion majors must include 2 credits of 392 and 2 credits of 394) (8), and 393 or 395 (2).

EDC 102, 312 and all courses listed above under music education, with the exception of MUS 321 and senior-level courses in performance, instrumental classes and major ensembles, must be completed before entering supervised student teaching. The practice teaching schedule must be preceded by a period of full-time observation at the assigned school and other schools. A follow-up seminar for all student teachers will be conducted each week of the practice teaching period.

## Philosophy

The Department of Philosophy offers a bachelor of arts (B.A.) degree. The master of arts (M.A.) program in philosophy is described in the *Graduate School Bulletin*.

*Faculty:* Associate Professor Wenisch, chairman. Professors Freeman and Young; Associate Professors Hanke, Kim, Peterson and Schwarz; Assistant Professors Johnson, Kowalski and Zeyl.

Students selecting this field of concentration must complete no less than 27 credit hours in philosophy. Students must take either PHL 101 or 451 and any two of the following: PHL 321, 322, 323, 324.

The remaining minimum of 18 credit hours may be chosen freely from the departmental offerings. However, students planning graduate work in philosophy are advised to take PHL 451, 441, 442, and at least two other courses numbered above 400.

## Physics

The Department of Physics offers a bachelor of arts (B.A.) degree and a bachelor of science (B.S.) degree. The master of science (M.S.) and doctor of philosophy (Ph.D.) degrees in physics are described in the *Graduate School Bulletin*.

<sup>11</sup>EDC 102 and 312 may also be counted toward Division C of the distribution requirements.

<sup>12</sup>One course in the student's major instrument area is exempt.

*Faculty:* Professor Pickart, *chairman*. Professors Desjardins, Dietz, Letcher, Malik and Quirk; Associate Professors Bonner, Choudry, Cuomo, Hartt, Kaufman, Kirwan, Northby, Nunes, Penhallow, Stone and Willis.

## BACHELOR OF ARTS

Students selecting this field of concentration must complete a minimum of 30 credits in physics and mathematics, including: PHY 111, 112 or 213, 214, 285, 286 (8), PHY 322 (3), 331 (3), 381, 382 (6), 401 or 402 (1), 451 (3), 491, 492 (3), MTH 244 (3).

It is strongly recommended that students take MTH 141 and 142 in the freshman year. If the student is considering graduate study, it is recommended that courses in French, German or Russian be elected.

## BACHELOR OF SCIENCE

This curriculum provides a general background in theoretical and practical physics, and it qualifies the student for industrial research or advanced training in the industrial laboratories and in the technical bureaus of the government. Students also will have an adequate foundation for graduate work leading to higher degrees in physics.

Initiative, independent solution of laboratory problems, and research are encouraged in the advanced laboratory courses.

The following courses will usually be required for the B.S., but exceptions and/or substitutions are possible, and may be arranged upon consultation with the department. For example, a well-prepared student may enroll for physics in the first semester of the freshman year; or courses in a related discipline may be taken instead of physics courses.

### Freshman Year

First semester: 15 credits

MTH 141 (3) and general education requirements (12).

### Freshman Year

Second semester: 16 credits

MTH 142 (3), PHY 213, 285 (4), and general education requirements (9).

### Sophomore Year

First semester: 16 credits

MTH 243 (3), PHY 214, 286 (4) and general education requirements (9).

### Sophomore Year

Second semester: 15 credits

MTH 244 (3), PHY 334 (3) and 341 (3) and general education requirements (6).

### Junior Year

First semester: 18 credits

Mathematics elective at the 300 or 400-level (3), PHY 322 (3) and 381 (3), general education requirement (3) and free electives (6).

### Junior Year

Second semester: 18 credits

Mathematics elective at the 300 or 400-level (3), PHY 331 (3), 382 (3) and 420 (3), and free electives (6).

### Senior Year

First semester: 15 credits

PHY 483 (3), 451 (3) and 455 (3), and free electives (6).

### Senior Year

Second semester: 16 credits

PHY 484 (3), 402 (1) and 452 (3), and free electives (9).

A total of 129 credits is required for graduation.

## Political Science

The Department of Political Science offers the bachelor of arts (B.A.) degree. The master of arts (M.A.) in political science and master of public administration (M.P.A.) programs are described in the *Graduate School Bulletin*.

*Faculty:* Professor Leduc, *chairman*. Professors Milburn, Stein, Warren, S.B. Wood and Zucker; Associate Professors Hennessey, and Killilea; Assistant Professors K. Murphy, Rothstein and Tyler.

Students selecting this field of concentration must complete a minimum of 30 credits in political science, including PSC 113 (3) and 116 (3).

The remaining 24 credits will reflect the emphasis desired by the student, though he must select at least one course in four of the following six fields: American politics and public administration, public law, comparative government, international relations, political theory, and political behavior.

## Psychology

The Department of Psychology offers the bachelor of arts (B.A.) degree. The master of science (M.S.) and doctor of philosophy (Ph.D.) degree programs in psychology are described in the *Graduate School Bulletin*.

*Faculty:* Professor Steinman, *chairman*. Professors Berger, Berman, Biller, Cain, Grebstein, A. Lott, B. Lott, Merenda, Prochaska, Silverstein, Smith,

Vosburgh, Willoughby; Associate Professors Gross, Kulberg and Velicer; Assistant Professor Collyer, Hurley, Stevenson, Tyne and Valentino.

Students in this field of concentration may follow either a general program or a preparatory program for an advanced degree.

The general program requires a minimum of 30 credits to be distributed as follows: PSY 113 (3); at least one from the group PSY 232 (3), 235 (3), 254 (3); both PSY 300 (3) and 301 (3) plus additional psychology electives to total 30 credits. Students interested in careers at the B.A. level should consult the *Handbook for Psychology Majors* and their academic advisers to select additional courses.

The preparatory program adds to the requirements listed above: PSY 232 (3), 235 (3), and 254 (3); at least four courses from the group: PSY 310 (3), 381 (3), 385 (3), 391 (3), 434 (3) and 435 (3). Additional courses should be selected only after consultation with an adviser.

## Russian

The Department of Languages offers the bachelor of arts (B.A.) degree with a concentration in Russian.

*Faculty:* Associate Professor Dornberg, *chairman* (Department of Languages); Assistant Professor Aronian, *acting section head*. Associate Professor Rogers; Assistant Professor C. Driver.

Students selecting this field of concentration complete at least 30 credits in Russian not including RUS 101, 102.

## Sociology

The Department of Sociology and Anthropology offers the degree of bachelor of arts (B.A.) in sociology. The master of arts (M.A.) program in sociology is described in the *Graduate School Bulletin*.

*Faculty:* Associate Professor Gelles, *chairman*. Professors England, Gersuny, Rosengren and Spaulding; Associate Professors Bassis and Carroll; Assistant Professors Reilly, Sennott, Shea and Travisano.

Students selecting this field of concentration must complete a minimum of 30 credits in sociology, including: SOC 202 or 208 (3), 301 (3), 492 (3).

SOC 202 or 208 should be taken during the sophomore year; 301 should be taken no later than the first semester of the junior year; and 492 is to be taken during the senior year whenever possible. In addition to the above requirements, majors are re-

quired to complete at least 6 credits at the 400 level in sociology.

Although the department does not offer a concentration in social welfare, students planning careers in social welfare may take social welfare courses as electives. These courses do not count toward the concentration in sociology. Students interested in anthropology are referred to the anthropology concentration listed previously in this chapter.

## Spanish

The Department of Languages offers the bachelor of arts (B.A.) degree with a concentration in Spanish. The master of arts (M.A.) program in Spanish is described in the *Graduate School Bulletin*.

*Faculty:* Associate Professor Dornberg, *chairman* (Department of Languages); Associate Professor Navascués, *section head*. Professor Hutton; Assistant Professors Manteiga and Morin.

Students selecting Spanish as a concentration will complete a minimum of 30 credits in Spanish. One 300-level course and SPA 481 are required. SPA 100, 101, 102, 121, 391, 392, and 393 cannot be counted toward the concentration.

LIN 201 and 202 and, with permission of the adviser, the section head, the department chairman, and the dean of the college, courses in allied fields such as history, art, and anthropology may also be selected.

A summer field workshop (SPA 410) in Spain or Spanish-America is occasionally offered for 3 to 6 credits. For information, see the section head.

## Speech Communication

The Department of Speech Communication offers the bachelor of arts (B.A.) degree with curriculums in speech communication studies and preprofessional studies in communicative disorders. The master of arts degree programs in communicative disorders, i.e., in speech pathology and audiology, are described in the *Graduate School Bulletin*.

*Faculty:* Associate Professor Bailey, *chairman*. Professors Beaupre, Dillavou, Doody and Fitz-Simons; Associate Professors Anderson, Brownell, Caldwell, Devlin, Erhart, Grzebień and Roth; Assistant Professors Grubman, Hurley, Katula, Purdy and Singer; Adjunct Professor Erickson; Instructor Rowland-Morin; Clinical Assistant Professor Regan; Clinical Coordinator Finck.

The department programs provide maximum flexibility in planning for a wide variety of

academic and occupational goals in speech communication studies and preprofessional studies in communicative disorders. The curriculum is personalized for each student. While the student plays a dominant role in curriculum planning, his/her program is closely supervised by his/her adviser. Specific curricular, extra-curricular and internship programs are planned as integral parts of each student's program. Departmentally approved courses give the student broad variety or specific depth, dependent on the student's needs and goals. Courses outside the department related to student communication needs and goals are encouraged and may be counted as concentration credits.

Thirty credits are the minimum required for students concentrating in speech communication.

The undergraduate concentrator in the department may pursue studies in any of the following tracks, dependent upon his/her interests and goals.

**Speech Communication Studies Program.** This concentration requires SPE 101, at least 3 credits of courses in the preprofessional track and at least 12 credits of courses at the +300 level. Students are required to select 12 of their remaining concentration credits within one of the following options:

**Individualized Program.** Student in consultation with adviser will plan a program to meet his/her needs.

**Business and Professional Communication.** Four of the following courses: SPE 201, 210, 215, 220, 304, 315, 317, 320, 400, 415<sup>13</sup>.

**Oral Interpretation.** Four of the following courses: SPE 201, 231, 304, 331, 332, 333, 337, 410, 431, 433<sup>13</sup>.

**Rhetoric and Public Address.** Four of the following courses: SPE 210, 215, 304, 317, 320, 337, 400, 420, 430<sup>13</sup>.

**Communication Theory.** Four of the following courses: SPE 201, 220, 300, 301, 304, 315, 320, 372, 374, 375, 400, 410, 415<sup>13</sup>.

**Preprofessional Programs in Communicative Disorders.** This concentration requires 12 credits of course work in speech pathology and audiology (always including SPE 260 and 261), SPE 372, 373, 374, 375, and at least 3 credits of courses in communication competencies: viz.—SPE 101, 201, 215, 220, 231, as preparation for graduate studies.<sup>13</sup>

## Theatre

The Department of Theatre offers a bachelor of arts (B.A.) degree and a bachelor of fine arts (B.F.A.) degree. Permission to register for work

toward the B.F.A. in theatre must be obtained through departmental interview.

**Faculty:** Professor Flannery, chairman. Associate Professors Emery, Steinberg and Wheelock; Assistant Professor Swift; Instructor McCarthy; Technical Director Galgoczy; Guest Artists Grando and Ranelli.

Productions at the University cover the range of theatre forms ancient to modern, with emphasis on contemporary and experimental work. All members of the University community may participate in productions.

## BACHELOR OF ARTS

The B.A. program in theatre is intended for students who wish to receive a general education in theatre within a strong liberal arts framework. A total of 33 credits is required as follows: THE 111, 112 (8); 161 (3); 281, 282 (6); 300 (2); 301 (2); 321 (3); 341 (3); 383 (3); and 483 (3). B.A. candidates are urged to complete THE 111, 112 and 161 by the end of their freshman year.

B.A. candidates are also required to take ENG 454 and 472 or 473 in partial fulfillment of Division A distribution requirements. B.A. candidates may elect up to 12 more credits in theatre with the approval of the department adviser.

## BACHELOR OF FINE ARTS

The B.F.A. program in theatre is intended for those highly motivated and talented students who wish to receive an education with a strong emphasis in their major theatrical field of interest. The program offers concentrated study in acting, design and technical theatre, and drama studies. All B.F.A. students are required to complete the following core courses: THE 111, 112 (8); 161 (3); 281, 282 (6); 321 (3); 341 (3); 383 (3); 483 (3). B.F.A. candidates are urged to complete THE 111, 112 and 161 by the end of their freshman year.

In addition, each student selects one of the following areas of specialization.

**Acting.** Students selecting acting must complete a total of 65 credits, including THE 151 (1); 211, 212 (8); 300 (1); 301 (2); 311, 312 (4); 317, 318 (4); 319, 320 (4); 411, 412 (4); and electives (8). Recommended electives include THE 205, 206; 215, 216; 322; 351; 413; 484 and courses in related fields such as anthropology, art, music, literature, psychology, history, speech and sociology.

**Design and Technical Theatre.** Students selecting design and technical theatre must complete a total of 59 credits, including THE 151 (1); 250 (3); 261, 262 (6); 355 (3); 365 (3) and two 400 level advanced project courses in design or technical theatre (6)

<sup>13</sup>Students will individualize the remaining credits in consultation with their adviser.

and electives (8). Recommended electives include THE 351, 352; 361; 451; 463; 484; ART 207, 251, 252, and courses in related fields such as anthropology, art, literature, music, psychology, history and sociology.

**Drama Studies.** This is an academically oriented interdisciplinary program for future directors, playwrights, critics, and theatre historians as well as those who desire to study theatre intensively as a medium for personal, social and cultural development.

Students selecting drama studies must complete a total of 66 credits, including THE 300 (2), 301 (2), and 484 (3). Other requirements in theatre include a choice of THE 205-206, 211-212, or 261-262 (6); 322 or 331 (3); and one course at the 400 level in an area of interest (3). In addition, concentrators in drama studies must take two courses in English drama from among ENG 366, 368, 446, 477, or 478 (6); ART 251, 252 or MUS 221, 222 (6); and six credits selected from PHL 455, SOC 442, HIS 342-343, 314-315, or 321-322, 323-324.

B.F.A. students selected for the Trinity Square internship program may substitute up to 9 credits from theatre courses in their area of specialization subject to the approval of the department. Requirements for the B.F.A. may be modified under special circumstances by permission of the department.

A total of 124 credits is required for graduation, of which 45 credits fall under distribution requirements. All B.F.A. candidates must take ENG 454 and 472 or 473 in partial fulfillment of Division A distribution requirements.

## Urban Affairs

The Urban Affairs Program Coordinating Committee offers three concentrations in the College of Arts and Sciences for the bachelor of arts (B.A.) degree: Urban Social Processes in the Urban Environment, Policy Formation in the Urban Environment, and Spatial Development in the Urban Environment. The courses that comprise these concentrations are offered by colleges throughout the University.

The Urban Affairs Program is described on page 11 and members of the coordinating committee are listed on page 198.

Students who select one of these three concentrations must complete five courses chosen from the core for the concentration, three or four courses chosen from the remaining courses, and one or two semesters in the Senior Seminar in Urban Affairs. Each of the concentrations requires a minimum of 30 credits.

Students who wish to major in one of these concentrations should consult the appropriate

member of the Urban Affairs Program Coordinating Committee for assistance in the formulation and approval of their concentrations.

**Urban Social Processes.** This concentration examines the functions of urban social systems, explores urban social issues which affect the lives of individuals in an urban environment, and investigates individual and systems-change strategies. Students gain an understanding of the systemic forces which act on individuals in urban societies to produce both positive and negative outcomes. Poverty and social class, the welfare system, race, crime, rapid environmental change, all generate social issues which take on particular significance in an urban setting — and have a dramatic impact on the lives of urbanites. In addition to a thorough grounding in conceptual approaches, students are directed toward research and intervention techniques which they may extend with graduate training in the social sciences, criminology, social work, community planning, and other urban-oriented fields. Students seeking jobs at the baccalaureate level may work in social agencies (e.g. welfare, youth development, the criminal justice system), the governmental departments which sponsor and monitor these agencies, or specialized educational facilities (e.g. halfway houses, perschool enrichment programs, alternative high schools).

Students are expected to satisfy the common core requirements. In addition, they must select one of the following courses to satisfy methodological skills: APG 402; EST 408, 409; PSY 300; SOC 301.

Students are also required to select 4 courses from the following: APG 319; CDF 250, 480; ECN 401, 403; HIS 339, 343; HMG 401; MGT 301; PSC 420, 483, 486; PSY 435; SOC 314, 316, 330, 336, 340, 410, 418, 438; SPE 315. Students are encouraged to arrange for an Urban Affairs internship.

**Policy Formation.** This concentration identifies the decision-making processes within the metropolis, examines the ways in which public policies are formulated and implemented, and considers ideas about the substance as well as the outcome of the policy formation processes. An understanding of such decision-making processes requires knowledge of the political, administrative, managerial, planning and economic aspects of urban life. Students completing the concentration should be prepared for entry-level administrative jobs in government agencies, business firms and community organizations, or for activist careers in politics. They might undertake graduate work in law, public administration, community planning, business or related disciplines.

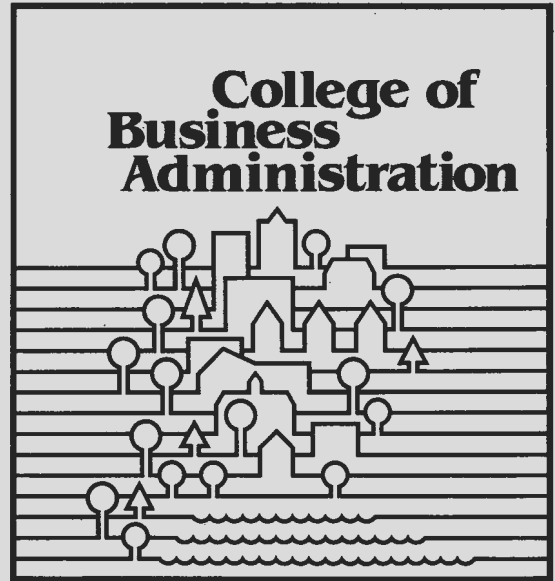
Students are expected to satisfy the common core requirements. In addition, they are required to select one course from PSY 300; SOC 301; MGS

201; MTH 451; EST 408, 409; GEG 482; to satisfy the methodological skill requirements. They are also required to select three courses from the following: ECN 342, 401, 402, 403, 464; HIS 323, 324, 339, 340, 341, 343, 363; PSC 460, 466, 483, 495, 498; CPL 410; FIN 341, 396; MGT 321, 422, 423; REN 310; GEG 411, 421, 452, 512; SOC 336, 340, 342, 434, 436. Practicum or internship experience is required in this concentration. It may be obtained through URB 397.

**Spatial Development.** This concentration gives the student an interdisciplinary viewpoint of the spatial structure and environmental character of the city. The curriculum is designed to focus special attention on the arrangement, allocation and interrelationships of human and physical resources. Man's relation to the urban ecosystem is examined in terms of the processes, patterns, networks and activities that produce the spatial and temporal organization of urban communities. Analytical and methodological skills may be acquired from courses in cartography, remote sensing and statistics. The structure of the concentration should prepare the student to deal more effectively with the increasing problems of rapid urban growth and environmental deterioration.

Employment opportunities are available in such activities as urban systems analysis, economic impact studies, cartographic drafting and air photo analysis, industrial location and regional development, and urban environmental problems. Spatial Development students should be prepared for work in organizations or agencies that handle questions such as equal allocation of resources, reduction of regional disparities in goods and services, and developing effective alternatives to problems in housing, poverty, pollution and other human concerns. These organizations can be in either the private or the public sector.

Students are expected to satisfy the common core requirements. In addition, they are required to select one course from EST 408, SOC 301, GEG 482 and a course from GEG 421, PLS 343 and ESC 301 to satisfy the methodological skill requirements. They are also required to select three courses from the following: HIS 399; CPL 410, 434, 520; ZOO 262, HMG 340; FIN 341; PSC 460, 466; SOC 434; ECN 402; GEG 512; INS 313; BSL 333; CVE 315; EGR 204. Students are encouraged to acquire an internship experience.



Richard R. Weeks, *Dean*  
Eugene M. Johnson, *Associate Dean*  
Everett T. Harris, *Assistant Dean/Administration*

The thirteen curriculums in the College of Business Administration allow the student to develop competence in a special field of interest and prepare him or her to meet the changing complexities of life and leadership in the business community. Curriculums are offered in accounting with possible emphasis on governmental, private, and public accounting; business education; business education with an option in distributive education; finance; general business administration; insurance; management; management information systems; management science; marketing; office administration; production and operations management; real estate; and urban business.

Basic courses required of all undergraduates at the University introduce the student to the humanities, social sciences, physical and biological sciences, and the arts, which are becoming more and more important for success in the business world. The business curriculums develop the student's professional capabilities through a broad group of business courses with specialization in one area of study. Business programs provide a strong foundation in accounting, computer science, marketing, organizational management and industrial relations, production and operations management, and statistics. The College is strengthening its emphasis on the behavioral studies and computer technology to meet the needs of the business community and society as a whole. Emphasis is placed upon the total business

environment as a part of the national and world economic structure. In all areas of learning, theory as well as analysis and decision-making is stressed.

The College of Business Administration is a professional school and has divided its courses into lower and upper divisions. The lower division courses constitute those taught in the freshman and sophomore years; the upper division — those taught in the junior and senior years. Courses taken by transfer students at the lower division level may be applied to satisfying upper division requirements only after successful completion of a validating examination. All 500- and 600-level courses offered by departments in the College of Business Administration are open to matriculated graduate students only.

A student enrolled in this college must complete the curriculum in one of the major areas of concentration and must obtain a cumulative quality point average of 2.00 or better for all required courses in the major area of concentration. Students wishing permission to substitute required courses or waive other requirements may petition the college's Scholastic Standing Committee. Petition forms are available in the dean's office.

Due to limited staff and facilities, transfers from University College to the undergraduate degree programs in business administration must be limited. Although cumulative averages are not the sole criterion for admission, students with overall quality point averages of less than 2.2 are advised that there is little chance for admission to these programs. Students who have not satisfied entrance requirements may petition the Scholastic Standing Committee of the college for a waiver of those requirements during their fourth or succeeding semesters. Students in the University College business programs who have not met entrance requirements to the college are permitted to enroll only in 100- and 200-level business courses and in non-business courses.

To ensure that students in business curriculums have access to required courses, upper-level courses will be open only to juniors, seniors, and graduate students. A strict registration priority will be followed. Highest priority will be given to senior business majors, followed by graduate students, junior business majors, senior business non-majors, junior business non-majors, seniors from non-business majors, and juniors from non-business majors. Students following an approved "area of interest" will be assigned as though they were business non-majors.

## Curriculum Requirements

The following two years are common to all curriculums except Business Education Office, Administration, and Marketing Textiles option.

**The Freshman Year Program** is 15 credits in each semester. The sequence MGS 101-102 is begun in the first semester and finished in the second. MGS 107 and a speech elective from Division D are taken in alternate semesters. The balance of credits is made up of general education and liberal electives.

**The Sophomore Year Program** is 15 credits in each semester. The ACC 201-202, ECN 125-126, and MGS 201-202 sequences are begun in the first semester and completed in the second. BED 227 is taken in either of the two semesters with the balance of credits in general education and liberal electives.

**General Education Requirements.** Students are required to select and pass 45 credits of course work from the general education requirements as listed on page 10. Specific requirements of the College of Business Administration in each division are listed below:

### Division A

Any course for which prerequisites have been met.

### Division B

MGS 101, 102 in the freshman year; MGS 201, 202 in the sophomore year.

### Division C

ACC 201, ECN 125, 126 in the sophomore year.

### Division D

Speech elective from Division D in the freshman year; BED 227 in the sophomore year.

**Electives.** Professional electives are upper-level courses offered by departments in the College of Business Administration.

Liberal electives are courses offered by departments outside the College of Business Administration.

Free electives may be either professional or liberal electives.

**Area of Interest — Optional.** After choosing a major field, students may elect to declare an area of interest which will appear on their transcripts as a category separate from their major. Credit may be drawn from any combination of concentration, distribution, electives and course-level categories. An area of interest may be defined as (1) the completion of 18 or more credits offered within a department and approved by the department chairman or (2) the completion of 18 or more credits or related studies offered by more than one department and approved by a member of the University faculty competent in the area of interest and the Scholastic Standing Committee of the College of

Business Administration. It is the responsibility of the student to declare his or her area of interest no later than the beginning of the semester he or she expects to graduate.

## Accounting

The Department of Accounting offers a curriculum leading to the bachelor of science (B.S.) degree. The master of science (M.S.) degree, which provides the education recommended by the American Institute of Certified Public Accountants for the practice of public accounting, and the master of business administration (M.B.A.) degree with an opportunity for specialization in accounting are described in the *Graduate School Bulletin*.

*Faculty:* Associate Professor Martin, *chairman*, Professor Sanderson; Associate Professors Brandon, Vangermeersch, Matoney, and P.S. Wood; Assistant Professors Bracken, Cairns, Looney, Schwarzbach and Swanson; Special Instructor Fradin.

The increased scope of governmental and business activities has greatly extended the field of accounting and has created an unprecedented demand for accountants both in government and in industry. This curriculum has been designed to meet that demand.

In addition to providing a general cultural and business background, the curriculum offers specialized training in the fields of general accounting, cost accounting, and public accounting. It offers specific, basic training to students who wish to become general accountants, industrial accountants, cost analysts, auditors, credit analysts, controllers, income tax consultants, teachers of specialized business subjects, certified public accountants, government cost inspectors, government auditors.

The broad scope of the courses offered makes it possible for a student who is interested in any of the fields of accounting to obtain fundamental training in the field of his or her choice, whether this training is to be used as an aid to living or as a basis for graduate study.

### Junior Year

*First semester: 15 credits*

ACC 311 and 321, ECN 327 or 328, FIN 321, and MGT 301.

### Junior Year

*Second semester: 15 credits*

ACC 312, 443, MKT 323, MGS 309 and 364.

### Senior Year

*First semester: 15 credits*

ACC 431 and 461, BSL 333, and 6 credits in free electives.

### Senior Year

*Second semester: 15 credits*

BSL 334 or 442, MGT 410, an accounting elective, a professional elective and a free elective.

## Business Education

The Department of Business Education and Office Administration offers a curriculum leading to the bachelor of science (B.S.) degree. The master of science (M.S.) degree in business education is described in the *Graduate School Bulletin*.

*Faculty:* Associate Professor Langford, *chairman*. Associate Professors Sink and K.F. Smith; Assistant Professors Allred and Clark.

This curriculum, which fulfills the requirement of the Rhode Island State Board of Education for certification, offers students an opportunity to prepare themselves to become teachers of business subjects. Two concentrations are available in the curriculum: social business-secretarial and distributive education.

Students selecting the distributive education concentration will also be certified to teach social business subjects. Students selecting the social business-secretarial concentration will be eligible for certification in both of these areas.

In addition to business and education courses, the programs also provide a broad liberal background. The curriculum for the freshman and sophomore years is common to both concentrations.

### Freshman Year

*First semester: 14 credits*

BED 121<sup>1</sup>, MGS 101, two general education electives from Division A and a speech elective from Division D.

### Freshman Year

*Second semester: 14 credits*

BED 122, MGS 102 and 107, a general education elective in Division A and a liberal elective.

### Sophomore Year

*First semester: 15 credits*

ACC 201, MGS 201, ECN 125, EDC 102 and PSY 113.

### Sophomore Year

*Second semester: 15 credits*

ACC 202, MGS 202, ECN 126, EDC 312 and BED 227.

## Social Business/Secretarial Concentration

### Junior Year

*First semester: 16 credits*



ACC 301, BED 321<sup>1</sup> and 326, BSL 333 and MKT 323.

**Junior Year**

Second semester: 19 credits

BED 322, BSL 334, EDC 430, FIN 321, MGT 301 and a free elective.

**Senior Year**

First semester: 14 credits

BED 323, EDC 441, MGS 309 and MGT 410.

**Senior Year**

Second semester: 15 credits

EDC 484 and 485.

**Distributive Education Concentration**

**Junior Year**

First semester: 15 credits

ACC 301, BED 326, BSL 333, MKT 323 and MGT 301.

**Junior Year**

Second semester: 15 credits

BSL 334, EDC 430, FIN 321, MGS 309 and MKT 335.

**Senior Year**

First semester: 18 credits

BED 427 and 428, MKT 443, MGT 410 and two free electives.

**Senior Year**

Second semester: 15 credits

EDC 484 and 485.

**Finance**

The Department of Finance and Insurance offers a curriculum in finance leading to the bachelor of science (B.S.) degree. The master of business administration (M.B.A.) degree with an opportunity for specialization in finance is described in the *Graduate School Bulletin*.

**Faculty:** Professor Poulsen, *chairman*. Professor Brainard; Associate Professors Booth and Fitzgerald; Assistant Professors Dash, Koveos, Lord and Miles.

A concentration in finance prepares for managerial positions in the private, public and not-for-profit sectors of the economy. The curriculum emphasizes both financial decision making and implementation.

Careers in finance are to be found in (1) commercial banking and other financial institutions; (2) security analysis, portfolio and related investment management; (3) corporate financial management leading to positions as treasurer, controller, and other financial administrative positions; (4) financial administration tasks in federal and state agencies as well as in non-profit sector in hospitals, nursing homes and educational institutions.

**Junior Year**

First semester: 15 credits

BSL 333, FIN 321, MGT 301, a liberal elective and a professional elective.

**Junior Year**

Second semester: 15 credits

FIN 330, and 396, MGS 309, MKT 323 and a professional elective.

**Senior Year**

First semester: 15 credits

FIN 322 and 496, two professional electives and a free elective.

**Senior Year**

Second semester: 15 credits

FIN 440, MGT 410, a professional elective, a liberal elective and a free elective.

**General Business Administration**

The Department of Business Administration offers a curriculum in general business administration leading to the bachelor of science (B.S.) degree. The general business administration curriculum offers the student an opportunity to study all phases of business operation. It is particularly suitable for (1) those students who are planning to operate their own businesses and are seeking a broad business background, (2) those who are preparing for positions in large organizations with training programs in which specialization is taught after employment, and (3) those who desire a general business background at the undergraduate level prior to taking more specialized graduate work.

Students who major in the general administration curriculum shall be limited to a maximum of 9 credit hours of professional electives in a specific major or concentration. A general business administration student should take a broad spectrum of courses and not concentrate in one special field of study.

**Junior Year**

First semester: 15 credits

FIN 321, MGS 309, MKT 323, MGT 301 and a free elective.

<sup>1</sup>Students may be excused from taking BED 121 and 321 by passing an examination, but must substitute an equal number of credits in their program.

**Junior Year**

Second semester: 15 credits

FIN elective, a MKT elective, a MGT elective at the 300 level, INS 301 and a free elective.

**Senior Year**

First semester: 15 credits

BSL 333, two professional electives and two free electives.

**Senior Year**

Second semester: 15 credits

MGT 410, three professional electives and a free elective.

## Insurance

The Department of Finance and Insurance offers a curriculum in insurance leading to the bachelor of science (B.S.) degree. The master of business administration (M.B.A.) degree with an opportunity for specialization in insurance is described in the *Graduate School Bulletin*.

Insurance is a basic industry which functions throughout the economy to indemnify loss and reduce risk. In performing these functions, insurance companies through their home and branch offices, their agencies and bureaus, currently employ about a million persons in a great variety of jobs (selling, administrative, technical, research, etc.).

For success in this industry, the professional concept with its emphasis on expert knowledge has become increasingly important, and students in this curriculum are prepared for and encouraged to work toward the professional designations conferred by the American College of Life Underwriters (C.L.U.) and the American Institute of Property and Liability Underwriters (C.P.C.U.).

The curriculum offers comprehensive preparation for diversified career opportunities in insurance, including satisfaction of state requirements for agents' and brokers' licenses in fire and marine, casualty and surety, and life and accident-sickness fields. It is approved by state insurance departments in Rhode Island and New York.

**Junior Year**

First semester: 15 credits

BSL 333, FIN 321, INS 301, MGT 301 and a professional elective.

**Junior Year**

Second semester: 15 credits

INS 313, MGS 309, MKT 323, a professional elective and a free elective.

**Senior Year**

First semester: 15 credits

INS 314 and 333, a liberal elective and two free electives.

**Senior Year**

Second semester: 15 credits

INS 322 and 325, MGT 410 and two professional electives.

## Management

The Department of Management offers a curriculum leading toward the bachelor of science (B.S.) degree. The master of business administration (M.B.A.) degree with an opportunity for specialization in management is described in the *Graduate School Bulletin*.

**Faculty:** Associate Professor Overton, chairman. Professors Coates, deLodzia, and Schmidt; Associate Professors Allen and Desfosses; Assistant Professors, Callaghan, Comerford, and Sisco.

This curriculum is intended to provide the student with a background in the conceptual, analytical, and applied aspects of the management of organizations. The areas of study focus upon decision-making from the perspective of the policy sciences. Courses tend to cluster in the areas of behavioral science, including organizational theory, business law, general business administration and policy, and industrial and labor relations. Courses are carefully integrated to include an overall introduction to business administration, with a number of complementary areas of study in organizational theory and behavior, the management of human resources, industrial and labor relations, personnel administration, general business administration, and business law.

Careers in business, government, hospitals, and other organizations are open to students who have successfully completed the curriculum. These studies also provide a good background for graduate programs in management.

**Junior Year**

First semester: 15 credits

FIN 321, MKT 323, MGT 301, one professional elective and one free elective.

**Junior Year**

Second semester: 15 credits

MGS 309, MGT 304, 305, one free elective and one liberal elective.

**Senior Year**

First semester: 15 credits

BSL 333, MGT 303, 380 and 407, and a free elective.

**Senior Year**

Second semester: 15 credits

MGT 410 and 423, one professional elective and two free electives.

**Management Information Systems**

The Department of Management Science offers a curriculum in management information systems leading toward the bachelor of science (B.S.) degree. The field of information systems is concerned with the collection, storing, processing, structuring, retrieval and reporting of information to assist managers in the operations, management and decision-making functions of an organization.

The program provides a thorough grounding in computer technology, systems analysis combined with business and management training.

**Junior Year**

First semester: 16 credits

BSL 333, FIN 321, MGS 309, MKT 323, CSC 383, 202.

**Junior Year**

Second semester: 14 credits

MGT 301, MGS 364, CSC 311, professional electives.

**Senior Year**

First semester: 15 credits

MGS 383, CSC 413, MGS elective, professional elective and a free elective.

**Senior Year**

Second semester: 15 credits

MGS 476, MGT 410, MGS elective, professional elective and a free elective.

**Management Science**

The Department of Management Science offers a curriculum in management science leading to the bachelor of science (B.S.) degree. The master of business administration (M.B.A.) degree with an opportunity for specialization in management science is described in the *Graduate School Bulletin*.

*Faculty:* Professor Rogers, chairman. Professors Jarrett and Shen; Associate Professors Ageloff, Armstrong, Budnick, Koza, McLeavey, Mojena, and Sternbach; Assistant Professors Mangiameli, March and Sanghvi.

Management science (MGS) is concerned with the development and application of quantitative techniques to the solution of problems faced by managers of public and private organizations.

More specifically, theory and methodology (tools) in mathematics, probability, statistics, and computing are adapted and applied in the identification, formulation, solution, implementation, control, and evaluation of administrative or decision-making problems.

The MGS concentration relates to the interface between quantitative techniques and their application in the real world. Upon graduating, majors in MGS will be qualified for (1) staff positions responsible for implementing and communicating quantitative approaches to decision-making, (2) management trainee programs which lead to assignments in any of the functional areas of an organization, or (3) graduate study leading to a masters of a doctorate.

**Junior Year**

First semester: 15 credits

BSL 333, FIN 321, MGS 301, MKT 323 and a free elective.

**Junior Year**

Second semester: 15 credits

MGS 309, 365 and 370, MGT 301 and a professional elective.

**Senior Year**

First semester: 15 credits

MGS 366, an MGS elective, two professional electives and a free elective.

**Senior Year**

Second semester: 15 credits

MGT 410, an MGS elective, a professional elective and two free electives.

**Marketing**

The Department of Marketing offers a curriculum leading to the bachelor of science (B.S.) degree. Career tracks are formed from elective courses for specialization in advertising, retailing, sales management, product management, international marketing, industrial marketing, marketing research, public sector marketing. The interdepartmental option in marketing-textiles may be pursued in the Department of Marketing. This option is a cooperative effort by the Department of Marketing and Department of Textiles, Clothing and Related Art. When pursued in the Department of Marketing it leads to a Bachelor of Science degree. The option is designed to prepare students for managerial positions in the textile industry. The master of business administration (M.B.A.) degree with an opportunity for specialization in marketing is described in the *Graduate School Bulletin*.

*Faculty:* Professor Alton, chairman. Professors Johnson and Weeks; Associate Professors Bowman, Della Bitta, Hill, Loudon, Nason and Wiener.

A major problem for the business sector is the determination of product and service needs of consumers and industries. Marketing has this task and uses marketing research to provide the necessary information to develop products and services, as well as the most appropriate communications and distribution channels. Some of the marketing areas are marketing research, advertising, product planning, channels of distribution, pricing, retailing, quantitative and logistical analysis, sales management, merchandising, transportation, wholesaling, international marketing, credits-collections, industrial marketing.

*Junior Year*

*First semester: 15 credits*

FIN 321, MGT 301, MKT 323 and two free electives.

*Junior Year*

*Second semester: 15 credits*

MGS 309, MKT 462, and an MKT elective, a professional elective and a free elective.

*Senior Year*

*First semester: 15 credits*

BSL 333, two MKT electives, a professional elective and a free elective.

*Senior Year*

*Second semester: 15 credits*

MGT 410, MKT 464, two MKT electives and a professional elective.

### **Marketing-Textiles Option**

*Freshman Year*

*First semester: 15 credits*

MGS 101, 107; TXC 103; CHM 101 or 103; a Division A elective (ART).

*Freshman Year*

*Second semester: 15 credits*

MGS 102, SPE elective, a Division A elective, general education elective (PSY) and an SOC elective.

*Sophomore Year*

*First semester: 15 credits*

ACC 201, BED 227, ECN 125, MGS 201, and a Division A elective.

*Sophomore Year*

*Second semester: 15 credits*

ACC 202, ECN 126, MGS 202, CHM 124, TXC 224.

*Junior Year*

*First semester: 15 credits*

FIN 321, MGT 301, MKT 323, TXC 303, 340 or 440.

*Junior Year*

*Second semester: 15 credits*

MGS 309, MKT 462, TXC 403, Marketing elective and a professional elective.

*Senior Year*

*First semester: 15 credits*

BSL 333, TXC 443 and a TXC elective; Marketing elective and a professional elective.

*Senior Year*

*Second semester: 15 credits*

MGT 410, MKT 464, two Marketing electives and a TXC elective.

Total credits required: 120.

### **Office Administration**

The Department of Business Education and Office Administration offers a curriculum in office administration leading to the bachelor of science (B.S.) degree.

This curriculum prepares students to assume responsible positions in business, industry, government service, and the professions as executive secretaries or administrative assistants.

A broad background in general business administration subjects, together with office skills and liberal electives for cultural enrichment, provide the student with the qualifications necessary for success in this challenging career.

*Freshman Year*

*First semester: 14 credits*

BED 121<sup>1</sup>, MGS 101 and 107, a Division A elective and a speech elective from Division D.

*Freshman Year*

*Second semester: 15 credits*

BED 122, MGS 102, 6 credits in general education electives and 4 credits in liberal electives.

*Sophomore Year*

*First semester: 15 credits*

ACC 201, BED 227, ECN 125, MGS 201 and a general education elective.

*Sophomore Year*

*Second semester: 15 credits*

ACC 202, ECN 126, MGS 202, PSY 113 and a general education elective.

*Junior Year*

*First semester: 16 credits*

BED 321<sup>1</sup> and 326, BSL 333, MGT 301 and a liberal elective.

<sup>1</sup>Students may be excused from taking BED 121 and 321 by passing an examination, but must substitute an equal number of credits in their program.

**Junior Year**

Second semester: 16 credits

BED 322, BSL 334, FIN 321, MKT 323 and a free elective.

**Senior Year**

First semester: 16 credits

BED 323 and 325, a professional elective, a liberal elective and a free elective.

**Senior Year**

Second semester: 14 credits

BED 324 and 328, MGS 309, MGT 303 and 410.

MGS 310, 383, MGT 301, a professional elective and a free elective.

**Senior Year**

First semester: 15 credits

BSL 333, MGS 311, 445, MGT 304 and a professional elective.

**Senior Year**

Second semester: 15 credits

MGS 458, MGT 410, two professional electives and a free elective.

## Production and Operations Management

The Department of Management Science offers a curriculum in production and operations management leading to the bachelor of science (B.S.) degree. The master of business administration (M.B.A.) degree with an opportunity for specialization in production and operations management is described in the *Graduate School Bulletin*.

Issues, concepts and techniques encountered in efficiently managing the modern production function in industry and business are the main concerns of this curriculum. The modern production function is here defined in a wider sense, to include all kinds of operations which employ men and machines to produce visible goods as well as to render intangible services. A basic understanding of the management task of design and evaluation of the possible alternative operations and processes are emphasized. Practice and implications of computer-based systems and operations in management are also investigated.

The operations management major prepares students to become certified production and inventory controllers. Certification examinations are administered by the national Educational Testing Service (ETS) and prepared by practitioners in the American Production and Inventory Control Society. Coursework in the major goes well beyond that necessary for the examinations and should put the students at the forefront of the field.

Among the topics covered in the major are: forecasting, capacity planning, inventory planning, material requirements planning, and operations scheduling and control.

**Junior Year**

First semester: 15 credits

ACC 321, FIN 321, MGS 309, MGS 364 or 301 (students electing MGS 301 must complete the sequence MGS 365-366) and MKT 323.

**Junior Year**

Second semester: 15 credits

## Urban Affairs

The curriculum in urban business is part of the interdisciplinary Urban Affairs Program. (See page 11.) It provides business students with an understanding of the role of business enterprise operating in an urban environment.

Students who wish to major in this curriculum should consult the business school member of the Urban Affairs Program Coordinating Committee for assistance in formulating their programs of study (see page 198).

**Junior Year**

First semester: 15 credits

FIN 321, MGS 309, MKT 323, MGT 301, and URB 498 or 499.

**Junior Year**

Second semester: 15 credits

ECN 401, PSC 460, 466, SOC 434, Urban elective.

**Senior Year**

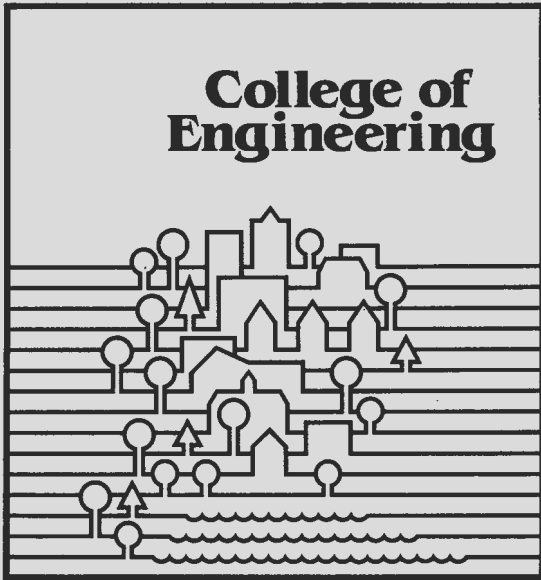
First semester: 15 credits

BSL 333, Urban elective, two professional electives and one free elective.

**Senior Year**

Second semester: 15 credits

ECN 402, MGT 410, Urban elective, professional elective and free elective.



Robert H. Goff, Associate Dean

The College of Engineering offers to undergraduate men and women curriculums in biomedical electronic, chemical, civil, computer electronic, electrical, industrial, and mechanical engineering, engineering science, chemical and ocean engineering, mechanical and ocean engineering, and urban engineering. Because the same fundamental concepts underlie all branches of engineering, the freshman year courses are essentially the same for all curriculums, and the choice of a specific branch of engineering is generally delayed until the beginning of either the second term, or the second year of study. Students choosing one of the curriculums that include ocean engineering follow the curriculums for chemical or mechanical engineering for three years and choose the ocean engineering segment in the senior year.

All of the engineering curriculums are based on an intense study of mathematics and the basic sciences, and of the engineering sciences common to all branches of the profession. On this base is built the specific study in depth of the important principles and concepts of each separate discipline. These principles are applied to the understanding and solution of problems of current interest and importance in the field. Each curriculum is designed to provide the knowledge and ability necessary for practice as a professional engineer, or for successful graduate study, which may include law, business administration or medicine as well as the normal engineering and science disciplines.

The goal of the College is to stimulate the students to become creative, responsible engineers, aware of the social implications of their work, and flexible enough to adjust to the rapid changes taking place in all branches of engineering. Engineers from all fields are heavily involved in the solution of technological and sociotechnological problems. The needs of industry are for balanced teams of both men and women from the different engineering areas.

Engineering students, in common with all students in the University, must meet the University's general education requirements listed on page 10 of this catalog. In these courses students are exposed to and challenged by concepts from the humanities and social sciences to insure that the social relevance of their engineering activities will never be forgotten.

Entering students who have chosen a specific curriculum should follow the particular program listed below. Those who have decided to major in engineering, but have not selected a specific program, should select courses in general chemistry, natural sciences, general education electives, MTH 141, 142; EGR 101, 102; MCE 162 and/or PHY 213 and 285.

Students who are undecided about engineering, but who wish to keep it open as an option, should take note that MTH 141 and 142. MCE 162 or PHY 213 and 285, and two courses in the natural sciences, one of which should be chemistry, are required for graduation from the College of Engineering, and are prerequisites for many engineering courses. They normally must be taken at an early stage, preferably before transferring from University College to the College of Engineering. Students who have not taken them before entering the College of Engineering must confer with an engineering adviser to work out a program for completing all degree requirements. In such cases completion of graduation requirements may take somewhat longer than the normal time.

## Biomedical Electronics Engineering

The bachelor of science (B.S.) degree in biomedical electronics engineering is offered by the Department of Electrical Engineering. Specialization in biomedical engineering is also available within the master of science (M.S.) and doctor of philosophy (Ph.D.) programs in electrical engineering, described in the *Graduate School Bulletin*.

*Faculty:* Professor Jaron, coordinator. Assistant Professor Ohley; Adjunct Professor Karlson; Adjunct Assistant Professors Cooper, Most and Williams; electrical engineering faculty.

Biomedical engineers design medical instruments such as electrocardiographs, electroencephalographs, blood analyzers and X-ray

machines used for diagnosis of disease, equipment such as radiotherapy machines, pacemakers and lasers for surgery, and develop artificial organs. They design computer systems to help physicians monitor critically ill patients, to correlate a multitude of disease symptoms in order to diagnose a disease, and to determine the best course of treatment.

Biomedical engineers are employed in (1) the medical instrument industry, where they design, manufacture, sell and service medical equipment; (2) hospitals, which employ engineers in increasing numbers to select, evaluate and maintain complex medical equipment and to train the hospital staff in their use, and (3) medical and biological research centers, which use the specialized training of the biomedical engineer to apply engineering techniques in research projects.

The biomedical electronics engineering program combines study in the biological sciences with those areas of engineering which are particularly important for the application of modern technology to medicine. With a few minor elective changes the program also satisfies the entrance requirements of most medical schools, but students who plan to go on to medical school should consult the premedical adviser and the coordinator of the biomedical electronics engineering program.

The concentration requires 134 to 135 credits. For transfer from the University College to the College of Engineering in the Biomedical Electronics Engineering program students must have completed *all Division B* courses required during the first three semesters (see below) with grade average of C or better.

The concentration requires 140 credits.

#### Freshman Year

First semester: 16 credits

- 3 CHM 102 Gen. Chemistry I
- 1 CHM 102 Lab. for CHM 101
- 1 EGR 101 Introd. to Engineering
- 1 EGR 102 Basic Graphics
- 3 MTH 141 Introd. to Calculus
- 1 MTH 141L Problem Solving Lab. for MTH 141
- 3 CSC 201 Introd. to Computing
- 3 Gen. educ. elective in Div. A, C, or D<sup>1</sup>

#### Freshman Year

Second semester: 18 credits

- 4 CHM 124 Organic Chemistry
- 3 MTH 142 Intermed. Calculus
- 3 PHY 213 Elementary Physics
- 1 PHY 285 Lab. for PHY 213
- 4 ZOO 111 Gen. Zoology
- 3 Gen. educ. elective in Div. A, C, or D<sup>1</sup>

#### Sophomore Year

First semester: 19 credits

- 3 ELE 209 Concepts in Elec. Engineering

- 3 ELE 210 Introd. to Elec. & Magnetism
- 1 ELE 214 Lab. for ELE 210
- 3 MTH 243 Calculus & Anal. Geometry
- 3 ZOO 345 Basic Animal Physiology
- 6 Gen. educ. electives in Div. A, C, or D<sup>1</sup>

#### Sophomore Year

Second semester: 18 credits

- 3 ELE 205 Microprocessor Lab.
- 3 ELE 211 Linear Syst. & Circuit Theory I
- 3 MCE 263 Dynamics
- 3 MTH 362 Adv. Engineering Math I
- 3 PHY 223 Introd. to Acoustics & Optics
- 3 Gen. educ. elective in Div. A, C, or D<sup>1</sup>

#### Junior Year

First semester: 19 credits

- 4 ELE 312 Linear Syst. & Circuit Theory II
- 3 ELE 322 Electromagnetic Fields I
- 3 MTH 363 Adv. Engineering Math II
- 3 PHY 340 Introd. to Modern Physics
- 6 Gen. educ. electives in Div. A or C<sup>1</sup>

#### Junior Year

Second semester: 16 credits

- 3 ELE 313 Linear Systems
- 3 ELE 323 Electromagnetic Fields II
- 4 ELE 342 Electronics I
- 3 PHY 420 Introd. to Thermodynamics & Stat. Mechanics (preferred), or MCE 341 Fundamentals of Thermodynamics
- 3 General educ. elective

#### Senior Year

First semester: 18 credits

- 5 ELE 443 Electronics II
- 3 ELE 586 Biomedical Electronics I or ELE 588 Biomedical Engineering I
- 1 ELE 481 Biomedical Engineering Seminar
- 3 General education elective
- 3 Math elective
- 3 Professional elective<sup>2</sup>

<sup>1</sup>All students must demonstrate competence in the expression of ideas in written English. This requirement may be met by satisfactorily completing six credits in Division D (Human Communications). SCRATCH OOOZ - Research Paper Writing - is strongly recommended as one of these courses.

For other requirements in Human Communications, Humanities and Social Sciences (Divisions A, C, D) see "Minimum Requirements" under Electrical Engineering on page 66. In addition, MTH 244 — Differential Equations is strongly recommended as a professional elective during the sophomore or junior year.

<sup>2</sup>Select from approved list (see adviser). Professional electives approved for this program in the first semester include BCP 311, 403, 435; CHM 335, 431; CSC 311; ELE 331, 457, 581; MCE 354; MTH 244, 471; ZOO 441; in the second semester BCP 302; CHM 336, 432; CSC 311, 400; ELE 436, 444, 458, 484, 581; MCE 354; MTH 244, 472.

**Senior Year**

Second semester: 16 credits

- 3 ELE 587 Biomedical Electronics II or ELE 589 Biomedical Engineering II
- 1 ELE 482 Biomedical Engineering Seminar
- 3 ZOO 442 Mammalian Physiology
- 6 Professional elective<sup>2</sup>
- 3 Free elective

**Chemical Engineering**

The Department of Chemical Engineering offers a curriculum leading to the bachelor of science (B.S.) degree in chemical engineering and in cooperation with the Department of Ocean Engineering offers a curriculum leading to the bachelor of science (B.S.) degree in chemical and ocean engineering. The master of science (M.S.) and doctor of philosophy (Ph.D.) degrees also offered by the department are described in the *Graduate School Bulletin*.

**Faculty:** Professor Treybal, chairman. Professors Gielisse, Shilling, Thompson, and Votta; Associate Professors Barnett, Knickle, Rockett and Rose; Assistant Professor Savage; Adjunct Associate Professor DiMeglio; Adjunct Assistant Professors Doyle, Sahagian, and Spano.

The chemical engineer is concerned with the application and control of processes leading to changes in composition. These may be chemical and physical processes, and control refers to achieving the desired goal at reasonable cost. The processes are most frequently associated with the production of useful products (chemicals, fuels, metals, foods, pharmaceuticals, paper, plastics, and the like), but also include such seemingly unrelated matters as removal of toxic components from the blood by an artificial kidney, and modeling the flow of exhaust gases from automobiles on the highway (turbulent diffusion and heat transfer coupled with chemical change). The chemical engineer's domain includes more efficient production and use of energy, processing of wastes, and protection of the environment.

Chemical engineers have a strong foundation in chemistry, physics, mathematics and basic engineering. Chemical engineering courses include the use of analog and digital computers, thermodynamics transport phenomena, mass transfer operations, metallurgy, materials engineering, process dynamics and control, kinetics and plant design. The student has the opportunity to operate small-scale equipment to determine efficiencies

and operating characteristics, and to visit chemical plants in the area. Intensive work in the solution of complex problems is given in which economics and optimization of engineering design are emphasized.

A chemical engineer with a background in both chemistry and engineering can apply his knowledge of research and development, design, production and manufacturing not only to the areas listed earlier, but to many others such as textiles, dyes, petroleum, ceramics, paint, rubber and the like, as well as to biomedical, biochemical, ocean, space, nuclear energy, and environmental problems and processes.

The senior year curriculum for students concentrating in chemical and ocean engineering is listed under Ocean Engineering, page 71.

The concentration requires 129 credits.

Programs can be designed for those interested in special areas such as material sciences, biochemical engineering, pollution control, and the like, in general chemical engineering. Programs for those interested in entering dental and medical schools, or schools of business administration, can also be constructed, sometimes requiring a few courses beyond the 129 regular credits.

**Freshman Year**

First semester: 15 credits

- 5 CHM 191 Gen. Chemistry<sup>3</sup>
- 1 EGR 102 Basic Graphics
- 3 MTH 141 Introd. Calculus with Anal. Geometry
- 6 Gen. educ. electives in Div. A, C, or D<sup>4</sup>

**Freshman Year**

Second semester: 16 credits

- 5 CHM 192 Gen. Chemistry<sup>3</sup>
- 3 MTH 142 Intermed. Calculus with Anal. Geometry
- 4 PHY 213 Elem. Physics and PHY 285 Physics Lab.<sup>5</sup>
- 3 ECN 123 Elements of Economics
- 1 Engineering elective

**Sophomore Year**

First semester: 17 credits

- 3 CHE 212 Chemical Process Calculations
- 4 CHM 291, Organic Chemistry
- 3 MTH 243 Calculus and Anal. Geometry of Several Variables

<sup>3</sup>For CHM 191 and 192 (10 credits), students may substitute CHM 101, 102, 112, 114, and 212 (12 credits).

<sup>4</sup>In order to meet accreditation requirements, these courses, together with at least 18 credits of the Division A, C, or D electives, must be chosen from a group approved by the department, with the approval of the adviser designated by the department.

<sup>5</sup>For PHY 213, 214, 285, and 286 (8 credits), students may substitute MCE 161 and 261 (or 162 and 263) and ELE 210 (9 credits).

<sup>2</sup>Select from approved list (see adviser). Professional electives approved for this program in the first semester include BCP 311, 403, 435; CHM 335, 431; CSC 311; ELE 331, 457, 581; MCE 354; MTH 244, 471; ZOO 441; in the second semester BCP 302; CHM 336, 432; CSC 311, 400; ELE 436, 444, 458, 484, 581; MCE 354; MTH 244, 472.



4 PHY 214 Elem. Physics and PHY 286 Physics Lab.<sup>5</sup>

3 Gen. educ. elective in Div. A, C, or D<sup>4</sup>

#### Sophomore Year

Second semester: 16 credits

3 CHE 272 Introd. to Chemical Engineering

3 CHE 332 Physical Metallurgy **or** approved professional elective<sup>4</sup>

4 CHM 292 Organic Chemistry

3 ELE 220 Elec. Circuits, Measurements, and Electronics

3 Approved biological science elective<sup>4</sup>

#### Junior Year

First semester: 17 credits

3 CHE 313 Chem. Engineering Thermodynamics

3 CHE 347 Transfer Operations I

2 CHM 335 Phys. Chemistry Lab.

3 CHM 431 Physical Chemistry

3 MTH 244 Differential Equations **or** approved math elective<sup>4</sup>

3 Gen. educ. elective in Div. A, C, or D<sup>4</sup>

#### Junior Year

Second semester: 16 credits

3 CHE 314 Chem. Engineering Thermodynamics

1 CHE 322 Chem. Process Analysis

3 CHE 348 Transfer Operations II

3 CHE 425 Process Dynamics and Control

3 CHM 432 Physical Chemistry

3 Gen. educ. elective in Div. A, C, or D<sup>4</sup>

#### Senior Year

First semester: 15 credits

2 CHE 345 Chem. Engineering Lab. **or** approved professional elective<sup>4</sup>

2 CHE 349 Transfer Operations III

2 CHE 351 Plant Design and Economics

3 CHE 464 Industrial Reaction Kinetics

3 NUE 581 Introd. to Nuclear Engineering, **or** PHY 340 Introd. to Modern Physics

3 Gen. educ. elective in Div. A, C, or D<sup>4</sup>

#### Senior Year

Second semester: 17 credits

2 CHE 346 Chem. Engineering Lab.

3 CHE 352 Plant Design and Economics

3 Approved professional elective<sup>4</sup>

3 CVE 220 Mechanics of Materials **or** approved professional elective<sup>4</sup>

6 Gen. educ. electives in Div. A, C, or D<sup>4</sup>

<sup>4</sup>In order to meet accreditation requirements, these courses, together with at least 18 credits of the Division A, C, or D electives, must be chosen from a group approved by the department, with the approval of the adviser designated by the department.

<sup>5</sup>For PHY 213, 214, 285, and 286 (8 credits), students may substitute MCE 161 and 261 (or 162 and 263) and ELE 210 (9 credits).

## Civil and Environmental Engineering

The Department of Civil and Environmental Engineering offers a curriculum leading to the bachelor of science (B.S.) degree. The master of science (M.S.) and doctor of philosophy (Ph.D.) degrees also offered by the department are described in the Graduate School Bulletin.

**Faculty:** Associate Professor Kelly, chairman. Professors Campbell, Moulthrop, Nacci, Poon, and Silva; Associate Professors Fang, Lavelle, Marcus, McEwen and Sussman.

The civil engineer is responsible for the planning, design, construction, management and research and development of systems which are necessary to satisfy the demands of modern civilization. Water supply and distribution, sewerage, solid waste disposal, air pollution, transportation systems, foundations for both land and ocean structures, dams, dock facilities and offshore towers, and buildings and bridges of many types are among the civil engineer's responsibilities.

The curriculum provides the student with sufficient background to pursue graduate study or to enter directly into professional practice in industry or government after graduation. The first two years are devoted largely to courses in mathematics, chemistry, physics and engineering science which are common to all engineering curriculums. In his or her last two years the student has a large degree of flexibility in developing his or her own program to meet his or her own professional goals through the selection of professional electives in environmental engineering, soil mechanics and foundations, structural engineering, and transportation and construction.

Those students interested in the application of civil engineering to the ocean and coastal zone may select as professional electives such courses as CVE 524, OCE 587, and courses from geology and ocean engineering.

Near the completion of the junior year each student is required to file a proposed plan of study which has been approved by the faculty adviser and the department. Professional electives and general education electives in Divisions A, C, and D must be selected to satisfy Engineer's Council for Professional Development accreditation requirements.

#### Freshman Year

First semester: 15 credits

3 CHM 101 Gen. Chemistry

1 CHM 102 Chemistry Lab.

1 EGR 101 Introd. to Engineering **or** EGR 102 Basic Graphics

3 MTH 141 Introd. Calculus with Anal. Geometry

3 GEL 103 Physical Geology

1 GEL 106 Introd. Geology Lab.

3 Gen. educ. elective in Div. A, C, or D

**Freshman Year**

Second semester: 16-19 credits

- 3-5 Natural science elective
- 1 EGR 101 *Introd. to Engineering* or EGR 102 *Basic Graphics*
- 3 MTH 142 *Intermed. Calculus with Anal. Geometry*
- 3-4 MCE 162 *Statics*<sup>6</sup> or PHY 213 *Elem. Physics and PHY 285 Physics Lab.*
- 6 Gen. educ. electives in Div. A, C, or D

**Sophomore Year**

First semester: 16 credits

- 3 MTH 243 *Calculus and Anal. Geometry*
- 3 MCE 263 *Dynamics*
- 3 PHY 214 *Elem. Physics*
- 1 PHY 286 *Physics Lab.*
- 3 CVE 216 *Metronics*
- 0 CVE 301 *Introd. to Professional Practice in Civil Engineering*
- 3 Gen. educ. elective in Div. A, C, or D

**Sophomore Year**

Second semester: 15 credits

- 3 MTH 244 *Differential Equations*
- 3 CVE 220 *Mechanics of Materials*
- 3 ELE 220 *Elec. Circuit, Measurements and Electronics*
- 0 CVE 302 *Introd. to Professional Practice in Civil Engineering*
- 6 Gen. educ. electives in Div. A, C, or D

**Junior Year**

First semester

- 3 Approved science elective<sup>7</sup>
- 2 CVE 322 *Civil Engineering Lab. I*
- 3 MCE 354 *Fluid Mechanics*
- 0 CVE 303 *Introd. to Professional Practice in Civil Engineering*

**Junior Year**

Second semester

- 2 CVE 323 *Civil Engineering Lab. II*
- 0 CVE 304 *Introd. to Professional Practice in Civil Engineering*

**Senior Year**

First semester

- 0 CVE 305 *Introd. to Professional Practice in Civil Engineering*

**Senior Year**

Second semester

- 0 CVE 306 *Introd. to Professional Practice in Civil Engineering*

The remaining courses in the junior and senior years shall be selected by the student to satisfy the following requirements:

<sup>6</sup>It is recommended that MCE 162 be selected.

<sup>7</sup>From a list approved by the department.

**Required core courses (15 credits)**

- CVE 352 *Structural Analysis and Design I*
- CVE 353 *Structural Analysis and Design II*
- CVE 374 *Environmental Engineering I*
- CVE 380 *Soil Mechanics* and either CVE 396 *Civil Engineering Analysis* or CVE 495 *Civil and Environmental Engineering Systems*

*Mathematical science elective.* Each student must select at least one course at the 400 level or above in mathematics, statistics or operations research.

*Professional electives.* Each student in consultation with his or her adviser selects at least 24 credits of approved courses in engineering and other areas appropriate to a program in Civil and Environmental Engineering.

*General education and free electives.* An additional 9 credits in Division A, C, or D are required to complete the University general education requirements and all students in the University must select 6 credits of free electives.

Total credits required: 129-132.

**Computer Engineering (Electronic)**

The bachelor of science (B.S.) degree in electronic computer engineering is offered by the Department of Electrical Engineering. Specialization in computer engineering is also available within the master of science (M.S.) and doctor of philosophy (Ph.D.) programs in electrical engineering, described in the *Graduate School Bulletin*.

*Faculty:* Professors Jackson and Tufts, coordinators. Electrical engineering faculty.

Computers and computer-like devices have truly transformed society, particularly in the technologically advanced countries. Computers are everywhere, and all indications are that computers and computer components (digital devices) will be even more pervasive five or ten years from now. Computer engineering is concerned with the design and efficient use of large or small computers and the development of other machines and instruments which contain computers, or parts of computers, as essential building blocks, from the hand-held calculator to the large multi-terminal computer, and the programmable assembly machine. A programmable machine is one which will change its operation in response to a program or command.

Computer engineers may be employed in the design or planning, service, operation and sale of computer systems as well as the design, service and sale of complex machinery, instruments and systems — such as an automated subway — which require computers as essential parts. The

employers may be industrial organizations, transportation companies, federal laboratories or local government.

The computer engineer must understand the fundamentals of computer logic and programming as well as the fundamentals of electronics and general engineering — mathematics, mechanics, electricity, magnetism, and heat transfer. Engineers use all of this knowledge to create new devices and systems which satisfy perceived human needs. Two four-year bachelor of science programs are available at the University to the student who wants to become a computer engineer: a computer technology emphasis in the senior year of the general electrical engineering program and the separate electronic computer engineering program which is described below.

For transfer from the University College to the College of Engineering in the Computer Engineering program students must have completed *all Division B* courses required during the first three semesters (see below) with a grade average of C or better.

The concentration requires 128 credits.

#### Freshman Year

First semester: 15 credits

- 3 CSC 201 Introd. to Computing I
- 3 CHM 101 Gen. Chem. Lecture I
- 1 CHM 102 Lab. for Chemistry I
- 3 MTH 141 Introd. to Calculus
- 1 MTH 141L Introd. Calculus Lab.
- 1 EGR 101 Introd. to Engineering
- 3 Elective

#### Freshman Year

Second semester: 17 credits

- 3 PHY 213 Elem. Physics I
- 1 PHY 285 Lab. for Physics I
- 3 MTH 142 Intermed. Calculus
- 1 EGR 102 Basic Graphics
- 3 CSC 202 Introd. to Computing II
- 6 Electives

#### Sophomore Year

First semester: 16 credits

- 3 ELE 209 Concepts in Elec. Engineering
- 3 ELE 210 Introd. to Elec. and Magnetism
- 1 ELE 214 Introd. Elec. Engineering Lab.
- 3 MTH 243 Calculus and Anal. Geometry
- 6 Electives

#### Sophomore Year

Second semester: 15 credits

- 3 ELE 205 Microprocessor Lab.
- 3 ELE 211 Linear Syst. & Circuit Theory I
- 3 MTH 362 Adv. Engr. Math. I
- 3 PHY 341 Modern Physics I
- 3 CSC 311 Machine & Assem. Lang. Programming

#### Junior Year

First semester: 16 credits

- 4 ELE 312 Linear Syst. & Circuit Theory II
- 3 ELE 322 Electromag. Fields I
- 3 ELE 331 Elec. Engr. Materials
- 3 MTH 363 Adv. Engineering Math. II
- 3 Elective

#### Junior Year

Second semester: 16 credits

- 3 ELE 313 Linear Systems
- 4 ELE 342 Electronics I
- 9 Electives

#### Senior Year

First semester: 17 credits

- 5 ELE 443 Electronics II
- 6 Professional electives
- 3 IDE 411 Engr. Statistics I
- 3 MTH elective

#### Senior Year

Second semester: 16 credits

- 3 ELE 405 Digital Computer Design
- 4 ELE 444 Electronics III
- 3 Professional elective
- 6 Electives

Senior year professional electives for the first semester are ELE 505 or 508 or 590 or 581 or 501, CSC 411 or 413, MCE 341; for the second semester ELE 436 or 506 or 561, CSC 411 or 412, MCE 341 or PHY 420. Mathematics electives are MTH 215 or 451 or 471 or 472.

For requirements in Human Communications, Humanities and Social Sciences (Divisions D, A, C) see "Minimum Requirements" under Electrical Engineering on page 66. In addition the electronic computer engineering program has 6 credits of free electives.

## Electrical Engineering

The Department of Electrical Engineering offers a curriculum leading to the bachelor of science (B.S.) degree. The master of science (M.S.) and doctor of philosophy (Ph.D.) degrees also offered by the department are described in the *Graduate School Bulletin*. For the B.S. degree the student may elect a general program or an emphasis option in the areas listed on page 67.

Faculty: Professor Polk, chairman. Professor Haas, Jaron, Lengyel, Lindgren, Mardix, Mitra, Poularikas, Sadasiv, Spence and Tufts; Visiting Professor Seely; Associate Professors Birk, Daly, Jackson, Kelley and Prince; Assistant Professors Krikorian and Ohley; Adjunct Professors Biberman, Karlson, Hall and D. Middleton; Adjunct Assistant Professors Cooper, McCollough, Most and Williams.

Electrical engineers work in all areas in which electrical phenomena are involved. These areas include communication systems, computers, control systems, quantum electronics and electro-optics, electro-acoustics, energy conversion, antennas and radio propagation, design of electronic devices, and bioengineering.

Since electrical instrumentation is at the heart of modern science and technology, electrical engineers are not only employed in the computer, electronics, communications and power industries, but may also be found in such diverse enterprises as transportation, the chemical industry, large hospitals, medical schools, and government laboratories. By carefully selecting elective courses the student should be able to enter any of these fields after graduation or be prepared for graduate study in engineering or physics.

The curriculum emphasizes the scientific basis of electrical engineering and the application of mathematical analysis to engineering problems. Work is required in network and systems theory, atomic physics and the behavior of the solid state, electromagnetic theory and electronics. Creative use of scientific principles in problems of engineering design is stressed particularly in the senior year. Digital computer techniques are a part of many electrical engineering courses.

Extensive laboratory work with electrical and optical devices serves to bridge the gap between mathematical analysis and the real world of "hardware". Separate undergraduate laboratories are available for electrical measurements, electronics, pulse and digital circuits, microprocessors, computer graphics, microwaves and quantum electronics, optics, materials, energy conversion, and systems. Selected students participate in advanced projects including microelectronics, investigation of optical properties of solids, optical and radio propagation, acoustics, computers, robotics and biological instrumentation.

Electrical engineering students should note that the four-year electrical engineering curriculum allows for three credits of completely free electives which do not have to satisfy any of the general education requirements. It is recommended, however, that elective courses be selected to satisfy the general education requirements in Divisions A, C, and D (27 credits) as early as possible. Although Division B requirements of 18 credits will be satisfied automatically by courses specified in the electrical engineering curriculum, it is recommended that students take some additional natural science such as ZOO 111, AST 108, BOT 111, GEL 103, or courses in mathematics or physics for which prerequisites have been satisfied.

For transfer from the University College to the College of Engineering in the Electrical Engineering program students must have completed all Division B courses required during the first three semesters (see below) with a grade average of C or better.

### Minimum Requirements

**Human Communications, Humanities and Social Sciences.** (27 credits) 1) All students must demonstrate competence in the expression of ideas in written English. This requirement may be met by satisfactorily completing 6 credits in Division D (Human Communications). 2) At least 9 credits from Division A (Arts and Humanities). At least 6 of these credits must be in one area of concentration. 3) At least 9 credits from Division C (Social Sciences). At least 6 credits must be in one area of concentration.

**Mathematics.** (19 credits) MTH 141, 141L, 142, 243, 362, 363; 3 cr. MTH elective (200 level or higher).

**Basic Sciences.** (20 credits) CHM 101/102; basic science elective (any course in CHM, BIO, GEL, ESC, PHY or ZOO approved by the department), PHY 213, 285, 223, 341, thermodynamics (PHY 420 or MCE 341).

**Computer Science.** (3 credits) CSC 201.

**Engineering Sciences and Design.** (56 credits) MCE 263; ELE 205, 209, 210, 214, 211, 312, 313; 322, 323, 331, 342, 443; two emphasis courses, emphasis lab, electrical engineering electives, engineering elective (non-electrical).

**Other Engineering Courses.** (2 credits) EGR 101, EGR 102.

**Free Electives.** (3 credits)

The concentration requires 130 credits.

#### Freshman Year

First semester: 15 credits

- 4 CHM 101 Gen. Chemistry I and CHM 102 Lab.
- 1 EGR 101 Introd. to Engr. or EGR 102 Basic Graphics (one each semester)
- 3 MTH 141 Introd. Calc. with Anal. Geometry
- 1 MTH 141L Introd. Calc. Problem Solving Lab.
- 3 CSC 210 Introd. to Computing
- 3 One elective in Div. A, C, or D

#### Freshman Year

Second semester: 17 credits

- 3 Basic science elective (to be specified)
- 1 EGR 102 Basic Graphics or EGR 101 Introd. to Engineering
- 3 MTH 142 Introd. Calc. with Anal. Geometry
- 4 PHY 213 Elem. Physics I and 285 Physics Lab.
- 6 Two electives in Div. A, C, or D

#### Sophomore Year

First semester: 16 credits

- 3 MTH 243 Calc. and Anal. Geom. of Several Variables
- 3 ELE 210 Introd. to Electr. and Magnetism
- 3 PHY 223 Introd. to Acoustics and Optics
- 3 ELE 209 Concepts in Elec. Engineering

- 1 ELE 214 Introd. ELE Lab.
- 3 One elective in Div. A, C, or D

#### Sophomore Year

Second semester: 18 credits

- 3 MTH 362 Adv. Engr. Mathematics I
- 3 PHY 341 Modern Physics
- 3 ELE 211 Linear Syst. & Circuit Theory
- 3 ELE 205 Microprocessor Lab.
- 3 MCE 263 Dynamics
- 3 One elective in Div. A, C, or D

#### Junior Year

First semester: 16 credits

- 3 MTH 363 Adv. Engr. Mathematics II
- 4 ELE 312 Linear Syst. & Circuit Theory
- 3 ELE 322 Electromagnetic Fields I
- 3 ELE 331 Elec. Engr. Materials I
- 3 One elective in Div. A, or C

#### Junior Year

Second semester: 16 credits

- 3 PHY 420 Introd. to Thermodyn. or MCE 341 Thermodynamics
- 3 ELE 313 Linear Systems II
- 3 ELE 323 Electromagnetic Fields II
- 4 ELE 342 Electronics I
- 3 One elective in Div. A or C

#### Senior Year

Total credits for 2 semesters: 32

- 5 ELE 443 Electronics II
- 6 Two emphasis courses
- 3 Emphasis Lab.
- 3 Electrical Engineering elective
- 3 Engineering elective\*
- 3 Mathematics elective
- 6 Two electives in Div. A, C, or D
- 3 Free elective

#### Special Senior Year Options

A student may elect either the general program which is described below or specialize in one of the following emphasis areas: biomedical engineering, communication and control systems, computer technology, microwaves and quantum electronics or solid state theory and applications.

A student who selects an emphasis area registers for the appropriate emphasis laboratory and for two applicable emphasis courses. He or she also chooses additional electives either to obtain greater depth in the emphasis area or to achieve breadth in his or her engineering knowledge. Electives must be approved by the student's regular adviser.

Program selection must be made after discussion with academic advisers, emphasis area advisers and other faculty. Each student must file (on a

form available from the department office) before spring registration for the first semester of the senior year a detailed program of studies which is approved by his or her emphasis area adviser. Students must obtain approval of their course selections from their regular adviser. Students formally enrolled in the Honors Program remain with the honors adviser of the department who approved their individually determined programs.

The general program for the senior year in electrical engineering consists of ELE 443 (5 cr.) and 444 (4), and four of the following three-credit courses: ELE 401, 427, 432, 436, 437, 457, or 417.

Emphasis courses and laboratories are indicated below. In each area two emphasis courses and one emphasis laboratory are required. Additional selections from among the emphasis courses and laboratories may be taken as professional or free electives. Course sequences must be scheduled so as to satisfy prerequisites.

Biomedical Engineering emphasis courses include in the first semester BCP 311, 403, 435; CHM 335, 431; CSC 311; ELE 331, 457, 481, 581, 586, 588; MCE 354; MTH 244, 471; ZOO 441; in the second semester BCP 302; CHM 336, 432; CSC 311, 202; ELE 436, 482, 581, 587, 589; MCE 354; MTH 244, 472; emphasis labs: ELE 444, 458 and 484 (all second semester).

Communication and Control Systems emphasis courses include in the first semester ELE 457, 502, 503, 509; in the second semester ELE 405, 436, 561 with ELE 444 or 458 as the emphasis laboratory.

Computer Technology emphasis courses include in the first semester, CSC 202; MTH 215 or 451; ELE 508, 505, 509, or 581 or 501; in the second semester, ELE 405, 444, 436 or 506 or 561; CSC 311; either ELE 505 or 405 may be taken, but not both. Emphasis labs: ELE 444 or CSC 311.

Microwaves and Quantum Electronics emphasis courses include in the first semester, ELE 401, 427 or 437 or 511 or 520 or CSC 202 or MCE 517; in the second semester, ELE 432 or 436 or 444 or 458 or 514 or 515 or 531 or 538 or 539 or 545 or 417. Emphasis lab: ELE 403.

Solid State Theory and Applications emphasis courses include in the first semester, ELE 401 or 417 or 511 or 520 or MCE 517; in the second semester, ELE 432, 436 or 444 or 515 or 538 or 539 or CHE 437; ELE 513. Emphasis lab: ELE 433.

Cooperative work in industry carrying academic credit (ELE 495, 496) is available for a few particularly talented and motivated students who are willing to devote more than average effort to their studies and who are capable of much better than average performance.

The Department of Electrical Engineering offers a five-year B.S.-M.S. co-op program. Academic course work is alternated between periods of en-

\*The senior year engineering elective must be taken outside electrical engineering.

engineering practice at companies or government laboratories selected by the department.

A total of 14 months of industrial experience is obtained in three segments: (1) 3 months, summer between sophomore and junior year; (2) 3 months, summer between junior and senior year: ELE 495 (3 credits); (3) 8 months, second semester of senior year plus the following summer: ELE 496 (6 credits).

The three assignments are usually, but not necessarily, taken at the same company. The industrial experience grows in technical complexity as the student progresses through the program, with the first industrial experience having a small technical content and the eight-month period at the end of the senior year being a junior engineering position. The student earns credit towards his or her degrees for the work done and experience gained during the second and third assignments.

Students interested in this program should contact Dr. J. C. Daly, the department's cooperative work coordinator.

## Engineering Science

The curriculum in engineering science is designed to allow more concentration in the basic sciences, engineering sciences, and interdisciplinary areas than is possible in the regular engineering curriculums. The degree earned is the bachelor of science (B.S.).

A core of required courses in the basic and engineering sciences provides the necessary foundation for further work in these areas. The 12 to 15 credits of specialized electives plus 6 credits of free electives afford ample opportunity for concentration, which may be in any one of the five undergraduate engineering departments, in mathematics, or in physics; or it may be in some interdisciplinary area cutting across two departments, one of which may not necessarily be in engineering.

With the proper choice of electives, this curriculum would prepare the student for either a professional career in industry or for graduate school.

The concentration requires 131-134 credits.

### Freshman Year

First semester: 14 credits

- 3 CHM 101 Gen. Chemistry I
- 1 CHM 102 Lab. for CHM 101
- 1 EGR 101 Introd. to Engineering
- 3 MTH 141 Introd. Calculus with Anal. Geometry
- 6 Gen. educ. electives in Div. A, C, or D

### Freshman Year

Second semester: 17-18 credits

- 3 CHM 112 Gen. Chem. Lecture II
- 1 CHM 114 Lab. for CHM 112

- 1 EGR 102 Basic Graphics
- 3 MTH 142 Intermed. Calculus with Anal. Geometry
- 3-4 MCE 162 Statics or PHY 213 Elem. Physics and PHY 285 Physics Lab.
- 6 Gen. educ. electives in Div. A, C, or D

### Sophomore Year

First semester: 15-17 credits

- 3-5 CHM 227 Organic Chem. Lecture I or CHM 431 Phys. Chemistry and CHM 335 Phys. Chemistry Lab.
- 3 ELE 210 Introd. to Electricity and Magnetism
- 3 MTH 243 Calculus and Anal. Geometry
- 3 MCE 263 Dynamics
- 3 PHY 223 Introd. to Acoustics and Optics

### Sophomore Year

Second semester: 17 credits

- 5 CHM 228 Organic Chem. Lecture II and CHM 226 Organic Chem. Lab. or CHM 432 Physical Chem. and CHM 336 Physical Chem. Lab.
- 3 CVE 220 Mechanics of Materials
- 3 ELE 211 Linear Syst. & Circuit Theory I
- 3 MTH 244 Differential Equations
- 3 PHY 341 Modern Physics

### Junior Year

First semester: 16 credits

- 4 ELE 312 Linear Syst. & Circuit Theory II
- 3 ELE 322 Electromagnetic Fields I
- 3 ELE 331 Electrical Eng. Materials
- 3 MCE 341 Fundamentals of Thermodynamics
- 3 Gen. educ. elective in Div. A, C, or D

### Junior Year

Second semester: 16 credits

- 3 CHE 332 Physical Metallurgy
- 3 ELE 323 Electromagnetic Fields II or a professional elective<sup>9</sup>
- 4 ELE 342 Electronics I
- 3 Professional elective<sup>9</sup>
- 3 Gen. educ. elective in Div. A, C, or D

### Senior Year

First semester: 18 credits

- 3 CHE 347 Transfer Operations I
- 9 Professional electives<sup>9</sup>
- 3 Gen. educ. elective in Div. A, C, or D
- 3 Free elective

### Senior Year

Second semester: 18 credits

- 3 CHE 425 Process Dynamics and Control or ELE 457 Feedback Control Systems or MCE 428 Mechanical Control Systems
- 6 Professional electives<sup>9</sup>
- 6 Gen. educ. electives in Div. A, C, or D
- 3 Free elective

<sup>9</sup>Professional electives shall include at least 3 credits of mathematics. Students planning to do graduate work in biomedical engineering should take either ZOO 111 or BIO 101 before the senior year.

## Industrial Engineering

The Department of Industrial Engineering offers a curriculum leading to the bachelor of science (B.S.) degree. The master of science (M.S.) degree also offered by the department is described in the *Graduate School Bulletin*.

**Faculty:** Professor C. F. James, chairman. Professors Nichols and Rubinsky; Associate Professors Lawing, Olson and Shao; Assistant Professor Odrey.

The industrial engineering curriculum is designed to provide significant strength in mathematics, basic science, and engineering science, plus a carefully coordinated set of courses that are of particular importance to the professional industrial engineer. Mathematical modeling of physical systems, optimization, probability and random variables, production systems, materials processing and metrology are areas that receive considerable attention. The professional portion of the curriculum is augmented with computer science and professional electives.

Upon completion, the student will be prepared amply to pursue a career in the many engineering opportunities in industry, transportation, government, hospitals, and service organizations. The curriculum also provides an excellent background for further formal study in industrial engineering or related fields of physical science.

By using the professional and free electives for certain courses, the student can complete a bachelor of science degree in industrial engineering plus a master of business administration degree within five years. See the department advisers for further details. The concentration requires 125-129 credits.

### Freshman Year

First semester: 14-15 credits

- 3 CHM 101 Gen. Chemistry Lecture **and**
- 1 CHM 102 Chemistry Lab. **or**
- 5 CHM 191 Gen. Chemistry
- 1 EGR 101 Introd. to Engineering
- 3 MTH 141 Introd. to Calculus with Anal. Geometry
- 6 Gen. educ. electives in Div. A, C, or D

### Freshman Year

Second semester: 16-19 credits

- 3-5 Natural science elective
- 1 EGR 102 Basic Graphics
- 3 MTH 142 Intermed. Calculus with Anal. Geometry
- 3 MCE 162 Statics **or**
- 4 PHY 213 Elem. Physics, and PHY 285 Lab.
- 6 Gen. educ. electives in Div. A, C, or D

### Sophomore Year

First semester: 16 credits

- 3 CSC 201 Introd. to Computing
- 3 ELE 210 Introd. to Electricity and Magnetism
- 4 IDE 220 Introd. to Industr. Engineering I
- 3 MCE 263 Dynamics
- 3 MTH 215 Algebraic Structures

### Sophomore Year

Second semester: 16 credits

- 3 ECN 123 Economics
- 3 ELE 220 Circuits, Measurements, and Electronics
- 4 IDE 221 Introd. to Industr. Engineering II
- 3 MTH 243 Calculus and Anal. Geometry of Sev. Variables
- 3 PHY 223 Acoustics & Optics

### Junior Year

First Semester: 15 credits

- 3 IDE 411 Engr. Statistics I
- 3 MCE 341 Thermodynamics
- 3 MTH 361 Math. Methods for Science and Engr.
- 3 PHY 340 Introd. to Modern Physics **or** PHY 341 Modern Physics I
- 3 Gen. educ. elective in Div. A, C, or D

### Junior Year

Second semester: 18 credits

- 3 ACC 201 Elem. Accounting
- 3 CVE 220 Mechanics of Materials
- 3 IDE 412 Engr. Statistics II
- 3 IDE 432 Operations Research I
- 3 MCE 354 Fluid Mechanics
- 3 Free elective

### Senior Year

First semester: 15 credits

- 3 CHE 333 Engr. Materials **or** CHE 437 Materials Engr.
- 3 IDE 350 Industr. Engr. Systems Design I
- 3 IDE 433 Operations Research II
- 3 Professional elective
- 3 Gen. educ. elective in Div. A, C, or D

### Senior Year

Second semester: 15 credits

- 3 IDE 351 Industrial Engr. Systems Design II
- 3 IDE 440 Materials Processing and Metrology
- 3 Free elective
- 3 Gen. educ. elective in Div. A, C, or D
- 3 Professional elective

General Education indicated in several places above refers to one of the electives in the University's general education program, required in all curriculums leading to a bachelor's degree. The general education requirements are: 15 credits in Division A (Humanities) and 12 credits in Division C (Social Sciences) **or** 12 credits in Division A and 15 credits in Division C. Each Division require-

ments can be diminished by a maximum of 3 credits with selected courses in communication skills (Division D).

## Mechanical Engineering and Applied Mechanics

The Department of Mechanical Engineering and Applied Mechanics offers a curriculum leading to the bachelor of science (B.S.) degree in mechanical engineering and applied mechanics and, in cooperation with the Department of Ocean Engineering, offers a curriculum leading to the bachelor of science (B.S.) degree in mechanical and ocean engineering. The master of science (M.S.) and doctor of philosophy (Ph.D.) degrees also offered by the department are described in the *Graduate School Bulletin*.

**Faculty:** Professor C. Nash, chairman. Professors Bradbury, G. Brown, Conta, Dowdell, Ferrante, Hagist, Schenck, Test, M. Wilson, and F. White; Associate Professors Bachelder, DeLuise, Goff, Hatch, T. Kim, Lessmann and Palm; Assistant Professors Datsaris and Durocher; Adjunct Assistant Professors Messier and Patton.

This curriculum provides a thorough and well-rounded foundation in basic science, mathematics, engineering science, and general education to prepare the graduate to enter a professional engineering career. The curriculum is also excellent preparation for graduate school. Mechanical engineers are employed in large numbers in every industry where they frequently assume positions of leadership. The program at the University of Rhode Island is unusually strong in providing a background in systems engineering, design, fluids and the thermal sciences including energy and energy transfer. Computer applications are stressed throughout the curriculum.

The work in the first two years consists of basic courses in science (mathematics, physics, chemistry), applied science (mechanics, electricity & magnetism, computer applications, theory of mechanisms) and general education (humanities, social sciences, communication).

The junior year concentrates on fundamental courses in mechanical engineering (thermodynamics, fluid mechanics, systems engineering, engineering analysis), materials science, engineering economy and electronic devices. Further general education studies are also covered.

The senior year in mechanical engineering includes machine design, heat transfer, manufacturing processes and a wide variety of professional electives such as mechanical control systems, advanced fluid mechanics, advanced mechanics of materials, dynamics of machines, internal com-

bustion engines, alternate energy systems, power plants, lubrication and bearings, thermal environmental engineering and vibrations.

Throughout the program the student takes an integrated series of laboratory courses which introduce laboratory technique and provide practical experience with the physical and engineering phenomena being covered in concurrent courses. Digital computer techniques are included. In the senior year the student carries out an individual project to develop creative ability and integrate the formal studies.

To receive the bachelor of science degree in mechanical engineering and applied mechanics, the student must satisfactorily complete all the courses in the following curriculum, although the sequence may be changed. The curriculum shown below is for the class of 1982 and subsequent classes. Students in the classes of 1979, 1980 and 1981 should obtain a check sheet from their advisers or consult the 1977-78 *Undergraduate Bulletin*.

The concentration for the classes of 1982 and subsequent requires 135 credits.

Those students desiring an undergraduate specialization in ocean engineering may choose the program in mechanical and ocean engineering. Students enrolled in mechanical and ocean engineering must follow the program of study for mechanical engineering during the freshman, sophomore and junior years. The senior year curriculum for this major is listed under Ocean Engineering.

### Freshman Year

First semester: 17 credits

- 4 CHM 101 Gen. Chemistry and CHM 102 Lab.
- 1 EGR 101 Intod. to Engineering or EGR 102 Basic Graphics
- 3 MTH 141 Introd. Calculus with Anal. Geometry
- 3 Gen. educ. elective in Div. A, C, or D
- 3 Gen. educ. elective in Div. A, C, or D
- 3 Gen. educ. elective in Div. A, C, or D

### Freshman Year

Second semester: 17 credits

- 3 ECN 123 Elements of Economics
- 1 EGR 102 Basic Graphics or EGR 101 Introd. to Engineering
- 3 MTH 142 Intermed. Calculus with Anal. Geometry
- 3 MCE 162 Statics
- 4 PHY 213, 285 Elem. Physics
- 3 Gen. educ. elective in Div. A, C, or D

### Sophomore Year

First semester: 17 credits

- 3 CVE 220 Mechanicis of Materials
- 3 MTH 243 Calculus and Anal. Geometry of Several Variables
- 1 MCE 212 Mechanical Engr. Lab. I



- 3 MCE 263 Dynamics
- 4 PHY 214, 286 Elem. Physics
- 3 Gen. educ. elective in Div. A, C, or D

#### Sophomore Year

Second semester: 18 credits

- 3 ELE 220 Elec. Circuits, Measurem. and Electronics
- 3 MTH 244 Differential Equations
- 3 MCE 323 Kinematics
- 3 PHY 341 Modern Physics
- 3 Gen. educ. elective in Div. A, C, or D
- 3 Gen. educ. elective in Div. A, C, or D

#### Junior Year

First semester: 16 credits

- 3 CHE 333 Engr. Materials
- 3 ELE 221 Electronic Instrum. and Electromech. Devices
- 1 MCE 313 Mechanical Engr. Lab. II
- 3 MCE 341 Fundamentals of Thermodynamics
- 3 MCE 372 Engr. Analysis I
- 3 Gen. educ. elective in Div. A, C, or D

#### Junior Year

Second semester: 16 credits

- 3 IDE 404 Engineering Economy
- 1 MCE 314 Mechanical Engr. Lab. III
- 3 MCE 342 Mechanical Engr. Thermodynamics
- 3 MCE 354 Fluid Mechanics
- 3 MCE 366 Introd. to Systems Engineering
- 3 MCE 373 Engr. Analysis II

#### Senior Year

First semester: 17 credits

- 3 IDE 440 Manufacturing Processes
- 2 MCE 315 Mechanical Engr. Lab. IV
- 3 MCE 423 Design of Machine Elements
- 3 MCE 448 Heat and Mass Transfer
- 3 Professional elective<sup>10</sup>
- 3 Professional elective<sup>10</sup>

#### Senior Year

Second semester: 17 credits

- 2 MCE 316 Mechancial Engr. Lab. V
- 3 MCE 429 Comprehensive Design
- 3 Professional elective<sup>10</sup>
- 3 Professional elective<sup>10</sup>
- 3 Free elective
- 3 Free elective

This curriculum totals 135 credits.

## Ocean Engineering

**Chemical and Ocean Engineering.** Students enrolled in this curriculum will follow the program of study for chemical engineering (page 62) during the freshman, sophomore, and junior years. The concentration requires 131 credits.

#### Senior Year

First semester: 16 credits

- 2 CHE 349 Transfer Operations III
- 2 CHE 351 Plant Design and Economics<sup>11</sup>
- 3 CHE 403 Introd. to Ocean Engr. Processes I
- 3 CHE 464 Industr. Reaction Kinetics
- 3 OCG 401 Gen. Oceanography
- 3 Gen. educ. elective in Div. A, C, or D<sup>12</sup>

#### Senior Year

Second semester: 18 credits

- 3 CHE 352 Plant Design and Economics<sup>11</sup>
- 3 CHE 404 Introd. to Ocean Engr. Processes II
- 3 CHE 534 Corrosion and Corrosion Control
- 3 OCE 410 Basic Ocean Measurements
- 6 Gen. educ. electives in Div. A, C, or D<sup>12</sup>

**Mechanical and Ocean Engineering.** Students enrolled in this curriculum will follow the program of study for mechanical engineering and applied mechanics during the freshman, sophomore and junior years. This curriculum requires 129-130 credits. The senior year for the classess of 1979, 1980 and 1981 is shown below.

#### Senior Year

First semester: 18 credits

- 3 MCE 401 Introd. to Ocean Engr. Systems I
- 3 MCE 423 Design to Machine Elements
- 3 CHE 333 Engineering Materials
- 3 OCG 401 Gen. Oceanography
- 3 PHY 425 Acoustics
- 3 Ocean-related elective<sup>13</sup>

#### Senior Year

Second semester: 15 credits

- 3 MCE 402 Introd. to Ocean Engr. Systems II
- 3 OCE 410 Basic Ocean Measurements
- 3 Gen. educ. elective in Div. A, C, or D
- 3 Ocean-related engineering or science elective<sup>13</sup>
- 3 Free elective

<sup>11</sup>CHE 351, 352 will include applications to ocean engineering problems for students selecting the Chemical and Ocean Engineering Program.

<sup>12</sup>In order to meet accreditation requirements, these courses, together with at least 18 credits of the Division A, C, or D electives, must be chosen from a group approved by the department, with the approval of the adviser designated by the department.

<sup>13</sup>The ocean-related electives are chosen by the student in consultation with the adviser.

<sup>10</sup>In order to meet accreditation requirements established by the Engineers' Council for Professional Development, these courses together with at least 18 credits of the Division A, C or D electives must be chosen from a group approved by the department with the approval of the adviser designated by the department.

## Urban Affairs

The curriculum in Urban Engineering is part of the interdisciplinary Urban Affairs Program (see page 11). It is designed to prepare students for systems-oriented activities in the analysis and solution of urban problems. Beginning with core work in mathematics, physics, chemistry and zoology, the curriculum includes computer science, ecology, systems engineering and operations research, as well as work in the social sciences and humanities which provide a general understanding of contemporary urban society. The curriculum includes a summer internship at the end of the junior year and a senior seminar which brings together students in urban affairs concentrations from all parts of the University.

Students who wish to major in this curriculum should consult the appropriate member of the Urban Affairs Program Coordinating Committee (listed on page 198) for assistance in the formulation and approval of their curriculums.

The concentration requires 126 credits.

### Freshman Year

First semester: 14 credits

- 3 CHM 103 Introd. Chemistry
- 1 CHE 105 Chemistry Lab.
- 3 ECN 123 Elements of Economics
- 1 EGR 102 Graphics
- 3 MTH 141 Introd. Calculus
- 3 General education elective (A)

### Freshman Year

Second semester: 17 credits

- 4 CHE 124 Organic Chemistry
- 3 MCE 162 Statics
- 3 MTH 142 Intermediate Calculus
- 3 PHY 213 Elementary Physics
- 1 PHY 285 Physics Lab.
- 3 General education elective (A)

### Sophomore Year

First semester: 17 credits

- 3 MTH 243 Calculus
- 3 PHY 214 Elementary Physics
- 1 PHY 286 Physics Lab.
- 3 URB 210 Introd. to Urban Affairs<sup>14</sup>
- 4 ZOO 111 General Zoology
- 3 General education elective (A)

### Sophomore Year

Second semester: 15 credits

- 3 CSC 201 Introd. to Computing
- 3 CVE 220 Mechanics of Materials
- 3 MTH 244 Differential Equations
- 3 SOC 202 General sociology
- 3 ZOO 242 Human Physiology

### Junior Year

First semester: 15 credits

- 3 CHE 333 Engineering Materials
- 3 CPL 410 Urban Planning<sup>14</sup>
- 3 MCE 372 Engineering Analysis I
- 3 MCE 341 Thermodynamics or PHY 420 Introd. to Thermodynamics
- 3 ZOO 262 Introductory Ecology

### Junior Year

Second semester: 15 credits

- 3 ACC 201 Accounting
- 3 ART 284 Architectural History
- 3 ECN 402 Urban Economics<sup>14</sup>
- 3 MCE 366 Introd. to Systems Engineering
- 3 SOC 434 Urban Sociology<sup>14</sup>

### Senior Year

First semester: 18 credits

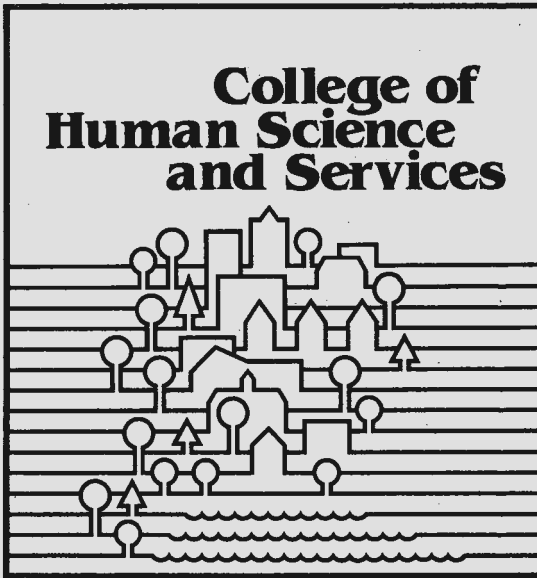
- 3 CVE 346 Transportation Engr.
- 3 IDE 432 Operations Research I
- 3 URB 398 Urban Seminar<sup>14</sup>
- 3 Professional elective
- 3 Professional elective
- 3 Free elective

### Senior Year

Second semester: 15 credits

- 3 CVE 374 Environmental Engr. I
- 3 IDE 433 Operations Research II
- 3 Professional elective
- 3 Professional elective
- 3 Free elective

<sup>14</sup>Urban core course.



Barbara E. Brittingham, *Acting Dean*

The mission of this College is to identify and create knowledge about the human problems of individuals and groups resulting from encounters with changing physical, social, intellectual, and philosophical environments, and to prepare professionals who are competent to prevent, solve, and cope with these problems.

The College which opened on July 1, 1978, offers undergraduate programs in home economics, education, and physical education. Students are encouraged to maintain close contact with their advisers in order to be informed of new curriculums and course options as they develop.

The College now offers curriculums leading to a Bachelor of Arts degree in Education to students who enroll at the University by the fall semester of 1978. Students seeking to enroll in the University after fall semester of 1978 to pursue a concentration in education should contact the Admissions Office for current materials about the concentration.

Also currently offered in the College are curriculums leading to 1) a bachelor of science degree with concentration in physical education and 2) a bachelor of science degree in home economics with concentrations in: child development and family relations; general home economics; home economics education; home economics in the urban environment; and textiles, clothing and related art.

The curriculums in all Home Economics programs are arranged in three groups. Group I includes general education courses. Group II includes required home economics courses, and Group III includes courses required for major emphasis.

## General Education

All students in the College of Human Science and Services are required to select and pass 45 credits of general education.

**Education** — Students who enroll during the fall semester, 1978, to complete a concentration in education leading to the B.A. degree, should follow the distributional requirements for the College of Arts and Sciences. (See page 34).

**Home Economics - Group I** — Concentrations in child development and family relations; general home economics; home economics education; home economics in the urban environment; and textiles, clothing and related art. Students should consult the general education listings at the beginning of the *Undergraduate Bulletin*. (See page 10). Specific requirements of the Home Economics curriculums in each division are listed below:

### Division A (18, 15, or 12 credits)

One course in art, music or theatre; one course in literature.

### Division B (18, 15, or 12 credits)

One course in biological sciences or chemistry.

### Division C (18, 15, or 12 credits)

One course in economics and two courses in psychology and/or sociology.

### Division D

No specific requirements.

**Physical Education** — Students in physical education should consult the distribution requirements for the College of Arts and Sciences. (See page 34). Within that framework students should complete the requirements as listed below:

### Division A (12, 15, or 18 credits)

No specific requirements, except as noted on page 34.

### Division B (15-18 credits)

Biology 101, Biology 102, Zoology 242, Zoology 343, and 3 credits of chemistry or physics.

### Division C (12, 15, or 18 credits)

Psychology 113, Psychology 232, Education 312.

### Division D (3, 6, or 9 credits)

Speech 101 or 102.

**Credits Required for Graduation:** The total number of credits required for graduation in each curriculum is: education, 120; physical education, 130; home economics, 128.

## Child Development and Family Relations

The Department of Child Development and Family Relations offers a curriculum leading to the bachelor of science (B.S.) degree. The master of science (M.S.) degree also offered by the department is described in the *Graduate School Bulletin*.

**Faculty:** Professor Fitzelle, *chairman*. Professor Cohen; Associate Professors Greene, Lapin, Rae and Spence; Assistant Professors Blackman, Blood, Cooper, Darnley, Kohut, K. Schroeder and L.S. Votta; Instructor Frank; Adjunct Professor Guthrie; Adjunct Assistant Professors C. Kowlaski and Mosher.

This curriculum provides a general background for work with children and families, building on the Home Economics Core (Group II) and in conjunction with the 29 elective credits necessary to complete the total of 128 credits required for graduation. Courses in Group II not chosen to fulfill the core requirements should be considered for inclusion among the elective credits.

Most professions that deal with children and families require academic work beyond the bachelor's degree for continuing professional work and advancement. Individuals with a baccalaureate degree are employed as preprofessionals, however, in nursery schools, day care centers, institutions and hospitals for children, recreational, child guidance, case work and other community agencies. Similarly, some of the courses in the curriculum, plus certain others in education, meet the requirements for the Provisional Nursery-Kindergarten Certificate in Rhode Island. The Professional Certificate requires successful teaching experience for five years and additional academic work.

**Group II Home Economics Core, 12 credits.** Students are required to select and pass one course in each of the following areas: CDF 150, 200 or 355; FSN 101, 207 or 237; HMG 210, 320 or 340; TXC 103 or 224.

**Group III.** If not taken to meet Group II requirements, the following courses are required: CDF 150, 200, 270, 340, 355, 390, 400, 450, 302 or 403 or 406; in addition, 18 credits in Home Economics or related areas subject to the approval of the department, with a maximum of 6 credits in any one area outside Home Economics, EDC 484 and CDF 375 may not be used.

Students who wish to meet the requirements for the Provisional Nursery-Kindergarten Certificate in Rhode Island must take the following courses in addition to Group III: EDC 102 and 312, 484, and 485; CDF 330 and 370. The sequence of courses is

extremely important since placements for student teaching will be during the fall semester only. Students interested in certification must apply by their third semester. It is suggested that they see their University College adviser as early as possible in their program.

Students interested in preparation for work in agencies serving individuals or groups with special needs should take CDF 375. Applications should be made at the end of the fourth semester for permission to take the course and to plan a program of courses with their adviser that will include electives appropriate to choice of field work.

## Education

The Department of Education offers a bachelor of arts (B.A.) degree in teacher education. The master of arts (M.A.) degree programs in education are described in the *Graduate School Bulletin*.

**Faculty:** Professor MacMillan, *chairman*. Professors Heisler, McGuire, Nally, Purnell, Russo; Associate Professors Allen, Brittingham, Bumpus, Calabro, Croasdale, Gunning, Kellogg, W. Kelly, Long, Maynard, McKinney, Nagel, Nelson, Pascale, Schaffran, Soderberg, Willis; Assistant Professors DiBiasio, Farstrup, Greene, Griesemer, Horwitz, Morton, Sullivan, Whitcomb; Instructor Boulmetis; Adjunct Professors Bromley, Crafts, Gross, Jones, Knott, Lucietto, McCreight and Shontz.

The curriculums in elementary and secondary teacher education offer a balanced program of academic preparation and professional training. The required professional courses contribute directly both to teaching skills and to the teacher's function in carrying out the role of the school in society and lead to a certificate to teach. In both curriculums, students must complete PSY 113 and 232.

The department also offers sufficient courses to allow a student to complete an area of interest. Students should consult the department chairman or an education adviser in University College.

The following courses are required in the professional sequence: EDC 102 or 103 (3), 312 or 313 (3), 372 (3), 484 (12) and 485 (3).

In addition, secondary education students will take EDC 430; elementary education students will take EDC 424, 427, 428 and Music 329.

All students in education will, in cooperation with their advisers, develop a 27-30 credit sequence of courses to meet the teacher certification requirement for competence in a subject area. Students may apply to the department from University College upon completion of their third semester or after 45 credits, whichever is later. University College students should consult with the education adviser as early as possible for further in-

formation, since spaces in programs are limited.

After admission to the department, all students must maintain an average of at least 2.20, and attain a grade of at least C in EDC 430 or 427 and 428 to be eligible for student teaching. Failure to meet these two conditions will lead to automatic dismissal from the program.

## General Home Economics

The curriculum in general home economics leads to the bachelor of science (B.S.) degree. It provides for general education in all areas of home economics combined with a professional concentration selected by the student. Professional concentrations would prepare students for fields such as community agency work, consumer affairs, home economics extension, home economics in business, home economics journalism, and home economics in the urban environment.

**Group II Home Economics Core, 12 credits.** Students are required to select and pass one course in each of the following areas: CDF 150, 200 or 355; FSN 101, 207 or 237; HMG 210, 320 or 340; TXC 103 or 224.

**Group III.** If not taken to meet Group II requirements, the following courses are required: CDF 220, 340, 355; FSN 101, 207, elective; HMG 210, 320, 371; TXC 103, 216, 224; in addition, the student is required to take at least 15 credits for professional concentration designed to meet his/her professional goals (adviser approval required).

## Home Economics Education

The Department of Home Economics Education offers a curriculum leading to a bachelor of science (B.S.) degree. The master of science (M.S.) degree is also offered by the Department (see *Graduate School Bulletin*).

**Faculty:** Professor P.S. Kelly, *chairman*. Associate Professors MacKenzie and May; Assistant Professor Kalymun.

The Home Economics Education curriculum, open to both men and women, provides the following options:

**Option I: Teacher Certification.** This program meets the state of Rhode Island requirements for certification (K-12) and also meets the Interstate Certification Compact which allows certification reciprocity with 31 states. The student teaching experience in the public schools (as well as additional field experiences) is included in the program during the senior year.

**Option II: Non-Teacher Certification.** This program prepares individuals to teach and direct educational activities in settings such as business, community agencies, adult programs, and home economics cooperative extension. An eight-credit, eight-week intern experience is included in the program during the senior year.

**Group II Home Economics Core, 12 credits.** Students are required to select and pass one course in each of the following areas: CDF 150, 200 or 355; FSN 101, 207 or 237; HMG 210, 320 or 340; TXC 103 or 224.

**Group III.** If not taken to meet Group II requirements, the following courses are required: CDF 200, 355, elective; EDC 102 or 403 or 407, 312; EDC 484 or HED 483; HED 334, 337, EDC/HED elective; FSN 101, 207, 221; HMG 320, 340, elective; TXC 103, 216, 305 or its equivalent.

## Home Management

The Department of Home Management does not offer a curriculum but does provide courses for students in other curriculums in the College of Human Science and Services.

**Faculty:** Assistant Professor Noring, *chairman*. Assistant Professors Christner and Lown.

## Physical Education, Health and Recreation

The Department of Physical Education offers the bachelor of science (B.S.) degree. The master of science (M.S.) program in physical education is described in the *Graduate School Bulletin*.

**Faculty:** Professor Reid, *chairman*. Professors Massey and Nedwidek; Associate Professors Bloomquist, Calverley, Clegg, Cohen, Crooker, DelSanto, Leathers, Maack, Mandell, O'Donnell, O'Leary, Piez, Polidoro, Robinson, Sherman, Sonstroem and Zarchen; Assistant Professors Falk, Henni, Norris and Seleen; special Instructors Lord, Marsden and McAniff.

The curriculum is designed for students who wish to teach health and physical education at the elementary or secondary school level. It allows a broad exploration of subject area, but is flexible enough to provide areas of emphasis in (1) elementary physical education, (2) secondary physical education, (3) athletic coaching, (4) health education and (5) athletic training. Students not desiring to pursue an emphasis area will fulfill requirements of the general program of studies. Completion of the degree program fulfills the require-

ments for teacher certification in the state of Rhode Island.

Students may also fulfill state certification requirements for an academic subject ordinarily taught in secondary schools through proper selection of free electives.

Students must purchase a uniform for student teaching as prescribed by the department, prior to the second semester of the sophomore year.

The following courses are required: HLT 123 (3), PED 270 (3), HLT 172 (1)<sup>1</sup>, PED 369 (3), 370 (3), 380 (3), 410 (3), 314 (3) or HLT 356 (3)<sup>2</sup>, PED 295 (3), Physical Activity Practicum (8) and Physical Education Emphasis Area (12).

The following non-physical education courses are also required: BIO 101 (3), 102 (3), Chemistry or Physics (3), ZOO 121 (4), 242 (3), 343 (3), PSY 113 (3), 232 (3), EDC 312 (3), SPE 101 (3) or 102 (3), EDC 484 (12) and 485 (3).

By the end of the sophomore year, the student may elect his or her specialization. After consulting with his or her faculty adviser and giving formal notification of intent to the department chairman, he or she may apply 12 credits of physical education to these specializations.

Students electing elementary physical education for emphasis must take PED 285 (2), 324 (2), 315 (1), 317 (1) and 6 credits from PED 351, 352 and 354.

Students electing secondary physical education for emphasis must take PED 285 (2), 324 (2), 315 (1), 317 (1) and 6 credits from PED 362, 364, 384, 386, 331 and REC 306.

Students electing health education for emphasis must take HLT 357 (3), 359 (3), 367 (3) and 3 credits from HLT 272, 358, 372 and PED 374.

Students electing athletic training for emphasis must take PED 243 (3), 343 (3), 344 (3), 345 (3), HLT 272 (2), 357 or 367 (3) and FSN 207 (3).

Students electing coaching for emphasis must take PED 243 (3), 363 (3), 315 (1), 317 (1) and 5 credits from PED 362, 364, 384 and 386.

Students who do not specialize in any of the above areas must complete a minimum of twelve credits of physical education including PED 285 (2), 324 (2), 315 (1), 317 (1) and 6 credits from any department course offerings excluding intercollegiate activities.

A total of 130 credits is required for graduation.

## Textiles, Clothing and Related Art

This department offers a curriculum leading to a bachelor of science (B.S.) degree. The master of science (M.S.) degree also offered by the department is described in the *Graduate School Bulletin*.

**Faculty:** Professor V.V. Carpenter, *chairman*. Associate Professors Helms and Weeden; Assistant Professors Avery, Higa and James; Instructors Ep-

pich and Perry; Curator Kaye; Adjunct Assistant Professor (Equivalent) Lundberg.

The curriculum is open to both men and women with ability and professional interest in the artistic and technical aspects of the subject. Programs of study can be arranged to prepare students for positions in merchandising of apparel and home furnishings, home sewing industry, museum education, consumer services and product development, textile marketing. Qualified students can prepare for graduate studies.

**Group II Home Economics Core, 12 credits.** Students are required to select and pass one course in each of the following areas: CDF 150, 200 or 355; FSN 101, 207 or 237; HMG 210, 320 or 340; TXC 103 or 224.

**Group III.** If not taken to meet Group II requirements, the following courses are required: TXC 103, 224, 216 or 327, 303<sup>3</sup>, 340 or 440, 390, 433, 9 credits TXC electives (6 credits must be upper level courses); in addition 18 credits, with at least 9 credits in any one area, must be selected in relation to specific professional options listed below.

*Textile Marketing and Fashion Merchandising.* Supporting courses in marketing or management.

*Textile Chemistry and Technology.* Programs in these areas are arranged in cooperation with the Philadelphia College of Textiles and Science.

*Textile Science.* Supporting courses in statistics, physics and chemistry.

*General TCRA Program.* Supporting areas are planned according to professional goals of students and may include courses in gerontology and family studies to qualify for work in clothing needs of the handicapped and the aged.

Specific options must be approved by the adviser.

## Textile Marketing

This curriculum leads to a bachelor of science (B.S.) degree. It combines the professional requirements of a concentration in Textiles and Clothing with the accreditation requirements of

<sup>1</sup>Not required of students pursuing coaching and athletic training emphasis.

<sup>2</sup>Required of students pursuing health education emphasis.

<sup>3</sup>CHM 124 is a prerequisite for TXC 303.

the College of Business Administration and is designed to prepare students for managerial positions in the textile industry. Students wishing to major in the curriculum should consult their department adviser.

The concentration requires 128 credits.

#### Freshman Year

First semester: 15 credits

MGS 101 (3) and 107 (3), CHM 101 or 103 (3), TXC 103 (3) Art elective in Division A (3).

#### Freshman Year

Second semester: 18 credits

MGS 102 (3), Speech elective in Division D (3), one elective in Division A (3), two psychology/sociology electives in Division C (6), FSN 101, 207 or 237 (3).

#### Sophomore Year

First semester: 18 credits

ACC 201 (3), BED 227 (3), CDF 150, 200 or 355 (3), ECN 125 (3), MGS 201 (3), one elective in Division A (3).

#### Sophomore Year

Second semester: 18 credits

ACC 202 (3), CHM 124 (3), ECN 126(3), HMG 320 (3), MGS 202 (3), TXC 224 (3).

#### Junior Year

First semester: 15 credits

FIN 321 (3), MGT 301 (3), MKT 323 (3), TXC 303 (3), TXC 340 or 440 (3).

#### Junior Year

Second semester: 15 credits

MGS 309 (3), MKT 462 (3), TXC 403 (3), one marketing elective (3), one professional elective (3).<sup>4</sup>

#### Senior Year

First semester: 14 credits

BSL 333 (3), one marketing elective (3), two TXC electives (5), one professional elective (3).<sup>4</sup>

#### Senior Year

Second semester: 15 credits

MGT 410 (3), MKT 464 (3), two marketing electives (6), TXC 433 (3).

## Urban Affairs

Home Economics in the Urban Environment adds an understanding of urban areas and their people to a student's preparation in a broad home

economics program. Students gain integrated understanding of families and their use of human and non-human resources to attain family goals, and the urban-related courses familiarize the students with the special needs of families in urban areas. Students with such a major might seek careers in urban cooperative extension, social welfare agencies or consumer protection agencies.

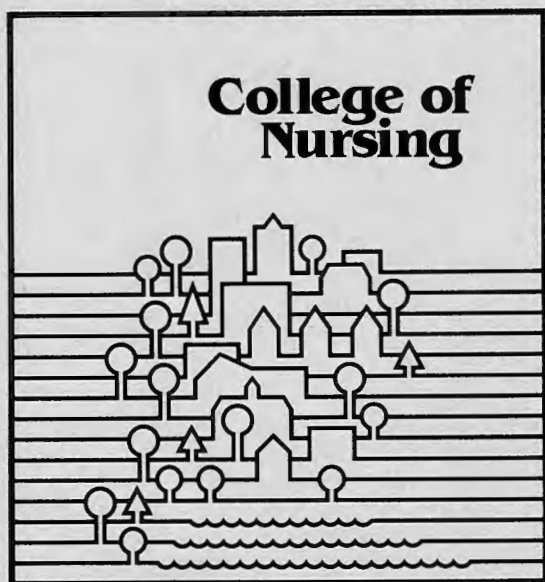
**Group II Home Economics Core 12 credits.** Students are required to select and pass one course in each of the following areas: CDF 150, 200 or 355; FSN 101, 207 or 237; HMG 210, 320 or 340; TXC 103 or 224.

**Group III.** Students are required to take the courses listed in Group III under General Home Economics. The requirement for 15 credits of professional electives is satisfied by the urban affairs common core, a requirement for students in all urban affairs curriculums. (See page 11 of *Undergraduate Bulletin*.)

**Group IV.** In addition to the courses listed under Groups I, II and III, students must take three urban-related courses from the following list or consult the adviser for others. Adviser consultation is recommended for choice of these courses.

CDF 250	Gerontology Theory and Application
CDF 375	Field Experience in Community Agencies
HED 491	Teaching Home Economics: Adults
HMG 401	Home Management of Deprived Families
HMG 420	Consumer Protection
HMG 470	Special Problems in Home Management
ADE 497	The Cooperative Extension Service
ADE 488	Methods and Materials for Adults and Extension Education
ECN 401	Poverty in the United States
HIS 344	History of North American Indians
HIS 346	Immigrant to Ethnic in Modern American History
HIS 347	Women in the Twentieth Century
PSC 221	State and Local Governments
PSC 288	The American Legal System
SOC 336	Social Stratification
SOC 340	Minority and Majority Relations
SOC 438	Aging in Society
SWF 311	Introduction to Social Work
SWF 313	Social Welfare Services
SWF 317	Social Work Methods

<sup>4</sup>This may be a textile elective, a marketing elective or an elective offered by another department in the College of Business Administration numbered 300 and above.



Barbara L. Tate, Dean

The College of Nursing offers a curriculum leading to the bachelor of science (B.S.) degree. The master of science (M.S.) degree also offered by the College is described in the *Graduate School Bulletin*.

*Faculty:* Professors Garner, Tate; Associate Professors Boucher, Castro, Cumberland, Del Papa, Hirsch, Houston, Kang, McElravy; Assistant Professors Barden, Bissell, DeCosta, Evans, Feather, Fortin, Haggerty, Hames, Joseph, Manfredi, Morgan, Munro, Nelson, O'Flynn-Comiskey, Pearson, Schwartz-Barcott, Smith, Waldman; Instructors Abbate, Byrnes, Grace, Halpin, Reimels, Risio, Ryan, Wanamaker, Wade.

The baccalaureate program is designed for men and women with academic, personal, and professional potential. It aims to develop mature, well-informed graduates who will take their places as responsible members of society in meeting the challenges of health care delivery and of continued learning.

The curriculum is based upon the belief that nursing is a creative behavior applied in the provision of human services for the promotion of health, prevention of illness, and care of the ill and that it is interdependent with all other disciplines concerned with health. Nursing knowledge is viewed as a unique synthesis drawn from the humanities, natural, biomedical and social sciences. The conceptual approach to nursing study incorporates the whole person and his environment, adaptation-level theory and nursing process.

Nursing courses include observation and clinical practice in numerous hospitals, community agencies, schools, nursing homes and physicians' offices throughout the state of Rhode Island.

There are three routes to admission to the College of Nursing baccalaureate program:

1) Students with no previous college of nursing study begin their preparation in University College with dual enrollment in the College of Nursing. After completion of 45-60 credits which must include required foundation courses with a minimum 2.0 quality point average, they may apply for confirmed admission to the College of Nursing. Priority is given to students with strong academic records and positive recommendations from faculty in introductory nursing courses.

2) Students with college study in another major or some nursing study in another baccalaureate program and a minimum of 45 completed credits, if accepted by the University, may be admitted directly.

3) Registered nurse students who have completed diploma or associate degree programs are not required to submit scholastic aptitude scores when seeking admission. As adult students who have developed a meaningful competence in basic subject areas, they may demonstrate their mastery by completing the College Level Examinations sponsored by the College Entrance Examination Board. Advanced credit allowances are based upon a review of the candidate's test scores and preparatory experience. Following direct admission to the College, students have the option of seeking credit by examination in subjects previously studied. They are required to enroll in some upper division nursing courses and to meet remaining program specifications.

The usual time for completion of all requirements for students with no previous college or nursing study is eight semesters and one summer session. All students in the College of Nursing meet all of the general education requirements of the University as listed on page 10. A minimal grade of C must be achieved in all required nursing courses. The faculty reserves the right to require withdrawal from the College of a student who gives evidence academically and/or personally of inability to carry out professional responsibility in nursing. The student is limited to 18 credits per semester except by permission of the Dean for special program adjustments or for participation in the Honors Program.

General expenses for students in the College of Nursing are approximately the same as of all other University students. Special items include uniforms, nursing equipment, transportation and one summer session. The use of an automobile or funds to meet public transportation costs is required during the semester of community health nursing experience, and can facilitate broadened



opportunities for experience in all courses.

The program is approved by the National League for Nursing and the Rhode Island Board of Nurse Registration and Nursing Education. The graduate is eligible for examination for professional licensure.

## Curriculum Requirements

**Foundation Courses.** The following are required before transfer from University College: CHM 103, 105, 124 (8 cr.), MIC 201 (4), NUR 101<sup>1</sup> (2), PHC 225 (2), PSY 113 (3), ZOO 121, 242, 244 (8).

The following are required before beginning the nursing major and therefore are recommended during the first two years: FNS 207 (3 cr.), NUR 220<sup>1</sup> (4), PSY 232 or CDF 200 (3), PHY 102 (3), SOC 202 (3), communication electives in Division D (6).

### Freshman Year

First semester: 14 credits

- 3 CHM 103 Introd. Chemistry
- 1 CHM 105 Introd. Chemistry Lab. or
- 3 CHM 101 General Chemistry
- 1 CHM 102 General Chemistry Lab.
- 3 ENG 110 Composition
- 3 SOC 202 General Sociology
- 4 ZOO 121 Human Anatomy

### Freshman Year

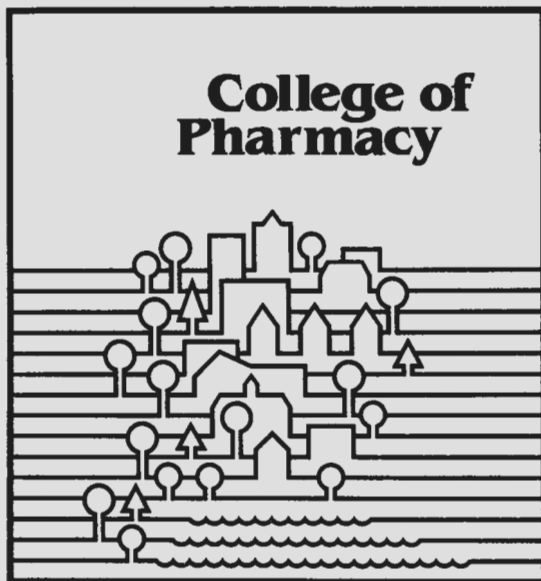
Second semester: 16 credits

- 4 CHM 124 Organic Chemistry
- 3 PHL 101 Logic: The Principles of Reasoning
- 2 NUR 101 Introd. to Nursing
- 3 PSY 113 General Psychology
- 3 ZOO 242 Human Physiology
- 1 ZOO 244 Human Physiology Lab.

**Nursing Major Courses.** The following are required for the nursing concentration: NUR 231 (6), 232 (4), PCL 226 (3), NUR 301 (7), 302 (4), 311 (3), 312 (3), 321 (3), 322 (4), 333 (5), 334 (5), 335 (2), 350 (2).

**General Education and Free Electives.** The following may be distributed throughout the program: general education electives in Division A (9-15 cr.), in Division C (9-15 which must include 6 credits from restricted list), free electives (10).

A total of 128 credits is required.



Heber W. Youngken, Jr., Dean

The College of Pharmacy offers a five-year curriculum leading to the bachelor of science (B.S.) degree in pharmacy and a special curriculum leading to the bachelor of science (B.S.) degree in respiratory (ventilation) therapy. The master of science (M.S.) degree, offered by all departments; the doctor of philosophy (Ph.D.) degree in pharmaceutical sciences, offered by all departments except Pharmacy Administration, and the master of science (M.S.) degree in environmental health sciences are described in the *Graduate School Bulletin*.

## Pharmacy

This five-year curriculum is patterned on presently accepted programs of study recommended by the American Association of Colleges of Pharmacy, the American Council on Pharmaceutical Education and other interested organizations. It is accredited by the American Council on Pharmaceutical Education and by the University of the State of New York, Division of Professional Education.

It provides preparation for community and institutional pharmacy practice. In addition, students have opportunities through the selection of professional electives to commence a specialization in one of several areas of pharmacy, including hospital, clinical, manufacturing, medical supply servicing, drug analysis, administration and research.

<sup>1</sup>Registered nurse students take NUR 211 (3 cr.) and free electives in place of NUR 101 and 220.

The satisfactory completion of the degree in pharmacy is one of the prerequisites for a license to practice pharmacy. Licensure is obtained after graduation by successfully completing the examination given by the Rhode Island State Board of Pharmacy or those of other states. In preparation for this, students are encouraged to participate in externship or internship programs.

As of September 1978, all students requesting transfer from the University College to the College of Pharmacy at the University of Rhode Island, must have at least a 2.0 overall quality point average in those basic science courses required for transfer; viz., at the end of three semesters BIO 101 and 102; CHM 101, 102, 112, 114 and 227; MTH 141; PHY 109; at the end of four semesters the foregoing courses plus CHM 226 and 228; MIC 201; ZOO 121 (or equivalent courses, where permitted).

A quality point average of 2.0 in all required professional courses given by the College of Pharmacy is required for graduation with a B.S. degree in pharmacy. This is in addition to University grade requirements.

Students in certain other New England states may enroll in pharmacy under the New England Regional Student Program. See page 20.

**Medicinal Chemistry Faculty:** Professor C.I. Smith, *chairman*. Professors Modest and Turcotte; Associate Professor Abushanab; Assistant Professor Panzica.

**Pharmacognosy Faculty:** Professor Worthen, *chairman*. Professors Cannon, Nakanishi, Shimizu and Youngken.

**Pharmacology and Toxicology Faculty:** Professor DeFeo, *chairman*. Professors Calabresi, DeFanti, Fuller, Karkalas and Lal; Associate Professors Cardinale, Carlson, Kaplan, Lundgren, Pogacar, Smith, Swonger and Vidins; Assistant Professors Carroll, Miller and Verrier; Lecturer Yashar.

**Pharmacy Faculty:** Professor Rhodes, *chairman*. Professors Carlin, Guthrie, Osborne and Paruta; Associate Professors Lausier and Schwartz; Assistant Professors Greene, Kaufman, Kellenberger, Marr, Mattea, Millette, Moleski and Snodgrass; Instructors Auger, Birmingham, Cotnoir, Fisher, Gibson, Haspela, Holm, Jordan, King, Lancaster, Measley, Murphy, Panaggio and Wellins.

**Pharmacy Administration Faculty:** Professor Campbell, *chairman*. Professor Vitello; Assistant Professor Curtiss, Instructor Shepherd; Special Lecturer Hachadorian.

## CURRICULUM REQUIREMENTS

The five-year program for all accredited colleges of pharmacy provides time for the general education requirements as described on page 10. The

major portion of the professional program begins in the third year when basic pharmaceutical and clinical disciplines are introduced.

Each year the curriculum is supplemented by field trips to selected pharmaceutical industries. Students also make use of selected hospital and community pharmacies in Rhode Island and New England for clinical studies and internship requirements.

A concentration in pharmacy requires 161 credits.

### First Year

First semester: 15 credits

- 3 ENG 110 Composition
- 3 BIO 101 Biology of Plants or BIO 102 Gen. Animal Biology
- 3 CHM 101 Gen. Chemistry I
- 1 CHM 102 Lab. for Chemistry 101
- 2 HLT 272 Advanced First Aid
- 3 Elective

### First Year

Second semester: 16 credits

- 3 ENG 120 Literature & Composition or SPE 201 Interpersonal Communication
- 3 MTH 141 Introd. Calculus Problem Solv. Lab.
- 3 CHM 112 Gen. Chemistry II
- 1 CHM 114 Lab. for Chemistry 112
- 3 BIO 101 Biology of Plants or BIO 102 Gen. Animal Biology
- 3 Elective

### Second Year

First semester: 17 credits

- 4 MIC 201 Introd. Med. Microbiology
- 3 CHM 227 Organic Chemistry Lecture
- 4 PHY 109 Introd. to Physics or PHY 111 Gen. Physics
- 3 ECN 123 Elements of Economics or ECN 125 Econ. Principles
- 3 Elective

### Second Year

Second semester: 15 credits

- 3 CHM 228 Organic Chemistry Lect. II
- 2 CHM 226 Organic Chemistry Lab.
- 4 ZOO 121 Human Anatomy
- 3 ACC 305 Accounting Principles or CSC 201 Introd. to Computing I
- 3 Elective

### Third Year

First semester: 17 credits

- 4 PHC 333 Gen. Pharmacy
- 3 BCP 311 Introd. Biochemistry
- 3 PAD 349 Pharm. Admin. Principles
- 3 ZOO 242 Introd. Human Physiology
- 1 ZOO 244 Introd. Human Physiol. Lab.
- 3 MCH 342 Pharmaceutical Analysis or elective

**Third Year**

Second semester: 18 credits

- 4 PCL 338 Pharmacol. & Biopharmaceutics
- 3 PAD 351 Pharmaceut. Law & Ethics
- 2 PHC 371 Introd. to Clinical Pharm.
- 3 APA 401 Introd. to Pathology
- 3 MCH 342 Pharmaceutical Analysis or elective
- 3 Elective

**Fourth Year**

First semester: 17 credits

- 3 MCH 443 Organic Medic. Chemistry
- 4 PCL 441 Gen. Pharmacology
- 1 PCL 443 Gen. Pharmacology Lab.
- 3 PCG 445 Gen. Pharmacognosy
- 1 PCG 447 Gen. Pharmacognosy Lab.
- 3 PHC 345 Pharmaceutical Technology
- 2 PHC 451 Pharmacotherapeutics I

**Fourth Year**

Second semester: 17 credits

- 3 MCH 444 Organic Medic. Chemistry
- 4 PCL 442 Gen. Pharmacology
- 1 PCL 444 Gen. Pharmacology Lab.
- 4 PHC 346 Dose Form Technology
- 3 PCG 446 Gen. Pharmacognosy
- 2 PHC 452 Pharmacotherapeutics II

**Fifth Year**

First semester: 17 credits

- 4 PHC 385 Pharmacy Practicum
- 1 PHC 386 Pharmacy Practicum Lab.
- 3 PCG 459 Public Health
- 9 Electives

**Fifth Year**

Second semester: 12 elective credits

- 6 PHC 390 Pharmacy Practice Externship
- 6 PHC 490 Clinical Pharmacy Clerkship

an associate degree.

The student program at the University of Rhode Island includes one of three areas of concentration — basic sciences (research), education or administration.

**University of Rhode Island Curriculum.** 63 credits. (Entrance with third-year standing.)

**Junior Year**

First semester: 16 credits

- 4 CHM 124 Organic Chemistry
- 3 MTH 141 Introd. Calculus with Anal. Geometry
- 3 SOC 202 Gen. Sociology
- 6 Electives<sup>1</sup>

**Junior Year**

Second semester: 15 credits

- 3 APA 401 Introd. to Pathology
- 3 CSC 201 Introd. to Computing I
- 3 MGT 300 Personnel Administration or MGT 301 Fundamentals of Management
- 6 Electives<sup>1</sup>

**Senior Year**

First semester: 17 credits

- 3 BCP 311 Introd. Biochemistry
- 2 PHC 225 Pharmaceut. Calculations
- 3 SOC 324 Medical Sociology
- 3 EDC 312 The Psychology of Learning
- 6 Electives<sup>2</sup>

**Senior Year**

Second semester: 15 credits

- 3 ELE 300 Elec. Instrumentation for Biol. & Health Sci.
- 3 PCL 226 Pharmacology and Therapeutics
- 3 EDC 430 Methods & Materials in Sec. Teaching
- 6 Electives<sup>2</sup>

## Respiratory Therapy

The program in respiratory therapy prepares students for an allied health specialty related to the management of respiratory disease. The respiratory therapist works with the physician, pharmacist, nurse, and other specialists in a hospital or institutional environment where multiple responsibilities are necessary in the care of patients.

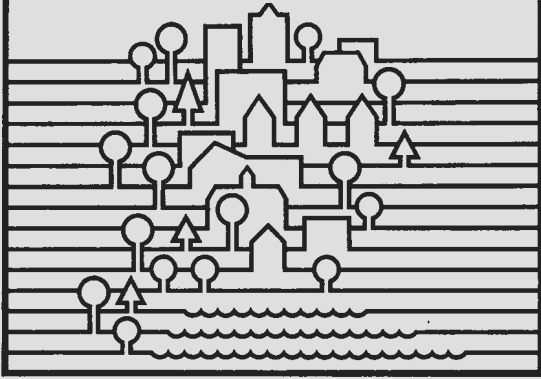
### CURRICULUM REQUIREMENTS

To qualify for the bachelor of science program in respiratory therapy, students must complete a two-year program in respiratory therapy including clinical work. This may be carried out in the Rhode Island Junior College and Rhode Island Hospital course or an equivalent community college with a clinical program in respiratory therapy leading to

<sup>1</sup>Electives will be selected from the areas of basic sciences, education or administration.

<sup>2</sup>Electives may include RTH 499, Special Problems in Respiratory Therapy and/or the sciences upon approval of the faculty committee.

## College of Resource Development



Gerald A. Donovan, *Dean*  
Albert L. Owens, *Director of Resident Instruction*

The College of Resource Development provides four-year curriculums in animal science, plant science, food science and technology, nutrition and dietetics, natural resources, agricultural and resource technology, and urban affairs leading to the bachelor of science (B.S.) degree. It also offers a two-year program in fisheries and marine technology leading to the associate in science (A.S.) degree. These curriculums are administered by the Director of Resident Instruction working directly with the college faculty.

The activities of the Resource Development faculty differ from those of the other colleges in that most appointments carry joint responsibility for the formal research programs of the Agricultural Experiment Station and Cooperative Extension Service, in addition to the graduate and undergraduate teaching.

The departmental organization of the faculty reflects the discipline orientation of the research programs. Graduate programs leading to the master of science (M.S.) degree are offered by most departments and some programs lead to the doctor of philosophy (Ph.D.) degree. The master of community planning (M.C.P.) degree is offered by the Department of Community Planning and Area Development. These are described in the *Graduate School Bulletin*.

**Animal Pathology Faculty:** Professor V.J. Yates, *chairman*. Professor Chang; Associate Professor Wolke; Assistant Professor Dunn; Special Lecturer Brown; Adjunct Professors Dardiri, Liu and Walsh.

**Animal Science Faculty:** Associate Professor R.I. Millar, *chairman*. Professors Donovan, Durfee, Meade and Smith; Associate Professors Henderson and Hinkson; Assistant Professors Gray, Gross and Nippo.

**Community Planning and Area Development Faculty:** Associate Professor J.J. Kupa, *director*. Professor Hammerschlag; Associate Professors Brooks, Feld, Foster and Mahayni; Adjunct Professor Barber, Hoffman, Schneider and Thomas.

**Fisheries and Marine Technology Faculty:** Captain G.A. Motte, *chairman*. Professor Sainsbury; Associate Professors Merriam and Motte; Assistant Professor Hillier; Instructors Gamache, Merdinyan, Mortimer, Stout and Wing.

**Food Science & Technology, Nutrition and Dietetics Faculty:** Associate Professor J.A. Bergan, *chairman*. Professors Chichester, Constantinides, Cosgrove, Dymysz, Felbeck, Olney, Rand and Simpson; Associate Professors Barnett, Brown, Eshelman, Goshdigian and Lee; Assistant Professors Caldwell, Gilbert and Patel; Adjunct Professors Coduri, Darby, Miller, Silverman and Zarogian.

**Forestry and Wildlife Management Faculty:** Associate Professor W.P. Gould, *chairman*. Professor Patric; Associate Professor Brown; Assistant Professors Golet and Husband.

**Plant Pathology-Entomology Faculty:** Professor R.W. Traxler, *chairman*. Professors Beckman, Jackson and Mueller; Assistant Professors Casagrande, Englander, LeBrun and D. Wallace; Adjunct Professors Kaplan and Tarzwell.

**Plant and Soil Science Faculty:** Professor W.E. Larmie, *chairman*. Professors Hindle, McGuire, Roberts, Skogley and Wakefield; Associate Professors Duff, Dunnington, Hull, Jagshitz, Krul, McKiel, Pearson, Shaw, Sheehan and Wilson; Assistant Professors Gough and Wright.

**Resource Economics Faculty:** Associate Professor D.L. Hueth, *chairman*. Professors Dirlam, Holmsen, Lampe, Owens, Rorholm and Spaulding; Associate Professors Gates, Grigalunas, W. Wallace and Weaver; Assistant Professors Bockstael, McConnell and Sutinen; Adjunct Professors Cummings and Dunham.

**Resource Development Education Faculty:** Associate Professor D.E. McCreight, *director*. Professors Bromley and Shontz; Assistant Professor Jones.

### Bachelor of Science Curriculums

All four-year curriculums offered by the College demand a total of 130 credits and contain four

categories of requirements: basic core, concentration, directed electives and free electives.

Consistent with the University's commitment to a general education philosophy, the basic core guidelines insure an exposure at low levels across the natural sciences, mathematics, social sciences, humanities and communication skills. Course experience common to all curriculums is summarized below. Additional basic core requirements of the several curriculums are included in the following curriculum statements, and represent an effort to communicate background experience essential to professional objectives or an extension of the general education philosophy.

The credits assigned to the concentration and directed elective categories are used by the student, in close conjunction with his or her faculty adviser, to develop an individualized program of study containing the desired depth and breadth in one or more disciplines consistent with career interests. By requiring the 24 concentration credits at the 300 level or above, a high quality program is assured. The block of free electives gives the student freedom to explore areas widely separated from his or her principal interest.

With the exception of certified programs in food science and in dietetics, all curriculums are characterized by a minimum of structure. This is a realistic recognition, on the one hand, that entering students vary widely in the degree of precision with which they have defined their educational goals. Many are still concerned with discovering their real aptitudes and interests, and use their undergraduate programs to this end. Those with precise professional objectives have no difficulty in shaping their programs to meet their particular needs. On the other hand the flexibility provided forces the student to play an important and continuing role in the direction and development of his or her program.

**Common Basic Core Requirements.** All curriculums contain the following commonality in their basic core course selections: 6-8 credits in animal and plant biology, 8 credits in general chemistry and/or other physical sciences; 3 credits in mathematics, 9-12 credits in the social sciences, 9-12 credits in the humanities and 6 credits in communication skills.

**Natural Resources.** Students in this curriculum share a common concern over the complex problems associated with man's use or misuse of the nation's natural resources, and are preparing to play some role in their resolution. They are developing programs that vary from preparation for graduate programs in marine biology, oceanography, fisheries biology, wildlife management and resource economics to more technically oriented positions in the management and conservation of our soil, water, mineral, energy, forest, fisheries and marine resources.

Additional basic core requirements, include RDV 100, 101, 300 and a course each in organic chemistry, physics, earth science, soils, resource economics, political science and sociology.

**Animal Science.** This curriculum is designed for students who plan to continue their formal training in one of the diversity of disciplines in animal science including veterinary medicine, aquaculture, animal management, nutrition, physiology, pathology or applied genetics.

Additional basic core requirements include ASC 101, 102, a second course in general chemistry and a course each in organic chemistry, physics, physiology, genetics, microbiology, calculus and statistics.

**Plant Science.** This curriculum provides a framework within which students can develop a strong background in the basic and applied plant and related sciences. Most students are developing programs that prepare them for graduate study in fields such as plant protection, nutrition, breeding, physiology and pathology.

Additional basic core requirements include PLS 104, 105, 212, a second general chemistry course, a course in organic chemistry, a biochemistry or second organic chemistry course, a course each in earth science or physics, and a course in genetics, plant physiology, microbiology, algebra and statistics.

**Food Science and Technology.** The University of Rhode Island is officially recognized by the Institute of Food Technologists as offering a curriculum in Food Science and Technology. The curriculum is in this college, and students are advised by faculty of the food science & technology, nutrition and dietetics department.

Additional basic core requirements include the basic courses in nutrition and food science, microbiology, organic chemistry, biochemistry, physics, calculus and statistics. Information on specific program requirements may be obtained from the Office of Resident Instruction.

**Nutrition and Dietetics.** This curriculum is available to students with interests in the areas of nutritional science. In addition, students can, with proper advisement, include all of the coursework recommended by the American Dietetic Association.

Additional basic core requirements include nine credits of basic food science and nutrition courses, and courses in human physiology, microbiology and biochemistry.

**Agricultural and Resource Technology.** This curriculum is designed for students with career interests in the more practical or technical aspects of animal, plant and soil sciences, and consequently

does not require the depth in the basic sciences provided in the science curriculums. Students are developing programs of study in areas such as ornamental horticulture, turf management, fish culture, animal management, and soil conservation.

Additional basic core requirements include a course in genetics and four introductory courses from among those offered by the several departments of the College.

**Urban Affairs.** The curriculum in Resource Development in the Urban Environment is part of the interdisciplinary Urban Affairs Program (see page 11), and seeks to provide students with an understanding of how human and natural resources pertain to urban affairs. Training is oriented to provide students with a basis for work with government or private agencies concerned with problems related to natural resources in contemporary society.

Additional basic core requirements include one course in the physical or biological sciences and four introductory courses from those offered by the several departments in the College. Individual student programs are designed to meet the core and concentration requirements of both the College and the Urban Affairs program.

**Teacher Education.** Students with 36 or more credits in resource development course work can meet teacher certification requirements in Agri-Business and Natural Resources by including the following education courses in their undergraduate programs: EDC 102, PSY 113, EDC 312, RDE 444, EDC 484 (9-12 credits), RDE 486 (0-3 credits) EDC 485, and 9 credits in related mechanics courses. Students planning to include the teacher education requirements should enroll in the Agricultural and Resource Technology curriculum.

## Associate in Science Program

**Fisheries and Marine Technology.** This two-year program, leading to the associate in science degree, was designed in cooperation with commercial fishermen and federal and state agencies to provide a thorough training for students intending to enter any sphere of commercial fisheries or marine technology. The 72-credit curriculum provides fundamental knowledge of fishing; vessel operation, equipment, handling and navigation; fishing methods and gear; fishery business, economics, marketing and legislation; fish and their behavior.

Work on board ship, in the net loft, seamanship and navigation laboratories, engineering laboratory, and marine electronics and vessel technology

laboratories make up a good proportion of credit hours. Formal classes on the campus will provide a background in the social, biological and physical sciences, as well as the professional subjects of navigation, seamanship, fishing gear and methods, engineering, marine electronics and vessel technology. Laboratory work is conducted on board the training vessel and in the waterfront laboratories.

This program is available to students in all New England states under the New England Regional Program sponsored by NEBHE (see page 20).

*First semester: 19 credits*

ENG 113 (3), FMT 013 (2), 101 (3), 118 (3), MTH 109 (3), REN 135 (5).

*Second semester: 17 credits*

FMT 014 (1), 110 (4), 121 (3), 131 (3), SPE 101 (3), general education elective (3).

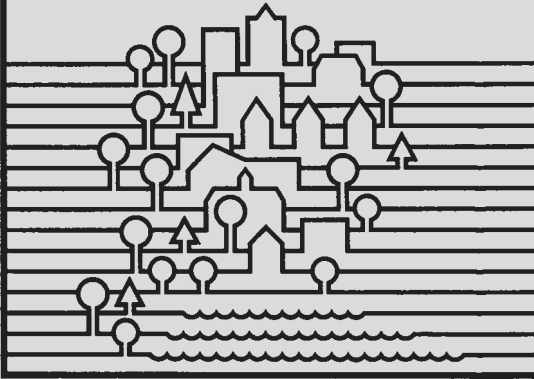
*Third semester: 18 credits*

FMT 235 (2), 241 (4), 261 (4), 281 (4), 293 (1), 351 (3).

*Fourth semester: 18 credits*

FMT 222 (3), 242 (4), 371 (4), 382 (4), 393 (3).

## Courses of Instruction



All permanent undergraduate courses offered at the University of Rhode Island are listed on the following pages by subject in alphabetical order. If any subject cannot be located readily, refer to the index. Courses numbered 001 to 099 are pre-freshman and special undergraduate courses and do not carry bachelor's degree credit. Those numbered 100 to 299 are lower division undergraduate courses and those numbered 300 to 399 are upper division undergraduate courses. The 400-level courses are generally limited to juniors and seniors majoring in a field, but open to other advanced undergraduates and to graduate students with permission.

The 500-level courses, listed in this bulletin by title line only, are graduate courses with a bachelor's degree usually prerequisite, but qualified seniors and honors students are admitted with permission. For a full description of these and courses at the 600- and 900-levels, see the *Graduate School Bulletin*.

Courses with two numbers, e.g. ACC 201, 202, indicate a year's sequence and the first course is either a prerequisite for the second or at least the two cannot be taken in reverse order without special permission. If a course is also offered by another department, this information appears following the course number. The roman numeral

### Course Title Code

ACC - Accounting	FIN - Finance	MSC - Military Science
ADE - Adult and Extension Education	FMT - Fisheries and Marine Technology	MUS - Music
APA - Animal Pathology	FSN - Food Science & Technology, Nutrition and Dietetics	NUE - Nuclear Engineering
ASC - Animal Science	FLF - Foreign Language Film	NUR - Nursing
APG - Anthropology	FOR - Forest and Wildlife Management	OCE - Ocean Engineering
ART - Art	FRN - French	OCG - Oceanography
AST - Astronomy	GEG - Geography	PCG - Pharmacognosy
BGS - Bachelor of General Studies	GEL - Geology	PCL - Pharmacology and Toxicology
BCP - Biochemistry and Biophysics	GER - German	PHC - Pharmacy
BIO - Biology	GRK - Greek	PAD - Pharmacy Administration
BST - Black Studies	HLT - Health	PHL - Philosophy
BOT - Botany	HIS - History	PED - Physical Education
BED - Business Education	HED - Home Economics Education	PHY - Physics
BSL - Business Law	HMG - Home Management	PLS - Plant and Soil Science
CHE - Chemical Engineering	HCL - Honors Colloquium	PLP - Plant Pathology-Entomology
CHM - Chemistry	IDE - Industrial Engineering	PSC - Political Science
CDF - Child Development and Family Relations	INS - Insurance	POR - Portuguese
CVE - Civil and Environmental Engineering	ITL - Italian	PRJ - Project 70
CLA - Classics	JOR - Journalism	PSY - Psychology
CLS - Comparative Literature Studies	LAN - Languages	RCR - Recreation
CPL - Community Planning	LAT - Latin	RDV - Resource Development
CSC - Computer Science	LSC - Library Science	RDE - Resource Development Education
DHY - Dental Hygiene	LIN - Linguistics	REN - Resource Economics
ESC - Earth Science	MGT - Management	REM - Resource Mechanics
ECN - Economics	MGS - Management Science	RTH - Respiratory Therapy
EDC - Education	MAF - Marine Affairs	RUS - Russian
ELE - Electrical Engineering	MKT - Marketing	SCR - Scratch
EGR - Engineering	MTH - Mathematics	SWF - Social Welfare
ENG - English	MCE - Mechanical Engineering and Applied Mechanics	SOC - Sociology
EHS - Environmental Health Science	MTC - Medical Technology	SPA - Spanish
EST - Experimental Statistics	MCH - Medicinal Chemistry	SPE - Speech Communication
	MIC - Microbiology	TXC - Textiles and Clothing
		THE - Theatre
		URB - Urban Affairs
		ZOO - Zoology

indicates the semester the course will be offered; the arabic numeral indicates the credit hours. Distribution of class hours each week is in parentheses. *S/U* credit signifies a course in which only satisfactory or unsatisfactory grades are given. The instructor's name follows the course description.

Twice a year, at the time of registration for the next semester, a *Schedule Book* is issued by the registrar listing the specific courses to be offered for that semester with the time of meeting, location, and instructor assigned for the section.

## Accounting (ACC)

Chairman: Associate Professor Martin

**201, 202 Elementary Accounting (I and II, 3 each)** 201: Basic functions and principles of accounting. 202: Partnerships, corporations, manufacturing accounts and specialized areas. (Lec. 3) Staff

**301 Accounting for Business Teachers (I, 3)** Principles involving assets, liabilities and owner's equity, emphasis on high school teaching. (Lec. 3) Pre: 202. Not open to accounting majors. Staff

**305 Accounting Principles (I and II, 3)** Basic principles and procedures, emphasis on their application to industrial administration of business enterprises. (Lec. 3) Open to non-business students only. Not open to students who have taken or are required to take 201. Staff

**311, 312 Intermediate Accounting (I and II, 3 each)** 311: Theoretical aspects of accounting principles, emphasis on current and fixed assets and the corporate structure. 312: Continuation including investments, liabilities, financial statements, application of funds, cash flow and price-level impacts. (Lec. 3) Pre: 202. Staff

**321 Cost Accounting (I, 3)** Cost systems including job order, process, and standard costs with emphasis on the managerial control of costs. (Lec. 3) Pre: 202. Staff

**343 A General Survey of the Federal Income Tax (II, 3)** Taxation for students with little or no previous work in accounting or business administration, emphasis on those aspects of taxation which are helpful to the individual. (Lec. 3) Not open to accounting majors. Staff

**371, 372 Special Problems (I and II, 3 each)** Seminar in current accounting problems, the topics of which may vary from semester to semester. (Lec. 3) Pre: permission of department. Staff

**413 Contemporary Accounting Issues (I, 3)** Interpretation of financial data. Case studies of current accounting theory in selected annual corporate reports. Pre: 312 or permission of instructor. Not for graduate program credit. Staff

**415 Accounting-Computer Systems (II, 3)** Accounting information systems and use of the computer for decision-making; emphasis on sources of information and employment of analytical tools in solving accounting problems. (Lec. 3) Pre: 312, 321, MGS 364 or permission of instructor. Staff

**422 Advanced Cost Accounting (II, 3)** Extension of managerial cost accounting, budgeting, and relationship of accounting to other quantitative fields. (Lec. 3) Pre: 321. Staff

**431 Advanced Accounting (II, 3)** Theory applicable to partnerships, installment sales, insurance, consignments, receiverships, estates and trusts, consolidated statements, and specialized accounting subjects. (Lec. 3) Pre: 312. Staff

**443 Federal Tax Accounting (I, 3)** Federal laws, regulations, and other authorities affecting taxation of individuals. (Lec. 3) Pre: 202. Staff

**461 Auditing (II, 3)** Auditing standards, procedures, programs, working papers and internal control. (Lec. 3) Pre: 312. Staff

**510 Financial Accounting (I and II, 3)**

**513 Accounting Systems (I, 3)**

**535 Advanced Problems in Accounting (II, 3)**

**544 (444) Topics in Federal Taxation (II, 3)**

**548 Accounting for Noncommercial Entities (II, 3)**

## Adult and Extension Education (ADE)

Program Director: Associate Professor McCreight

**487 The Cooperative Extension Service in Today's Society (II, 3)** Comprehensive look at the Cooperative Extension Service including its history, structure, philosophy, purpose, goals and objectives, program planning process, changing clientele, funding, methods and procedures. Role of the modern Cooperative Extension Service in the United States. (Lec. 3) Bromley

**488 Methods and Materials for Adult and Extension Education (II, 3)** Techniques utilized in working with large and small groups. Hardware and software used effectively in adult and extension education identified and demonstrated. Communications in extension education studied in depth. (Lec. 3) Jones

**489 Utilization of Paraprofessionals in Adult and Extension Education (I, 3)** Training paraprofessionals and others working with auxiliary personnel. Logs, videotapes, reports, role playing and other material on paraprofessional activities analyzed. (Lec. 3) Jones

**491, 492 Special Problems in Adult Education (I and II, 1-3 each)** Specialized problems in adult and extension education. Seminars or supervised individual projects. (Lec. or Lab.) Pre: permission of instructor. Staff

**575 Adult and Cooperative Extension Programming for Older Adults (I, 3)**

## Animal Pathology (APA)

Chairman: Professor Yates

**331 Anatomy and Physiology (I, 3)** Fundamentals of anatomy and physiology of domesticated animals. (Lec. 3) Pre: MIC 201 or 211, ZOO 111; junior standing. Dunn

**332 Animal Diseases (II, 3)** Specific diseases of mammals. (Lec. 3) Pre: 331. In alternate years, next offered 1978-79. Dunn

**401 Introduction to Pathology (II, 3)** General and systemic pathology including cellular changes, etiology and pathogenesis of inflammation, metabolic and neoplastic processes. (Lec. 3) Pre: MIC 201 or 211, ZOO 242, and/or equivalent; junior standing, or permission of instructor. Wolke



**461 Laboratory Animal Technology**

See Animal Science 461.

**501, 502 Seminar (I and II, 1 each)****534 Animal Virology (II, 3)****536 Virology Laboratory (II, 2)****538 Epidemiology of Viral and Rickettsial Diseases (II, 2)****555, 556 Pathology Rotation (I, II, 3 each)****591, 592 Special Projects (I and II, 1-3 each)****Animal Science (ASC)**

Chairman: Professor R.I. Millar

**101 Introduction to Animal Science (I, 3)** Animal industry's role in world and national economy; inheritance, growth, physiology, nutrition and diseases of domestic animals and poultry; geographic distribution and marketing of animal products. (Lec. 3) Nippo

**102 Introduction to Animal Science Laboratory (I, 1)** Laboratory and demonstrations of principles of the animal industries. (Lab. 2) Pre: 101. May be taken concurrently with 101. Millar

**201 Man and His Animals (II, 3)** Study of the interrelationships between man and domestic animals with emphasis on pets; including breeds of dogs and cats, pet nutrition, behavior, breeding and areas of topical interest. (Lec. 3) Nippo

**212 Feeds and Feeding (I, 3)** Principles and practices of feeding farm animals, nutrient requirements, physiology of digestion, identification and comparative value of feeds, computer calculation of rations for livestock. (Lec. 2, Lab. 2) Nippo

**252 The Pleasure Horse (I and II, 2)** Principles of light horse management and horsemanship, including appreciation and use. (Lec. 1, Lab. 2) Open to all students interested in the pleasure horse. Henderson

**281 Introduction to Aquaculture (I, 3)** Aquaculture, its contribution to world food supply, methods of production, environmental and ecological considerations, cultural practices employed for selected species, selective breeding, feeding, disease, processing and marketing. (Lec. 3) Pre: BIO 102 or ZOO 111, or permission of instructor. Durfee

**313 Biology of the Horse (I, 3)** Study of the horse, including its history, structure and body functions. Emphasis on function of bones, teeth, muscles, feet and legs, digestive and reproductive systems. (Lec. 3) Hinkson

**323 Animal Management I (I, 3)** Principles of care and management of domesticated ruminant animals including dairy cattle, beef cattle, sheep and goats. Emphasis on the production methods of the animal industries. Participation in field trips required. Gray

**324 Animal Management II (II, 3)** Principles of the care and management of domesticated monogastric animals including swine and poultry. Emphasis will be given to modern production methods. Participation in field trips required. Durfee and Gross

**343 Behavior of Animals that Serve Man (II, 3)** Examination of the basis for, and exhibition and control of behavioral patterns of domestic animals. (Lec. 3) Pre: 101 or permission of instructor. Nippo

**352 General Genetics (I, 3)** Introduction to genetic principles and concepts with applications and implications of these concepts to man and other species. (Lec. 3) Pre: BOT 111, or BIO 101 or 102 or ZOO 111. Not open to students who have taken BOT 352. Smith

**354 Genetics Laboratory (I, 2)** Basic principles of heredity demonstrated with *Drosophila*, *Coturnix* and plants. (Lab. 4) Pre: 352 or BOT 352, may be taken concurrently with 352. Not open to students who have taken BOT 354. Smith

**356 Light Horse Management (II, 3)** In-depth study of accepted management and care practices, nutrition, and health of the light horse. (Lec. 2, Lab. 2) Pre: 252 or permission of instructor. Henderson

**361 Game Bird Propagation and Management (I, 3)** Principles and techniques of game bird propagation, hatchery operation, confinement rearing, nutrition, disease problems and shooting preserve management. (Lec. 2, Lab. 2) Pre: BIO 102 or ZOO 111. Millar

**372 Introductory Endocrinology (I, 3)** Morphology and physiology of endocrine glands. Roles of hormones in regulation of body processes. Discussion of all endocrine organs and relationship of endocrine and nervous systems. Emphasis on domesticated animals and fowl. (Lec. 3) Pre: BIO 102 or ZOO 111. Gray

**382 Poultry Business (II, 3)** Poultry enterprises, methods of organization, financing, business management, emphasis on current developments within the industry affecting business decisions. (Lec. 2, Lab. 2) In alternate years, next offered 1979-80. Millar

**412 Animal Nutrition (II, 3)** Principles of animal nutrition, metabolism of carbohydrates, proteins, and fats; mineral and vitamin requirements; nutritive requirements for maintenance, growth, reproduction, lactation and work. (Lec. 3) Pre: 212, organic chemistry, junior standing. Henderson

**415 Physiology of Lactation (I, 3)** Endocrine control, milk precursors, physiology of milk production and anatomy of mammary system including vascular, lymphatic and nervous system. (Lec. 3) Pre: junior standing. In alternate years, next offered 1978-79. Hinkson

**432 Biology of the Fowl (II, 3)** Anatomy and physiology of the developing and adult domestic fowl, emphasizing characters of greatest economic interest, embryology, meat and egg production. Physiological responses to environmental conditions and their influences on commercial production. (Lec. 2, Lab. 2) Pre: ZOO 111 or BIO 102, 1 semester of organic chemistry. In alternate years, next offered 1979-80. Durfee

**451 Horse Nutrition and Feeding (II, 2)** Nutritional needs of the horse for growth, maintenance, lactation, breeding and work will be discussed. Also nutrition sources and feeding programs. (Lec. 2) Pre: 212 and one semester of organic chemistry. Hinkson

**452 (or FMT 452) Industrial Fishery Technology (II, 3)** Utilization of industrial fish, production of fish meal, fish oil, condensed fish solubles, fish protein concentrate; handling, packaging, storage and transportation. Nutritive quality, market value and demand relationships for fish proteins. (Lec. 2, Lab. 3) Pre: permission of instructor. Meade

**461 (or APA 461) Laboratory Animal Technology (I, 3)** Selection, breeding, and management of laboratory animals. (Lec. 2, Lab. 2) Pre: ZOO 111 or BIO 102. HENDERSON, Gray and Yates

**472 Physiology of Reproduction (II, 3)** Anatomy and physiology of reproduction, emphasis on domestic farm animals and fowl. Endocrine aspect of reproduction. (Lec. 2, Lab. 2) Pre: ZOO 111 and permission of instructor. In alternate years, next offered 1978-79. Gray

**474 Population Genetics in Animal Breeding (II, 3)** Genetic structure of populations, conditions of equilibrium and gene frequency changes. Inbreeding and other mating systems. Criteria for selection and comparison of breeding systems. (Lec. 3) Pre: 352 or BOT 352. In alternate years, next offered 1978-79. L. Smith

**476 The Genetics of Fish (II, 2)** Modes of inheritance found in fish including chromosome numbers and sex determination, methods of selection and mating systems used in the development of strains for aquaculture. (Lec. 2) Pre: 352. In alternate years, next offered spring 1979-80. L. Smith

**483 Salmonid Aquaculture (II, 3)** Principles of salmonid aquaculture, including culturing, spawning, incubation, feed formulation and feeding, disease control, genetics, systems management, harvesting and transport. (Lec. 2, Lab. 2) Pre: 281 or equivalent, or permission of instructor. In alternate years, next offered 1978-79. Meade

**491, 492 Special Projects (I and II, 1-3 each)** Work which meets individual needs of students in aquaculture, animal, poultry, and food science. (Lec. and/or Lab. according to nature of project) Pre: permission of department. Staff

**501, 502 Animal Science Seminar (I and II, 1 each)**

**512 Advanced Animal Nutrition (II, 3)**

**532 Experimental Design (II, 3)**

**584 Advanced Aquaculture Systems (I, 3)**

**586 Fish Nutrition (I, 3)**

**591, 592 Research Problems (I and II, 3 each)**

Note: for Biochemistry of Foods, see FSN 431, 432.

## Anthropology (APG)

Chairman: Associate Professor Gelles (Sociology and Anthropology)

**200 Language and Culture (I or II, 3)** Cross-cultural survey of the interaction of culture and language. Introduction to various fields of linguistic research emphasizing descriptive and semantic investigations. Linguistic studies used as illustrative material. (Lec. 3) Pre: 203. Pollnac

**201 Human Origins (I and II, 3)** The biocultural evolution of humans. Current trends of human evolution. (Lec. 3) Loy

**202 The Prehistoric Ages of Man (I and II, 3)** Consideration of cultural development from the Old Stone Age to the Iron Age. Emphasis on the Paleolithic, the emergence of food production and emergence of Old and New World civilization. (Lec. 3) Turnbaugh

**203 Cultural Anthropology (I and II, 3)** Introduction to concepts and methods of cultural anthropology, application of these to contemporary preliterate and peasant societies. (Lec. 3) Staff

**301 Primate Form and Behavior (I, 3)** Comparative survey of the form and structure of living primates, including man. Examination of correlations between morphology and locomotor pattern, feeding ecology, and habitat preference. Laboratory dissection of monkey. (Lec. 2, Lab. 2) Pre: 201. Loy

**303 New World Prehistory (I or II, 3)** Reconstruction of American Indian culture history from earliest times to the period of European discovery and colonization, using archaeological evidence and perspectives. (Lec. 3) Turnbaugh

**305 Peoples of East Asia (I or II, 3)** Survey of traditional and contemporary culture and society in the three principal countries (China, Korea, and Japan) of the East Asia culture area. (Lec. 3) Pre: 203. Guthrie

**309 Anthropology of Religion (I or II, 3)** Religious systems of selected peoples around the world; examination of theories concerning the origins, functions, and natures of these religions. (Lec. 3) Pre: 203. Guthrie

**311 Native North Americans (I or II, 3)** Ethnographic analysis of selected American Indian and Eskimo groups from before European contact to the present. Modern reservation life and continuing influence of the federal government on Indian life. (Lec. 3) Pre: 203. Lynch

**313 The Ethnology of Africa (I or II, 3)** Ethnology of the cultural development of Africa's peoples from prehistoric times to the present, emphasis on traditional cultures prior to foreign influences; impact of European cultures. (Lec. 3) Pre: 203. Pollnac

**315 Cultures and Societies of Latin America (I or II, 3)** Contemporary cultures and societies, emphasis on adjustment of the people to modern social and economic changes. (Lec. 3) Pre: 203. Poggie

**317 Archaeological Method and Theory (I or II, 3)** Problems of collection and interpretation of data, emphasizing nature of archaeological investigation, classification, dating, reconstruction of social contexts. Laboratory demonstrations. (Lec. 3) Turnbaugh

**319 Cultural Behavior and Environment (I or II, 3)** Cultural adaptations made by traditional and industrial societies to natural and human environments using examples from prehistory and ethnography. (Lec. 3) Pre: 201, 202, or 203. In alternate years, next offered 1979-80. Turnbaugh

**321 Social Anthropology (I or II, 3)** Social structure and organization in the full range of types of human societies. Structural-functional approach. (Lec. 3) Pre: 203. Poggie

**322 Anthropology of Modernization (I or II, 3)** Patterns and processes of contemporary social and cultural change among traditional people. (Lec. 3) Pre: 203. Poggie

**323 Politics in Small-Scale Societies (I or II, 3)** Comparative study of political evolution, leadership, conflict, decision-making, and law. Relationship of politics to economics, kinship, and ideology among tribesmen and peasants. (Lec. 3) Pre: 203. Lynch

**324 Peasant Societies (I or II, 3)** Evolutionary development and sociocultural characteristics of the world's peasantry. Case studies of adaptations of peasants to a variety of ecological settings. (Lec. 3) Pre: 203. In alternate years, next offered 1979-80. Poggie

- 326 Anthropology of Law** (I or II, 3) Examination of the range of procedures for handling disputes in tribal and peasant societies around the world. Emphasis on relation of law to its cultural context. (Lec. 3) Pre: 203 or 323. Lynch
- 401 History of Anthropological Theory** (I or II, 3) Theory from the sixteenth century to the present; readings from Tylor, Morgan, Boas, Sapir, Kroeber, Benedict, Malinowski and Radcliffe-Brown. (Lec. 3) Pre: 203 and two 300-level courses in anthropology or permission of department. In alternate years, next offered in 1978-79. Guthrie
- 402 Methods of Anthropological Inquiry** (I or II, 3) Logic, techniques, and problems in obtaining true information in anthropological inquiry. Problems from anthropological field work and use of cross-cultural data. (Lec. 3) Pre: 203 and two 300-level courses in anthropology or permission of department. In alternate years, next offered in 1979-80. Poggie
- 405 Psychological Anthropology** (I or II, 3) Behavior in different cultures employing psychological concepts and theories. (Lec. 3) Pre: 203 and 6 credits of 300-level courses in anthropology or permission of department. Pollnac
- 407 Economic Anthropology** (I or II, 3) Introduction to theoretical concepts and methodologies used in analysis of tribal and peasant economies, emphasis on case studies from the anthropological literature. (Lec. 3) Pre: 203. Staff
- 409 Anthropological Linguistics** (I or II, 3) Use of the linguistic model in the analysis of man's cultural products, including folk narrative and kinship systems. Emphasis on techniques used in the formal analysis of both verbal and non-verbal behavior. (Lec. 3) Pre: 203 and 200 or LIN 201. Pollnac
- 411 Maritime Ethnology** (I, 3) Examination of man's sociocultural adaptation to the seas. (Lec. 3) Pre: 203 or permission of instructor. Pollnac and Poggie
- 412 Primate Behavior and Organization** (I or II, 3) Investigation of the naturalistic behavior and organization of non-human primates, and the relationship of primate data to anthropology (the biogram concept). (Lec. 3) Pre: 201 or permission of instructor. Loy
- 470 Problems in Anthropology** (I and II, 3) Staff-guided study and research, seminar or individual program. (Lec. 3 or Lab. 6) Pre: permission of department. Staff
- 120 Introduction to Art** (I and II, 3) Fundamental principles of the visual arts, evolution of styles and conceptions through the ages in different forms of creative expression. (Lec. 3) May not be taken after 251, 252 for credit. Holmes
- 203 Color** (II, 3) Visual perception of color and manipulation of light as they pertain to two- or three-dimensional formulations. (Studio 6) Leete
- 207 Drawing I** (I and II, 3) Visual perception and observation, using nature structures, drawing from live models, still life and landscape; exercises in basic drawing techniques and principles. (Studio 6) Staff
- 208 Drawing II** (I and II, 3) Advanced practice in graphic conceptions; exercises in spatial problems, organizing relationships of abstract forms and structures; advanced drawing media. (Studio 6) Pre: 207. Staff
- 213 Photography I** (I and II, 3) Introduction to photography, exploration of related techniques using light sensitive materials. (Studio 6) May be repeated once with permission of instructor. Pre: permission of instructor. Parker
- 215 Filmmaking I** (I and II, 3) Introduction to basic filmmaking technique and theory. Emphasis on film as a visual art. Required projects and readings. (Studio 6) May be repeated once with permission of instructor. Keller
- 216 Filmmaking II** (I and II, 3) Continuation of 215 with added emphasis on sound. Required projects and reading. (Studio 6) Pre: 215. May be repeated once with permission of instructor. Keller
- 221 Two-dimensional Studio II** (I and II, 3) Techniques of painting, utilizing as reference the natural and man-made environments. Traditional and contemporary materials. (Studio 6) Pre: 101 and 207. Staff
- 231 Printmaking I** (I and II, 3) Introduction to intaglio and lithographic processes, with an emphasis on image development and workshop procedures. (Studio 6) Pre: 101 or 207 or permission of instructor. Cordes
- 233 Relief Printing and Typography I** (I and II, 3) Introduction to basic elements of graphic design; letter forms, their relationship to the page and to the image. Various traditional and modern reproduction techniques, workshop practice in type setting and layout. (Studio 6) Pre: 101 or permission of department. Richman
- 243 Three-dimensional Studio II** (I and II, 3) Formation of three-dimensional forms employing basic sculptural materials and techniques. Basic media, emphasis on form, material and structural means in studio practice. (Studio 6) Pre: 103 or permission of instructor. Staff
- 251, 252 Introduction to History of Art** (I and II, 3 each) 251: Stylistic development of architecture, sculpture and painting from prehistory through the Middle Ages. 252: Continuation from the early Renaissance to the present. (Lec. 3) Pre: for 251, sophomore standing. Staff
- 263 American Art** (I, 3) Painting, sculpture and architecture from their origins in the seventeenth century to the present, emphasis on the nineteenth and twentieth centuries. (Lec. 3) Staff
- 273 African Art** (I, 3) Introduction to the art of the Western Congo, Lower Congo, Bushongo, Eastern Congo, Gabon, Southern Nigeria; the Sudan, Guinea Coast, Nigeria, Benin, Ife, and the Cameroons. (Lec. 3) In alternate years, next offered 1978-79. Staff

## Art (ART)

Chairman: Professor Fraenkel

- 101 Two-dimensional Studio I** (I and II, 3) Exploration of principles of visual organization relating primarily to formulations on the two-dimensional surface by means of fundamental studies and assignments in studio techniques. (Studio 6) Staff
- 103 Three-dimensional Studio** (I and II, 3) Introduction to problems in three-dimensional organization and figure modeling in clay or plaster, observations from the live model, discussion and application of various molds and casting techniques. (Studio 6) Staff

- 274 Topics in Film and Photography (II, 3)** Selected topics or periods in the history of film and photography. Topics to be announced. (Lec. 3) Pre: permission of department. May be repeated twice with permission of instructor. Staff
- 280 Introductory Topics in European Art (I or II, 3)** Consideration of the history of European art through surveys of particular periods and themes. Topics to be announced. (Lec. 3) May be repeated twice with permission of instructor. Spring 1979: Christian and Jewish Art. Staff
- 283 Topics in Non-European Art (I or II, 3)** Selected topics in non-European art other than African. Topics to be announced. (Lec. 3) May be repeated once with permission of instructor. Staff
- 284 Introductory Topics in Architectural History (I or II, 3)** Consideration of the history of architecture and city planning through surveys of selected periods and themes. Topics to be announced. (Lec. 3) May be repeated once with permission of instructor. Spring 1979: Modern Architecture. Roworth
- 309, 310 Drawing III and IV (I and II, 3 each)** 309: Further problems, emphasis on independent investigation in analysis, planning and supportive notation. 310: Continuation. (Studio 6) Pre: 208 or permission of instructor for 309; 309 for 310. Staff
- 314 Photography II (I and II, 3)** Continuation of 213. (Studio 6) May be repeated once with permission of instructor. Pre: 213. Parker
- 322 Two-dimensional Studio III (I and II, 3)** Continuation of 221. (Studio 6) Pre: 221. May be repeated once with permission of instructor. Staff
- 332 Printmaking II (I and II, 3)** Continuation of 231 with introduction to color lithography. Contemporary viewpoints and their relationship to traditional printmaking, with emphasis on individual image development. (Studio 6) Pre: 231. Cordes
- 334 Relief Printing and Typography II (I and II, 3)** Continuation of 233. Applications of previous studies to experimental workshop assignments leading to production of book pages, folders, posters and other visual material incorporating type and print in a contemporary idiom. (Studio 6) May be repeated once with permission of instructor. Pre: 233 or permission of department. Richman
- 337 Printmaking III (I and II, 3)** Semi-independent work in printmaking media. Introduction of aluminum plate and photo-lithography. (Studio 6) Pre: 332. Cordes
- 338 Printmaking IV (I and II, 3)** Emphasis on individual development in specific printmaking media. Critical evaluation of visual development. (Studio 6) Pre: 337. Cordes
- 344 Three-dimensional Studio III (I and II, 3)** Continuation of 243. (Studio 6) Pre: 243 or permission of instructor. Staff
- 354 The Art of Greece and Rome (I, 3)** Developments in architecture, painting and sculpture in Greece and Rome from 800 B.C. to 400 A.D. Brief analysis of the art of the Aegean from 2500 to 1500 B.C. (Lec. 3) Pre: 251 or permission of department. Staff
- 355 Early Christian and Byzantine Art (II, 3)** Transformation of the late antique into Judaeo-Christian art, emphasis on painting, mosaic, sculpture and architecture. Pagan styles and motifs in Jewish and Christian religious context. (Lec. 3) Pre: 251 or permission of department. In alternate years, next offered 1979-80. Kampen
- 356 Medieval Art (II, 3)** Painting, sculpture, architecture and minor arts of the Middle Ages from 500 to 1400 in Western Europe. (Lec. 3) Pre: 251 or permission of department. Kampen
- 359 Baroque Art (II, 3)** Transitional phases of mannerism to the seventeenth century Baroque synthesis in Italy and Northern Europe, the international Rococo style. (Lec. 3) Pre: 251 and 252 or permission of department. Staff
- 361, 362 Modern Art (I and II, 3 each)** Main developments in painting, sculpture and architecture in Europe and America during the nineteenth and twentieth centuries. (Lec. 3) Pre: 252 or permission of department. Onorato
- 365 Renaissance Art (I, 3)** Painting, sculpture, and architecture of Italy and Northern Europe from 1400 to 1600. (Lec. 3) Pre: 251 and 252 or permission of department. Staff
- 403, 404 Studio-Seminar I and II (I and II, 3 each)** Assigned visual investigations and independent projects under the guidance of instructors. Periodic critiques and discussion of work of all participants. (Studio 6) Pre: 12 credits in studio for 403; 403 for 404. Staff
- 405, 406 Studio-Seminar III and IV (I and II, 3 each)** Intensive self-directed work under guidance of instructors. Periodic critiques and discussions of work of all participants. (Studio 6) Pre: 24 credits in studio for 405; 405 for 406. Staff
- 461 Topics in Methods, Theory and Criticism (I or II, 3)** Art history methods or selected topics in the theory and criticism of art. Topics to be announced. (Lec. 3) Pre: permission of department. May be repeated once with permission of instructor. Staff
- 462 Modern Art Seminar: Art Since 1945 (II, 3)** Reports on contemporary work and its relation to earlier movements. (Lec. 3) Pre: 362 or permission of department. Onorato
- 469, 470 Art History—Senior Projects (I and II, 3-6 each)** Intensive, independent work on a project determined after consultation with the student's project adviser. (Lec. 3-6) Pre: permission of department. Staff
- 480 Advanced Topics in European Art (I and II, 3)** Consideration of the history of European art through analysis of selected periods or themes. Topics to be announced. (Lec. 3) Pre: permission of department. May be repeated once with permission of instructor. Staff
- 484 Advanced Topics in Architectural History (I or II, 3)** Consideration of the history of architecture and city planning through analysis of selected themes or periods. Topics to be announced. (Lec. 3) Pre: permission of department. May be repeated once with permission of instructor. Staff
- 501, 502 Graduate Studio Seminar I and II (I and II, 3 each)**

## Astronomy (AST)

Chairman: Professor S. Pickart (Physics)

**108 Introductory Astronomy (I and II, 3)** Celestial sphere, earth as an astronomical body, sun, motions and characteristics of members of solar system, constellations, constitution of stars and nebulae. Planetarium used freely for lectures and demonstration. (Lec. 3) Penhallow

**408 Introduction to Astrophysics (II, 3)** Application of photometry and spectroscopy to stellar composition, structure, and evolution. Radio astronomy and the structure of our galaxy. Energy production in stars and galaxies. Observational cosmology (Lec. 3) Pre: PHY 112 or 214. 108 is recommended but not required. Penhallow

Note: for other courses related to Astronomy see courses listed under Physics.

## Bachelor of General Studies (BGS)

Associate Dean for Academic Programs: A. Cremin Byrne (Division of University Extension)

**100 Pro-Seminar (I or II, 4)** Introduction to critical approaches to learning with emphasis on reading and rhetorical skills appropriate to college students. Required of BGS students. Staff

**390 Social Science Seminar (I or II, 6)** Exploration of the social sciences for BGS students who have completed the Pro-Seminar, started their area of concentration and have the consent of their adviser. Required of all BGS students. S/U credit. Staff

**391 Natural Science Seminar (I or II, 6)** Exploration of the natural sciences for BGS students who have completed the Pro-Seminar, started their area of concentration and have the consent of their adviser. Required of all BGS students. S/U credit. Staff

**392 Humanities Seminar (I or II, 6)** Exploration of the humanities for BGS students who have completed their Pro-Seminar, started their area of concentration and have the consent of their adviser. Required of all BGS students. S/U credit. Staff

## Biochemistry and Biophysics (BCP)

Chairman: Professor Fisher

**302 The Molecular Basis of Life (II, 3)** Molecular basis of life as a key to origin of life, evolution, expression of genetic information, biological control. For the non-biology major interested in an overall view of biology at the molecular level. (Lec. 3) Pre: junior standing. Fisher, Hartman, and Tremblay

**311 Introductory Biochemistry (I, and II, 3)** Chemistry of biological transformations in the cell. Chemistry of carbohydrates, fats, proteins, nucleic acids, enzymes, vitamins and hormones integrated into a general discussion of the energy-yielding biosynthetic reaction in the cell. (Lec. 3) Pre: CHM 124 or equivalent. Staff

**401 (or MIC 401) Quantitative Cell Culture (I, 3)** Methods of mammalian cell culture to examine the normal and abnormal cell in the study of cancer, genetic

diseases, the radiation syndrome, nutrition and other problems. (Lec. 3) Pre: any two of the following: BIO 101, 102, BOT 111, ZOO 111 or MIC 210; senior standing or above. Fisher

**403 (or MIC 403) Introduction to Electron Microscopy (I, 2)** Survey of techniques in electron microscopy. Discussion of advantages and limitations. Thin sectioning, negative staining, shadow-casting, freezing-etching, histochemical procedures, autoradiography, darkroom procedures, scanning electron microscopy, interpretation of electron micrographs. (Lec. 2) Pre: permission of department. Fisher and Hufnagel

**405 Electron Microscopy Laboratory**  
See Microbiology 405.

**411 Biochemistry Laboratory (II, 3)** Biochemical approach to biological research including a biological problem in metabolism at the level of enzymology. Effect of an alteration of the hormonal or nutritional status of an organism on enzyme-systems evaluated. Instruments and biochemical methods. (Lec. 1, Lab. 4) Pre: 311 or equivalent and permission of department. Tremblay

**435 (or CHM 435) Physical Chemistry for Life Sciences (I, 3)** Gases, solutions, thermodynamics, equilibrium, kinetics, quantum theory and photochemistry. (Lec. 3) Pre: two semesters of chemistry. Not open to students majoring in chemistry. Hartman

**491, 492 Research in Biochemistry and Biophysics (I and II, 1-6 each)** Special problems. Student outlines the problem, carries on experimental work, presents the conclusions in a report. (Lab. 2 to 12) Pre: permission of instructor. Not for graduate credit. Staff

**521 Introductory Biophysics (II, 3)**

**523, 524 Special Topics in Biophysics (I and II, 1-6 each)**

**541, 542 Laboratory Techniques in Biochemistry (I and II, 3 each)**

**581, 582 General Biochemistry (I and II, 3 each)**

**595, 596 Seminar in Biochemistry and Biophysics (I and II, 1 each)**

## Biology (BIO)

Chairmen: Professor Goos (Botany) and Professor Wilde (Zoology)

**101 Biology of Plants (I and II, 3)** Principles of biology sewed with an ecological thread to emphasize importance of plants on contemporary human life, thought, welfare and cultural history. Designed for non-majors. (Lec. 2, Lab. Rec. 1) Staff

**102A General Animal Biology (I and II, 3)** Introduction to life processes of animals, including man. Examines biological aspects of inheritance, ecology, behavior, animal survey, and regulation of biosystems. Laboratory surveys general concepts of animal biology. (Lec. 2, Lab. 2) Heppner

**102B General Animal Biology (Special Sections) (I and II, 3)** Same lectures as 102A, but laboratories examine specific topics. Topics vary each semester. Previous topics included marine biology, biological creative writing, biology as art. (Lec. 2, Lab. 2) Zoology Staff

Note: students who elect 101 may not enroll in BOT 111, and those who elect 102 may not enroll in ZOO 111.

## Black Studies (BST)

Director: M. Hendrix

**101, 102 Introduction to Black Studies I, II (I and II, 3)** 101: Introduction provides a methodological and attitudinal basis for further studies about black peoples. Classic texts in area of knowledge. 102: Research, identifying source materials, and special collections. Pre: 101. Staff

## Botany (BOT)

Chairman: Professor Goos

**111 General Botany (I and II, 4)** Structure, physiology and reproduction of seed plants as a basis for understanding broad principles of biology and relation of plants to human life. Survey of plant kingdom. (Lec. 3, Lab. 2) Not open to students who have passed BIO 101. Palmatier and Staff

**216 Algae and Man (II, 2)** Importance of algae in the environment; their impact upon man and his technologies. (Lec. 2) Pre: 111 or BIO 101. Harlin.

**221 General Morphology (II, 3)** Representative forms of algae, fungi, bryophytes and vascular plants with emphasis on heredity, evolution, ecology, life cycle, and plant geography. (Lec. 1, Lab. 4) Pre: 111 or BIO 101. Hauke

**245 Plant Physiology (I, 3)** Processes underlying the physiology of the whole plant. Emphasis on fundamental principles and interrelationships of plant functions in growth and development. (Lec. 2, Lab. 3) Pre: 111 or BIO 101, CHM 104 or 112. Albert

**262 Introductory Ecology**  
See Zoology 262.

**311 Plant Anatomy (I, 3)** Structure of vascular plant tissues and organs as it relates to their function. Variations in anatomy, phylogeny of vascular tissue, anatomy of fossils, and the relation of structure to economic value. (Lec. 1, Lab. 4) Pre: 111 or BIO 101. Hauke

**315 Aquatic Plant Ecology (I, 2)** Marine and freshwater plant ecology. Habitats, environmental factors, vegetation types, community structure, periodicity, culture and bioassay, productivity, radioisotope use and mineral recycling. (Lec. 2) Pre: 111 or BIO 101; BOT 262 recommended. One all-day field trip. Staff

**323 Field Botany (I, 3)** Collection, identification and study of vascular plants with emphasis on native flora of Rhode Island. Use of manuals, interpretation of morphological characters, problems in nomenclature and herbarium technique. (Lec. 1, Lab. 5) Pre: 111 or BIO 101. Palmatier

**332 Plant Pathology: Introduction to Plant Diseases (II, 3)** Nature, cause and control of plant diseases. Examples are taken mostly from serious diseases found in this region. (Lec. 1, Lab. 4) Pre: 111 or BIO 101, or equivalent. Beckman

**352 Genetics (II, 3)** Fundamental concepts of inheritance and variation in plants, animals, bacteria and viruses. Methods of recombination, the process of mutation, gene structure and function. (Lec. 3) Pre: 111, BIO 101 or 102, or ZOO 111; sophomore standing. Not open to students who have taken ASC 352. Mottinger

**354 Genetics Laboratory (II, 2)** Basic principles of heredity demonstrated with fungi, *Drosophila* and maize. (Lab. 4) Pre: 352 or permission of instructor. May be taken concurrently with 352. Mottinger

**395 Undergraduate Seminar in Botany (II, 1)** Introduction to sources of botanical literature. Presentation of papers by students, guest speakers, and discussion by the class. (Lec. 1) Harlin

**402 Systematic Botany (I, 3)** Diversity, evolution, phylogeny, and classification of vascular plants. Plant identification, analysis of variation, nomenclature, and systematic literature. (Lec. 2, Lab. 3) Pre: 111 or BIO 101. In alternate years, next offered 1978-79. Hauke

**417 Field Aquatic Plant Ecology (I, 3)** Field and laboratory work in marine and freshwater ecology. Provides practical experience in aquatic biology. Practicum for 315. (Lab. 6) Pre: prior or concurrent enrollment in 315 or equivalent. Staff

**418 Marine Botany (II, 3)** Field and laboratory study of marine algae, their morphology, ecology, and physiology with emphasis on classification and use of keys. (Lec. 2, Lab. 3) Pre: 111 or BIO 101 and junior standing. Sheath

**419 Freshwater Botany (I, 3)** Field and laboratory study of freshwater algae, and certain other plants, their morphology, ecology, and physiology, with emphasis on classification and use of keys. (Lec. 2, Lab. 3) Pre: 111 or BIO 101 and junior standing. Sheath

**421 Advanced Practicum in Aquatic Plant Ecology (II, 3)** Team research involving group selection of field project, preparation of proposal, design of experiment, investigation, and final report. (Lab. 6) Pre: 417 or equivalent. In alternate years. Staff

**424 Plant Ecology (II, 3)** Distinguishing, describing and determining the composition of plant communities, with a bearing on the landscape and role of humankind as an agent for change. Literature, special projects and reports, ecological techniques, field trips. One all-day field trip. (Lec. 1, Lab. 4) Pre: 262, 323 or 402. Palmatier

**432 Mycology: Introduction to Fungi (I, 4)** Structure, development, cytology, distribution and identification of fungi, with consideration of their importance in industry, medicine, plant disease, and organic decomposition. (Lec. 2, Lab. 4) Pre: BIO 101 or 111; 221 or 332 suggested. Goos

**445 Advanced Plant Physiology (II, 3)** Major areas with emphasis on quantitative and metabolic aspects of plant processes and their relationships to growth. (Lec. 2, Lab. 3) Pre: 245, CHM 124 or 227, or equivalent or permission of instructor. Albert

**453 Cytology (I, 3)** Structure and development of plant and animal cells, cell division, meiosis and fertilization. Bearing of cytology on taxonomy, physiological behavior and theories of heredity and evolution. (Lec. 1, Lab. 4) Pre: 111, BIO 101, or ZOO 111, permission of department. Staff

**455 Marine Ecology**  
See Zoology 455.

**457 Marine Ecology Laboratory**  
See Zoology 457.

**491, 492 Special Problems (I and II, 1-3 each)** Selected areas pertinent to needs of individuals or small groups. Class, seminar or tutorial situations. (Lec. 1-3 or Lab. 2-6)

Offered only to undergraduates on arrangement with staff. Staff

- 511 **Developmental Plant Anatomy** (II, 3)
- 512 **Morphology of Vascular Plants** (II, 3)
- 520 **Tidal Marsh Plant Ecology** (I, 3)
- 524 **Methods in Plant Ecology** (I, 3)
- 526 **Plant Geography** (I, 3)
- 534 **Physiology of the Fungi** (I, 3)
- 536 **Phytopathological Techniques** (I, 3)
- 540 **Experimental Mycology** (II, 3)
- 542 **Medical Mycology** (II, 3)
- 551 **Seminar in Aquatic Botany** (I, 1)
- 554 **Cytogenetics** (I, 4)
- 559 **Physiological Ecology of Marine Macroalgae** (I, 4)
- 562 **Seminar in Plant Ecology** (II, 2)
- 579 **Advanced Genetic Seminar** (I and II, 1)
- 581, 582 **Botany Seminar** (I and II, 1 each)
- 591, 592 **Botanical Problems** (I and II, 3 each)
- 593, 594 **Botanical Problems** (I and II, 3 each)

## Business Education (BED)

Chairman: Associate Professor Langford

- 110 **Introduction to Business** (I and II, 3) Nature, philosophy, objectives and scope of American business system. Emphasis in the inter-relations of the functional areas. (Lec. 3) Staff
- 120 **Personal Typewriting** (II, 1) Development of basic skill in the operation of the typewriter. (Lab. 3) Staff
- 121 **Elementary Typewriting** (I, 2) Development of basic skill in the operation of the typewriter. Understanding office procedures using the typewriter. Students expected to attain speed of 40 words a minute. (Lab. 4) Staff
- 122 **Advanced Typewriting** (II, 2) Continuation of 121 with emphasis on business applications for typewriting. Speed of 55 words a minute required by end of semester. (Lab. 4) Pre: 121 or equivalent. Staff
- 227 **Business Communications** (II, 3) Effective business communication with interdisciplinary approach. Practice and discussion of basic types of business messages, written and oral. Integrated case problems to develop and present effective reports. (Lec. 3) Pre: permission of instructor. Staff
- 321 **Elementary Shorthand** (I, 4) Fundamental principles of Gregg shorthand, Diamond Jubilee Series. (Rec. 4) Staff
- 322 **Advanced Shorthand** (II, 4) Continuation of 321. Speed and accuracy in taking dictation. Speed of 80 words a minute required by end of semester. (Rec. 4) Pre: 321 or equivalent. Staff
- 323 **Dictation and Transcription** (I, 4) Synchronization of elements of transcription: shorthand, typewriting, and English. (Rec. 3, Lab. 5) Pre: for other than business education and office administration majors, permission of instructor. Staff
- 324 **Advanced Dictation and Transcription** (II, 2) Refinement of techniques in dictation and transcription to meet business standards. (Rec. 1, Lab. 3) Pre: for other than business education and office administration majors, permission of department. Staff
- 325 **Records Administration** (I, 3) Comprehensive study of the establishment and maintenance of business records, including an analysis of the various information processing/storage systems. (Lec. 3) Staff
- 326 **Business Machines** (I and II, 3) Operation of business machines, their appropriate use in business and in the business departments of secondary schools. (Lab. 6) Pre: for other than business education and office administration majors, permission of department. Staff
- 328 **Office Procedures and Administration** (II, 3) Seminar in the administrative procedures of the business office (Lec. 3) Staff
- 421 **Directed Study** (I and II, 3) Independent study. Development of an approved project supervised by a member of department faculty. Pre: junior standing, permission of department and instructor. Not for graduate degree program credit. Staff
- 422 **Special Problems** (I and II, 3) Lectures, seminars, and instruction with special emphasis on student research projects. Pre: junior standing, permission of department and instructor. Not for graduate degree program credit. Staff
- 427 **Organization, Administration and Methods of Teaching Distributive Education** (I, 3) Background, objectives, coordination and teaching techniques, administrative policies and operation of programs in secondary and post-secondary schools and adult education programs. Planning of curriculums. (Individualized study) Pre: permission of department. Not for graduate degree program credit. Staff
- 428 **Coordinating and Developing Curriculum for Cooperative Vocational Business and Distributive Education** (I, 3) Duties of the coordinator: selecting training agencies, developing job analysis, selecting and briefing the training supervisor, selecting and working with advisory committee, utilizing other community resources. Principles and problems in the construction of high school and post-secondary school curriculums. (Lec. 3) Pre: senior standing and permission of department. Staff
- 520 **Research and Methods in Teaching Office Occupations Subjects** (I, 3)
- 522 **Improvement of Instruction in Social Business Subjects** (II, 3)
- 524 **Foundations and Recent Developments in Business Education** (II, 3)
- 525 **Research Seminar in Business Education** (I, 3)
- 526 **Field Study and Seminar in Business Education** (I and II, 3)
- 527 **Communication for Business** (I, 3)

## Business Law (BSL)

Chairman: Associate Professor Overton (Management)

- 333 **Law in a Business Environment** (I, 3) Contractual relations prefaced by a survey of origins, framework and concepts of our legal system. (Lec. 3) Pre: junior standing. Open to non-business students only by permission of department. Staff
- 334 **Law in a Business Environment** (II, 3) Operation of the system of jurisprudence as it affects agency business organizations and the sale of merchandise. (Lec. 3) Pre: 333. Open to non-business students only by permission of department. Staff

**442 Property Interests (II, 3)** Creation and transfer of personal and real property interests: suretyship and guarantee, bailments, real estate law, trusts and estates. (Lec. 3) Pre: 333 or permission of instructor. Staff

**500 Legal Environment of Business (I and II, 2)**

**501 Law and Accounting (I, 3)**

## Chemical Engineering (CHE)

Chairman: Professor Treybal

**212 Chemical Process Calculations (I, 3)** Orientation to chemical engineering, material-balance computations on chemical processes, use of gas laws, vapor pressure, humidity, solubility and crystallization. (Lec. 2, Lab. 3) Pre: CHM 112 or 192. Shilling

**272 Introduction to Chemical Engineering (II, 3)** Introduction to the use of computers and numerical methods including numerical solution of differential equations, as applied to chemical engineering. (Lec. 2, Lab. 3) Pre: 212 and MTH 243. Votta

**313 Chemical Engineering Thermodynamics (II, 3)** Applications of the first, second and third laws of thermodynamics involving thermophysics, thermochemistry, energy balances, combustion and properties of fluids. (Lec. 2, Lab. 3) Pre: 212 or CHM 431 and MTH 243. Votta

**314 Chemical Engineering Thermodynamics (I, 3)** Continuation of 313 with applications to compression, refrigeration and chemical equilibrium. (Lec. 2, Lab. 3) Pre: 313. Votta

**322 Chemical Process Analysis (I, 1)** Quantitative experimental studies of selected unit chemical processes. (Lab. 3) Pre: credit or registration in 347. Votta

**331 Applied Metallurgy (I, 3)** Fundamentals of metallurgy with emphasis on physical and chemical properties and their relationship to metal structure, including alloy systems of engineering significance, microstructural control of properties. (Lec. 2, Lab. 3) Not open for credit for engineering students, except in Mechanical Engineering Technology. Savage

**332 Physical Metallurgy (I and II, 3)** Fundamentals of physical metallurgy as they apply particularly to the engineering metals and their alloys. Properties, characteristics and structure of metals, theory of alloys, thermal processing, and studies in corrosion. (Lec. 2, Lab. 3) Pre: CHM 101, 103 or 191 and junior standing. Rockett and Savage

**333 Engineering Materials (I and II, 3)** First course in engineering materials devoted largely, but not exclusively, to physical metallurgy. Includes structure and properties of pure substances and binary systems at equilibrium and, when used intentionally, at non-equilibrium. (Lec. 2, Lab. 3) Pre: junior standing or permission of instructor. Rockett and Savage

**345, 346 Chemical Engineering Laboratory (I and II, 2 each)** Quantitative studies illustrating chemical engineering principles. Emphasis on report writing and the interpretation of experimental data. (Lab. 6) Pre: 348. Staff

**347 Transfer Operations I (I, 3)** Dimensional analysis; fluid statics; mass, energy, and momentum balances for

fluid systems, boundary layers, turbulence, incompressible flow; flow through fixed beds of solids and fluidized beds; filtration. (Lec. 3) Pre: credit or registration in 313 or MCE 341. Treybal

**348 Transfer Operations II (II, 3)** Heat transfer: conduction, convection, radiation. Mass transfer: distillation, liquid extraction, gas absorption; staged and differential contact. (Lec. 2, Lab. 3) Pre: 347. Knickle

**349 Transfer Operations III (I, 2)** Diffusion and mass transfer, humidification and dehumidification, water cooling, absorption and ion exchange, drying, leaching. (Lec. 2) Pre: 348. Treybal

**351, 352 (or OCE 351, 352) Plant Design and Economics (I and II, 2, 3)** Elements of plant design integrating the principles learned in previous courses. Emphasis is on optimum economic design and the writing of reports. 351: (Lec. 1, Lab. 3) 352: (Lec. 1, Lab. 6) Pre: 314 and 348. Knickle and Treybal

**391, 392 Honors Work (I and II, 1-3 each)** Independent study under close faculty supervision. Discussion of advanced topics in chemical engineering in preparation for graduate work. Pre: junior standing or permission of department. Staff

**403, 404 (or OCE 403, 404) Introduction to Ocean Engineering Processes I and II (I and II, 3 each)** Theory and basic principles directly applicable to ocean related processes. Desalinization, mining, combating oil spills, seawater as a coolant, seawater as a waste diluent, food processing, sulfur and petroleum production, recovery minerals. (Lec. 2, Lab. 4) Pre: permission of instructor. Barnett and Knickle

**425 Process Dynamics and Control (II, 3)** Principles involved in automatic control of processing plants. Modeling and responses of dynamic systems, feedback control. (Lec. 3) Pre: MTH 243 and ELE 211, or 220 and credit or registration in CHE 347 or MCE 354. Shilling

**437 Materials Engineering (I and II, 3)** Introduction to engineering aspects of the fundamentals of the solid state. Structural chemical and physical properties of engineering materials with emphasis on ceramics, polymers and composite materials. (Lec. 3) Pre: CHM 101, 103 or 191 or permission of department. Gielisse

**447, 448 Unit Operations in the Food Industry (I and II, 4 each)** Basic principles underlying unit operations of chemical engineering applied to food industries. Topics covered include heat transfer, fluid flow, extraction and drying. Not for credit in chemical engineering curriculum. (Lec. 3, Lab. 3) Pre: CHM 228, PHY 112, MTH 109 and permission of instructor. Barnett

**464 Industrial Reaction Kinetics (I, 3)** Modelling of simple chemical-reacting systems; computation of design parameters to satisfy system constraints and typical restraints (e.g., product rate and distribution) and conditions of optimality. (Lec. 3) Pre: 314. Shilling

**471 Analysis of Engineering Data (I, 3)** Application of some of the modern mathematical techniques to the analysis of engineering data. (Lec. 3) In alternate years, next offered 1979-80. Votta

**501, 502 Graduate Seminar (I and II, 1 each)**

**530 Polymer Chemistry (I, 3)**

**531 Polymer Engineering (II, 3)**

**532 Ceramic Engineering (I, 3)**

**533 Engineering Metallurgy (II, 3)**



- 534 (or OCE 534) Corrosion and Corrosion Control** (I, 3)  
**535 (or OCE 535) Advanced Course in Corrosion** (II, 3)  
**537 Advanced Materials Engineering** (II, 3)  
**538 Nuclear Metallurgy** (II, 3)  
**539 Electron and Light Microscopy of Solids** (I, 3)  
**540 Phase Equilibria** (II, 3)  
**572 X-ray Diffraction and Fluorescence** (I, 3)  
**573 Mechanical Metallurgy** (I or II, 3)  
**574 Biochemical Engineering** (I, 3)  
**581 Introduction to Nuclear Engineering** (I and II, 3)  
**582 Radiological Health Physics** (I, 3)  
**583 Nuclear Reactor Theory** (II, 3)  
**585 Measurements in Nuclear Engineering** (I, 3)  
**586 Nuclear Reactor Laboratory** (II, 3)  
**591, 592 Special Problems** (I and II, 1-6 each)

## Chemistry (CHM)

Chairman: Professor Cruickshank

- 101 General Chemistry Lecture I** (I and II, 3) Fundamental concepts and principles in atomic structure, energy relationships, and reaction mechanisms balanced with applied and descriptive materials. (Lec. 3) Not open to students who have received credit for 103 or 191. Rosen, Gonzalez
- 102 Laboratory for Chemistry 101** (I and II, 1) Experimental work illustrating certain concepts and principles of general chemistry. Experiments in solution, reaction rates, enthalpy, molar heat capacity, and electrochemistry. (Lab. 3) Pre: prior or concurrent registration in 101. Staff
- 103 Introductory Chemistry Lecture** (I, 3) One-semester general chemistry course designed for students whose curriculums require the one-semester organic chemistry course, 124. (Lec. 3) Not open to students who have received credit for 101 or 191. P. Brown and Petersen
- 105 Laboratory for Chemistry 103** (I, 1) Fits course content of 103. (Lab. 3) Pre: prior or concurrent registration in 103. Staff
- 107 Chemistry of Our Environment** (I and II, 3) Elementary chemistry for non-science majors, emphasizing chemical aspects of the human environment. Chemistry of the biosphere, of pollution and aspects of industrial chemistry. (Lec. 3) Staff
- 112 General Chemistry Lecture II** (I or II, 3) Elementary thermodynamics, chemical equilibration in aqueous solutions, properties and reactions of inorganic species, practical applications of chemical principles. (Lec. 3) Pre: 101 or 103. Not open to students who have passed 104. Staff
- 114 Laboratory for Chemistry 112** (I or II, 1) Semi-micro-qualitative analysis and its applications. (Lab. 3) Pre: prior or concurrent enrollment in 112. Not open to students who have passed 106. Staff
- 124 Organic Chemistry** (I and II, 4) Elementary principles of organic chemistry with emphasis on aliphatic compounds, especially those of physiological significance such as amino acids and proteins, carbohydrates, fats and waxes. (Lec. 3, Lab. 3) Pre: 101 or 103. Not open to students in chemistry or chemical engineering. MacKenzie
- 191 General Chemistry** (I, 5) Descriptive inorganic chemistry, qualitative analysis and an introduction to quantitative analysis. Required for students in the chemistry curriculum who have had a year of high school chemistry. (Lec. 4, Lab. 3) Not open to students who have received credit for 101 or 103. Freeman
- 192 General Chemistry** (II, 5) Continuation of 191. (Lec. 4, Lab. 3) Fasching
- 212 Quantitative Analysis** (I, 4) Principles of gravimetric and volumetric analysis with detailed attention to solution of stoichiometric problems. Laboratory analysis of representative substances by gravimetric or volumetric procedures. (Lec. 3, Lab. 3) Pre: 112 and 114. Forcé
- 226 Organic Chemistry Laboratory** (I and II, 2) Common techniques and typical preparative methods in both aliphatic and aromatic series. (Lab. 6) Pre: prior registration in 228. Not open to students who have received credit for 229 or 230. Cheer
- 227 Organic Chemistry Lecture I** (I or II, 3) General principles and theories with emphasis on classification, nomenclature, methods of preparation and characteristic reactions of organic compounds in aliphatic series. (Lec. 3) Pre: 104 and 106 or 112 and 114 or 192. Cheer, Rosen
- 228 Organic Chemistry Lecture II** (I or II, 3) Continuation of 227 with emphasis on the aromatic series. (Lec. 3) Pre: 227. Cheer, Vittimberga
- 291 Organic Chemistry** (I, 4) Development of principles and theory through an examination of structure, nomenclature and reactions of organic compounds. (Lec. 3, Lab. 3) Pre: 192 or permission of instructor. Not open to students who have passed 227. Goodman
- 292 Organic Chemistry** (II, 4) Continuation of 291 with extension to several additional families of compounds. (Lec. 3, Lab. 3) Pre: 291. Not open to students who have passed 228. Goodman
- 335, 336 Physical Chemistry Laboratory** (I and II, 2 each) Physical chemical properties of gases, liquids and solutions; electrochemical cells; phase diagrams of binary and ternary systems; and chemical kinetics. Designed for chemistry majors. (Lab. 4) Pre: 431 for 335; 432 for 336. May be taken concurrently with 431, 432. Staff
- 353, 354 Undergraduate Research** (I and II, 1-6 each) Methods of approach to a research problem. Literature, laboratory work and a report of an original problem or problems. (Lab. 3-18) May be repeated for a total of six credits each. Pre: permission of instructor. Staff
- 392 Seminar in Chemistry** (II, 1) Preparation and presentation of papers on selected topics in chemistry. Required of seniors in chemistry. (Lec. 1) Undergraduate credit only. Pre: prior of concurrent registration in 228 or 432. Staff
- 401 Intermediate Inorganic Chemistry** (I, 3) Principles of inorganic chemistry broadly related to structure and reactivity. Many-electron atoms bonding theories, acid-base concepts, coordination chemistry, reaction mechanisms. (Lec. 3) Pre: 432. Nelson
- 412 Instrumental Methods of Analysis** (II, 3) Theory and application of optical and electrical instruments to solution of chemical problems: flame photometry, emission spectroscopy, ultraviolet, visible, and infrared spectrophotometry, colorimetry, turbidimetry, nephelometry, fluorometry, potentiometry, voltammetric titration methods. (Lec. 3) Pre: 228 and prior or concurrent registration in 432. Staff

**414 Instrumental Methods of Analysis Laboratory (II, 2)** Applications of instrumental methods to the solution of problems in analytical chemistry. (Lab. 6) Pre: prior or concurrent enrollment in 412. Forcé

**425 Qualitative Organic Analysis (I, 4)** Methods of identification of typical organic compounds. Separation and identification of components of mixtures. Use of infrared and nuclear magnetic resonance spectra emphasized. (Lec. 2, Lab. 6) Pre: 228 and 226 or 230. Staff

**431, 432 Physical Chemistry (I and II, 3 each)** 431: Gas laws, kinetic theory, laws of thermodynamics, chemical equilibrium, phase equilibria, and electrochemistry. 432: Atomic theory, quantum chemistry, bonding, molecular interactions and chemical kinetics. (Lec. 3) Pre: 112 or 192 and MTH 141. May be taken for graduate credit only by students whose disciplines do not require physical chemistry as part of their undergraduate programs. Gonzalez, C. Brown

**435 Physical Chemistry for Life Sciences**  
See Biochemistry and Biophysics 435.

**501 Advanced Inorganic Chemistry I (I, 3)**

**502 Advanced Inorganic Chemistry II (II, 3)**

**504 Physical Methods of Inorganic Chemistry (II, 3)**

**511 Advanced Analytical Chemistry I (I, 3)**

**512 Advanced Analytical Chemistry II (II, 3)**

**518 Radiochemistry (II, 3)**

**521 Advanced Organic Chemistry I (I, 3)**

**522 Advanced Chemistry II (II, 3)**

**529 Advanced Physical Chemistry I (I, 3)**

**532 Advanced Physical Chemistry II (II, 3)**

**535 Chemical Applications of Group Theory (I, 2)**

**536 Molecular Spectroscopy and Structure (II, 3)**

**544 Data Processing in Chemistry (II, 3)**

## Child Development and Family Relations (CDF)

Chairman: Professor Fitzelle

**150 Personal Development (I and II, 3)** Emphasis on self-understanding and human relationships in general. Influence of societal roles, groups interaction, and contemporary cultural issues on individual development. (Lec. 3) Staff

**200 Growth and Development of Children (I and II, 3)** For students who intend to enter a profession dealing with children. Physical, social, mental, emotional growth and development, and interrelations among them from birth to puberty. (Lec. 3) Staff

**250 Gerontology Theory and Application (I and II, 3)** Introduction to the study of aging processes: biological, psychological, and social theories. Health, social and other age-related problems will be examined in the classroom and through field experience. (Lec. 2, Rec. 1) Spence and Staff

**270 Introduction to Work with Children (I and II, 3)** Theory and practice in care, teaching and guidance of preschool children. Lectures, discussion and participation in nursery school. Students should have two free hours between 9 and 11:30, and 1 and 3:30 one day per week. (Lec. 2, Lab. 2) Pre: 200. Nursery School Staff

**290 Fundamentals of Preschool Education (I and II, 2)** Philosophy and theory basic to teaching and guiding the

young child. Restricted to professional and semi-professional persons with experience in the field. (Lec. 2) Pre: permission of instructor. Staff

**302 Adolescent Growth and Development (I and II, 3)** Physical, psychological, social and emotional growth and development of individual during adolescent years. (Lec. 3) Pre: 200 or PSY 232. Staff

**320 Human Relations Laboratory (I and II, 1)** Understanding individual behavior in the context of a social group; discussion and selected group dynamics techniques. (Lab. 2) Open only to students concurrently enrolled in HMG 370. S/U credit. Fitzelle

**330 Curriculum for Young Children (I and II, 3)** Program planning for nursery school and kindergarten. Theory and teaching techniques that foster full development of the young child through language, arts, creative activities, science and mathematics. (Lec. 3) Pre: 270. Staff

**331 Literature for Children (I and II, 3)** Literary heritage of American children and criteria for the selection and presentation of literature to children. (Lec. 3) Pre: junior standing. Staff

**340 Family and Community Health (I and II, 3)** Health maintenance throughout life. Specific health concerns of various age groups. Community and world health needs and agencies concerned with meeting these needs. Home nursing demonstration and practice. (Lec. 3) Pre: junior standing. Votta

**355 Marriage and Family Relationships (I and II, 3)** Relationships between men and women in courtship, engagement and first years of marriage, as influenced by development and functioning of the individuals' personalities which in turn are influenced by cultural factors. (Lec. 3) Pre: junior standing. Staff

**370 Nursery School Practicum (I and II, 4)** Supervised participation in the nursery school. Discussion and conferences. (Lec. 2, Lab. 4) Pre: prior or concurrent registration in 330 and permission of department. Nursery School Staff

**375 Field Experiences in Community Agencies (I and II, 8)** Supervised experience in community agencies for individuals or groups with special needs. Apply for permission by end of fourth semester. Primarily for Home Economics students. Pre: 12 credits in CDF, permission of department and senior standing. Staff

**390 Contemporary Philosophies of Guiding Children (I and II, 3)** Factors involved in developing a philosophy of guidance of children and adolescents. The evolution of present-day theory. Contemporary writers read and discussed. (Lec. 3) Pre: 270 or permission of department. Staff

**392 Child Care: Changing Patterns (I, 3)** Comprehensive study of child care, historical background and development, administration of centers, sociological problems, legislation, new trends in programs. Guest lecturers, related field observations. (Lec. 3) Pre: 270 or permission of department. Lapin

**400 Child Development: Advanced Course (I and II, 3)** Presentation of theory of human development and consideration of some of the classical and current investigations in the field. (Lec. 3) Pre: 200 or equivalent. Staff

**403 Human Development During Adulthood (I or II, 3)** Major social, psychological and cultural factors influenc-

ing development after physiological maturity and prior to senescence. Major theorists and normal crises of adulthood. (Lec. 3) Pre: 200 or 302 or equivalent. Staff

**406 Growth and Development During Infancy (I, 3)** Study of developmental sequences from birth to two years with emphasis on biological, psychological, social and environmental influences affecting growth. Laboratory periods consist of observation and experience with infants in various settings. Pre: 200 and permission of the instructor. (Lec. 2, Lab. 1) Staff

**407 Perspectives on Parenting (II, 3)** Comprehensive study of the central issues, research and recent developments in the field of parenting; the impact of the behavioral sciences and social change on parents. (Lec. 3) Pre: CDF 200 or permission of instructor. Greene

**450 Family Interaction (I and II, 3)** Interdisciplinary approach to the dynamics of intrafamily relationships, interactions of family units and family members with elements of the socio-cultural environment. (Lec. 3) Pre: 355 or SOC 202. Staff

**451 Family and the Elderly (II, 3)** Emphasis on the elderly in analysis of intergenerational organization and relationships. Cultural values, psychosocial factors, economic considerations and societal trends relative to family life. (Lec. 3) Cooper and Spence

**460 Family Life Education (II, 3)** Interdisciplinary consideration of relationships between the sexes during childhood and adolescence, including: family health, normal psycho-sexual development, marriage, ethics, sex education, teaching of family relations. (Lec. 3) Pre: 355 or permission of department. Staff

**480 Children and Families in Poverty (II, 3)** Interdisciplinary approach to understanding culturally and economically deprived people. Some experience working with such individuals or groups. (Lec. 2, Lab. 1) Pre: permission of department. Staff

**497, 498 Special Problems (I and II, 2-4 each)** Open to qualified seniors or graduate students who wish to do advanced work. (Lec. or Lab. according to nature of problem) Pre: senior standing and permission of department. Staff

**500 Child Development Seminar (I or II, 3)**

**501 The Study of Children and Families (I, 3)**

**550 Family Relations Seminar (II, 3)**

**570 Field Experience with Exceptional Children (I and II, 3)**

**597, 598 Advanced Study (I and II, 3 each)**

**301 to 306 Introduction to Professional Practice in Civil Engineering (I and II, 0)** Discussion with faculty and visiting speakers on curriculum and career planning, professional practice and ethics, employment opportunities and graduate study. (Lab. 2) Required of all civil engineering students in their sophomore, junior and senior years. S/U credit. Staff

**315 Surveying I (I, 3)** Theory and practice of plane surveying including use, care and adjustment of surveying instruments, boundary surveys, horizontal and vertical curves, earthwork and topography. (Lec. 2, Lab. 3) Pre: MTH 141. Moulthrop

**322, 323 Civil Engineering Laboratory I and II (I and II, 2 each)** Properties and behavior of engineering materials. Directed work in concrete, soils and bituminous materials and experimental stress analysis. Independent student projects. (Lec. 1, Lab. 3) Pre: 220. Staff

**334 Construction Planning and Specifications (II, 3)** Introduction to construction planning; procedures involved in construction activities with major emphasis on heavy construction. (Lec. 3) Pre: 220. Staff

**346 Transportation Engineering (II, 3)** Development, location and design aspects of the major transportation systems. (Lec. 3) Moulthrop

**352 Structural Analysis and Design I (I, 3)** Structural systems: beams, frames, trusses. Conjugate beam, virtual work, general method for indeterminate structures. Introduction to design of steel structures. (Lec. 3) Pre: 220. Staff

**353 Structural Analysis and Design II (II, 3)** Energy methods, slope deflection, moment distribution, influence lines, stability, matrix methods. Introduction to reinforced concrete design. (Lec. 3) Pre: 352. Staff

**374 Environmental Engineering I (I and II, 3)** Systems concerned with urban environmental problems of water supply and treatment, sewerage treatment of municipal and industrial waste waters, stream pollution, air pollution, and disposal of solid waste materials. (Lec. 3) Pre: MCE 354. Staff

**377 Biological Aspects of Water Quality**  
See Plant Pathology 377.

**380 Soil Mechanics (II, 3)** Engineering properties of soils. Seepage, drainage, and frost action investigation. Theory of earth pressures, slope stability, and consolidation. (Lec. 3) Pre: credit or registration in 220. Staff

**391 Honors Work (I and II, 3)** Independent study under close faculty supervision. Discussion of advanced topics in civil engineering in preparation for graduate work. Pre: junior standing or permission of department. Staff

**396 Civil Engineering Analysis (II, 3)** Problems from several fields of civil and environmental engineering solved by numerical methods with particular emphasis on use of electronic digital computers. Computer assignments in the area of each student's interest. (Lec. 2, Lab. 3) Pre: 216. Lavelle or Marcus

**442 Traffic Engineering (I, 3)** Highway traffic characteristics and methods of providing for an effective, free and rapid flow of traffic. Types of studies, regulations, control devices and aids, planning and administration. (Lec. 2, Lab. 3) Pre: 346. Moulthrop

**447 Highway Engineering (II, 3)** Principles of design of modern highways and streets including economic

## Civil and Environmental Engineering (CVE)

Chairman: Associate Professor W.E. Kelly

**216 Metronics (I, 3)** Applications of numerical analysis and computer programming to travers, coordinate geometry, curves, and earth work computations. (Lec. 2, Lab. 3) Pre: MTH 141. Staff

**220 Mechanics of Materials (I and II, 3)** Theory of stresses and strains, thin-walled cylinders, beam deflections, columns, combined bending and direct stresses, joints, indeterminate beams. (Lec. 3) Pre: MCE 162. Staff

consideration; capacity, geometric layout, drainage, pavements and construction. (Lec. 2, Lab. 3) Pre: 346. Moultrap

**453 Computer Analysis of Structures (I, 3)** Introduction to matrix methods of structural analysis. Solutions of planar structures using a digital computer. (Lec. 3) Pre: 353 and 396. Lavelle

**460 Analysis and Design of Metal Structures (II, 3)** Properties of metals. Current design criteria and practice for the design of steel elements. Elastic and inelastic behavior and design of tension, compression, flexural, and beam-column members. Design of connections. Comprehensive design problems. (Lec. 2, Lab. 3) Pre: 352. Not for graduate degree program credit Staff

**465 Analysis and Design of Concrete Structures (I, 3)** Current criteria and practice for design of reinforced and prestressed concrete structures. Elastic and ultimate strength analysis of beams, slabs, columns and frames. Comprehensive design problems. (Lec. 3, Lab. 3) Pre: 353. Not for graduate degree program credit. Staff

**470 Water Supply and Treatment (II, 3)** Development of surface and ground water supplies, water transportation and distribution systems. Water treatment processes including chemical coagulation and precipitation, water softening, iron and manganese removal, disinfection, corrosion control, and saline water conversion. (Lec. 2, Lab. 3) Pre: 374 or permission of instructor. Not for graduate degree program credit. Campbell

**471 Municipal Waste Water Systems (I, 3)** Development of systems for the collection and conveyance of municipal waste waters. Treatment of waste waters by physical, chemical, and biological systems. Re-use of waste waters. Regional systems development and financing. (Lec. 2, Lab. 3) Pre: 374 or permission of instructor. Not for graduate degree program credit. Campbell

**472 Industrial Air Pollution (I or II, 3)** Sources and characteristics of urban-industrial air pollution, allowable concentrations and control, stack sampling, chemical supplements in air pollution control, diffusion of pollutants, site selection and abatement programs. Air resources management programs. (Lec. 3) Pre: permission of department. Staff

**473 Analysis of Air Pollutants (I or II, 3)** Pollutants in the atmosphere. Methods of sampling and interpretation, and analysis of pollutants in gases, vapors, mists, dusts and fumes. Laboratory methods of sampling and analysis of air pollutants. (Lec. 2, Lab. 3) Pre: CHM 110 or permission of department. Staff

**478 Solid Waste Disposal and Management (II, 3)** Sources, collection and treatment methods for the removal of solid wastes from the environment. Recovery and re-use of waste materials. Economics of solid wastes and by-products. Interrelation between solid wastes, air and water pollution. (Lec. 3) Pre: permission of department. Sussman and Poon

**481 Soil Behavior (I, 3)** Behavior of granular and cohesive soils with experimental determinations of soil properties. Emphasis on shearing strength and seepage studies. (Lec. 2, Lab. 3) Pre: 380 or permission of instructor. Staff

**482 Soil Engineering (II, 3)** Strength, stability and settlement considerations in design of foundation, retaining wall, and earth dam structures. Sub-surface investigations and economic factors in the selection of suitable foundations. (Lec. 2, Lab. 3) Pre: 380. Staff

**483 Foundation Engineering (II, 3)** Application of the principles of soil mechanics to the design of sheet piling, cofferdams, and wharves. Advanced problems in the selection and design of foundations for major structures including buildings, bridges, walls, dams, etc.; case studies. (Lec. 2, Lab. 3) Pre: 380. Staff

**491, 492 Special Problems (I and II, 1-6 each)** Advanced work, under supervision of a member of the staff and arranged to suit individual requirements of the student. (Lec. or Lab. according to nature of problems. Credits not to exceed a total of 12) Pre: permission of department. Staff

**495 Civil and Environmental Engineering Systems (I, 3)** Practical civil and environmental engineering projects, broad in scope from the areas of water resources, structures, pollution control and transportation are studied, analyzed, designed and discussed. (Lec. 3) Pre: senior standing in civil engineering. Not for graduate degree program credit. Marcus

**521 Advanced Strength of Materials (I or II, 3)**

**524 (or OCE 524) Marine Structural Design (I or II, 3)**

**551 Advanced Structural Analysis (I, 3)**

**565 Response of Structures to Dynamic Loads (I or II, 3)**

**570 Sanitary Chemistry (I, 3)**

**571 Sanitary Chemistry Laboratory (II, 3)**

**572 Biosystems in Sanitary Engineering (I or II, 3)**

**575 Open Channel Hydraulics (I or II, 3)**

**584 Principles of Pavement Design (I or II, 3)**

**585 Soil Stabilization (I or II, 3)**

**586 Physico-chemical Properties of Soils (II, 3)**

**587 Ground Water Flow and Seepage Pressure (I, 3)**

**588 Ground Water Hydrology (II, 3)**

**596 Numerical Methods in Structural Engineering (I or II, 3)**

## Classics (CLA)

Section Head: Instructor Campbell

**391 Masterpieces of Greek Literature (I, 3)** Representative genres of the Greek classics in translation. (Lec. 3) Cashdollar

**392 Masterpieces of Roman Literature (II, 3)** Representative genres of the Roman classics in translation. (Lec. 3) Staff

**393 Literature of Greek Mythology (I and II, 3)** Myths, folk-tales and legends of ancient Greece. Readings from Greek and Roman literature in translation. Emphasis on literary, historical and religious aspects of mythology. (Lec. 3) Cashdollar

## Communications

### Business Education

227 Business Communications

### English

110 Composition

120 Literature and Composition

### Journalism

212 News Writing and Reporting

324 Magazine Article and Feature Writing

**Scratch**

- 000V Intermediate Composition  
 000W Basic Composition  
 000X College Writing  
 000Y Advanced Composition  
 000Z Research Paper Writing

**Speech**

- 101 Fundamentals of Oral Communication  
 102 Public Speaking  
 215 Argumentation and Debate  
 220 Group Discussion

**Community Planning (CPL)**

Director: Associate Professor Kupa

- 410 Fundamentals of Urban Planning (II, 3)** Survey of urban planning principles, methods and techniques pertinent to contemporary urban problems. History of city forms and functions and development of urban planning as a profession. Problems and priorities in shaping the future urban environment. (Lec. 3) Primarily for students not enrolled in the graduate curriculum in Community Planning and Area Development. Foster
- 434 Introduction to Environmental Law (II, 3)** Surveys issues arising out of laws designed to protect the environment and manage resources: right to a decent environment, government regulation versus private property rights, citizen participation in planning environmental controls. (Lec. 3) For students not enrolled in the graduate curriculum in Community Planning and Area Development. Staff
- 501 Introduction to Community Planning, History and Theory (I, 3)**
- 503, 504 Seminar in Contemporary U.S. Environment (I and II, 3 each)**
- 505 Planning Studio I (I, 3)**
- 506 Planning Studio II (II, 6)**
- 508 Research Methodology (II, 3)**
- 510 Survey of Regional, Inner-City and Environmental Planning (I, 3)**
- 520 Seminar in Regional Planning and Development (II, 3)**
- 521 (or REN 532) Land Resources Economics (I, 3)**
- 531 Seminar in Urban Design (I, 3)**
- 534 Environmental Law (II, 3)**
- 540 Housing in American Society (II, 3)**
- 541 Manpower Planning (I, 3)**
- 544 Urban Planning and Politics in the Metropolis (II, 3)**
- 552 Values and Prediction in Planning (I or II, 3)**
- 570 Plan Implementation (I or II, 3)**
- 591, 592 Special Problems in Planning (I or II, 3)**

**Comparative Literature Studies (CLS)**

Director: Associate Professor Vigilones

- 250 Themes and Myths (I or II, 3)** Study of the evolution and transformation of a myth or theme in several national literatures. An introduction to a comparative and interdisciplinary approach. May be repeated for credit as often as the topic changes. (Lec. 3) Spring 1979: *The Image of The City*. Trivelli, Coordinator

**350 Literary Theory and Criticism (I or II, 3)** Introduction to theories of literature and their application in the analysis of selected texts. May be repeated for credit as often as the topic changes. (Lec. 3) Staff

**450 Studies in Comparative Literature (I or II, 3)** Detailed study of literary movement, genre, or an aspect of literature as seen in two or more literatures. May be repeated for credit as often as the topic changes. (Lec. 3) Pre: 6 credits in literature or permission of instructor. Fall 1978: *Romantic Movement in Germany, England and France*. Dornberg, Toloudis and Tutt

**Computer Science (CSC)**

Chairman: Professor Hemmerle (Computer Science and Experimental Statistics)

**201, 202 Introduction to Computing I, II (I and II, 3 each)** Algorithms, programs, and computers. Programming and program structure, data representation, organization and characteristics of computers. Computer solution of several numerical and non-numerical problems using one or more programming languages. (Lec. 3) Pre: 201, MTH 141 for 202. Staff

**220 Computers in Society (II, 3)** History, operation, application, and social significance of computers. Emphasis on the role of the computer in society with respect to political, economic, cultural, social, and ethical aspects: its capabilities, potentials and dangers. (Lec. 3) Pre: 201. Staff

**311 Machine and Assembly Language Programming (I and II, 3)** Introduction to the principles of machine and assembly language programming. Internal machine representation of character, integer and floating point numbers. Logical operations on non-numeric data. (Lec. 3) Pre: prior or concurrent registration in 202. Staff

**350 Introduction to Numerical Computation (I or II, 3)** Finite precision arithmetic, floating point number systems, pitfalls in computation, efficient use of array storage, assessing algorithm efficiency, iterative processes, halving and doubling algorithms, built-in functions, diagnostic methods. (Lec. 3) Pre: 202, MTH 215, 243. Staff

**381 Introduction to FORTRAN Coding (I or II, 1)** An intensive introduction to the syntax and use of the FORTRAN programming language. (Lec. 1) Not open to students with credit in 201. Staff

**382 Introduction to Job Control Language (I or II, 1)** An intensive introduction to the syntax and use of the Job Control language used by the University's Academic Computing Center. (Lec. 1) Pre: 201 or 381. Staff

**383 Introduction to PL/1 Coding (I or II, 1)** An intensive introduction to the syntax and use of the PL/1 programming language. (Lec. 1) Pre: 201 or 381. Staff

**385 Introduction to COBOL Coding (I or II, 1)** An intensive introduction to the syntax and use of the COBOL programming language. (Lec. 1) Pre: 201 or 381. Staff

**410 Introduction to Computer Science and Algorithmic Processes (I and II, 3)** Concepts and properties of algorithms, language and notations for describing algorithms, analysis of computational problems and development of algorithms for their solution, application of a specific procedure-oriented language to solve

simple numerical and non-numerical problems using a computer. (Lec. 3) Pre: 201 and MTH 142. Staff

**411 Computer Organization and Programming (I and II, 3)** Logical structure of computer systems, information representation, instruction codes, arithmetic and logical operations, flow of control. Assembly language programming, input-output, sub-routines, linkages, macros, conditional assemblers. (Lec. 3) Pre: 311, and prior or concurrent registration in 382. Staff

**412 Programming Systems (II, 3)** Structure of monitor and executive systems, time-sharing systems, real-time systems, input-output systems, file organization and manipulations, command languages. (Lec. 3) Pre: 411. Staff

**413 Data Structures (I, 3)** Formal data structures. Algorithms for handling such common structures as arrays, linear lists, trees and multi-linked lists. Searching and ordering techniques. Data management systems. Data structures in programming languages. (Lec. 3) Pre: 202, 383, prior or concurrent registration in 382 and MTH 215. Staff

**491, 492 Problems in Computer Science (I and II, 1-3 each)** Advanced work in computer science. Conducted as seminars or as supervised individual projects. (Lec. or Lab. arranged) Staff

**500 Scientific Applications of Digital Computers I (I, 3)**  
**502 Theory of Algorithmic Languages and Compilers (II, 3)**

**505 (or ELE 505) Design of Digital Circuits (I, 3)**

**512 Advanced Programming Systems (I, 3)**

**515 Theory of Computation (I, 3)**

**525 (or IDE 525) Simulation (II, 3)**

**535 Information Organization and Retrieval (II, 3)**

**551 Scientific Applications of Digital Computers II (II, 3)**

**581 (or ELE 581) Artificial Intelligence (I or II, 3)**

**582 (or ELE 582) Robotics (I or II, 3)**

**583 (or ELE 583) Computer Vision (I, 3)**

**591, 592 Problems in Computer Science (I and II, 1-3 each)**

## Dental Hygiene (DHY)

Chairman: Professor B. Wilson

**101 Pre-Clinical Dental Hygiene (I, 1)** Philosophies, concepts and procedures needed before beginning experience in dental hygiene clinic. Emphasis on the basic concepts and principles in preventive oral health care. (Lec. 1) Wilson

**125 Dental Morphology, Head and Neck Anatomy (I, 3)** Study of form and function of teeth and their related structures. A detailed study of the anatomy and physiology of the structures of the head and neck. (Lec. 4, Lab. 2) Bliss

**126 General and Oral Histology and Embryology (II, 3)** Cytology, development and microscopic anatomy of oral cavity. (Lec. 2, Lab. 2) Pre: 125. Persechino

**128 Periodontics (II, 1)** Classification of periodontal disease, clinical picture, causative factors, and types of treatment. (Lec. 2) Ross

**135 Technique-Clinical Dental Hygiene I (I, 1)** An introduction to knowledge and skills essential for the per-

formance of dental hygiene services. Emphasis on principles of instrumentation and perfecting clinical competence on manikin heads and laboratory partners. (Practicum 6, Lec. 1) Pre: permission of department chairperson. Staff

**136 Clinical Dental Hygiene II (II, 2)** Development of clinical skills. Application of the basic principles of oral inspection, charting, radiology, fluoride application and dental health education. (Practicum 14\*, Lec. 1) Staff

**141 Dental Assisting (I, 1)** Lectures, clinical observations, and practice devoted to methods of assisting dentists. (Practicum 4) Peterson and Staff, Regional Dental Center, Newport

**227 General and Oral Pathology (I, 3)** Significance, signs, symptoms and relationship of general disease to oral disease. Stress on manifestation of oral pathology and clinical recognition of atypical or abnormal oral conditions and disease. (Lec. 3) Carlotti and England

**231 Roentgenology (I, 2)** Lectures, demonstrations and laboratory practice. Study of nature and behavior of x-rays, extra- and intra-oral radiographic techniques and procedures. Recognition and interpretation of information revealed by radiographic examination. (Lec. 1, Lab 2) Wilson and Staff

**237 Clinical Dental Hygiene III (I, 2)** Continuation of 136. (Practicum 20\*) Staff

**238 Clinical Dental Hygiene IV (II, 2)** Continuation of 237. (Practicum 20\*) Staff

**244 Dental Materials and Operative Technique (II, 1)** Study of physical, chemical and mechanical properties of materials used in dentistry. Laboratory procedures develop skill in preparation, manipulation, and use of materials relevant to the practice of dental hygiene. (Lec. - Practicum 3 for 8 weeks) Bush

**246 Ethics, Jurisprudence, and Office Management (II, 1)** Dental office procedures with emphasis on patient recall programs. Laws and ethics relating to practice of dentistry and dental hygiene. (Lec. 2) Kershaw

**250 Dental Health Education (II, 2)** Educational philosophy, teaching methods and acquisition of skills in methods of research. Investigation, review, interpretation and critical evaluation of scientific literature as the basis for dental health education. (Lec. 2) Wilson

**252 Community Health (II, 2)** Philosophy and background of public health practice. Review of current health concepts, practice, needs and problems. Emphasis on methods for promotion of optimal health for all. Supervised field experiences. (Lec. 2) For concentrators only. Wilson

**254 Survey of Dental Specialties (II, 1)** Survey of major specialties in dentistry: endodontics, pedodontics, orthodontics, and oral surgery. (Lec. 2) Feldman, Girasole, Nelson and Schwab

**260 Advanced Preventive Dentistry (II, 2)** Methodology of clinical and educational research. Interpretation of statistics, in-depth study of fluorides and dental disease. Consideration of the aging process and related problems. (Lec. 3) Yacovone

## Earth Science (ESC)

Chairmen: Professor Alexander (Geography) and Professor J.A. Cain (Geology)

**100 Environmental Geology**  
See Geology 100.

**101 Geological Field Trips**  
See Geology 101.

**104 (or GEG 104) Geographical Earth Science (I and II, 4)** The earth's physical environment, atmosphere and hydrosphere: the earth as a globe, weather, storms, air pollution, climate, and glaciers. Reciprocal relationships between man and his environment. (Lec. 3, Lab. 2) Not open to students who have passed GEG 101. Havens

**105 (or GEL 105) Geological Earth Science (I and II, 3)** Introductory study for nongeology majors. Volcanism, earthquakes, mountain-building, Ice Ages, history of the earth, evolution of life. Current topics such as continental drift, seafloor-spreading, environmental geology and lunar geology. (Lec. 3) Not open to students who have passed GEL 103 or 104. 104 is not prerequisite to 105. Staff

**106 Introductory Geology Laboratory**  
See Geology 106.

**301 Environmental Remote Sensing (II, 3)** Introduction to interdisciplinary aspects of environmental remote sensing, including image and non-image sensing applied to geographic mapping, land-use, forestry, geology, engineering, urban-industrial patterns, wildlife management, ecology. (Lec. 3) Pre: RDV 100 or junior standing or permission of instructor. Fisher and Staff

## Economics (ECN)

Chairman: Professor Sabatino

**123 Elements of Economics (I and II, 3)** Survey of principles and institutions underlying the production and distribution of goods and services and the determination of income, employment and the general level of prices. (Lec. 3) Not open to students who have passed 125. Staff

**125, 126 Economic Principles (I and II, 3 each)** Principles underlying the organization and functioning of the economic system. Description and analysis of institutions and market forces affecting the production and distribution of goods and services, business fluctuations, and international trade. (Lec. 3) Pre: for 126, 123 or 125 or permission of department. 125 is not open to students who have passed 123. Staff

**180 Current Topics in Economics (I or II, 1)** A selected topic of current interest. May be repeated with permission of the department, providing the topic is not the same. (Lec. 1) Staff

**300 Radical Critiques of Contemporary Political Economy (II, 3)** Radical right and radical left critiques. Radical views on values, methodology, production planning, income distribution, economic power, the military-industrial complex, imperialism and racial and sexual discrimination. (Lec. 3) Pre: 123 or 125, or permission of instructor. Rayack

**302 Economic Development of the United States (I or II, 3)** Developmental factors in American economic life in-

roduce students to the past and present business environment. (Lec. 3) Pre: 123 or 126 or permission of department. Haller and Brown

**327 Intermediate Economic Theory: Income and Employment (I or II, 3)** Measurement of national income. Theory of the determination of the general level of income, employment, and prices. Business fluctuations. (Lec. 3) Pre: 123 or 126 or 990 or permission of instructor. Latos

**328 Intermediate Economic Theory: Pricing and Distribution (I or II, 3)** Market conditions and forces affecting the pricing and production of goods and services, the allocation of resources and the distribution of income. (Lec. 3) Pre: 126 or permission of instructor. Rayack

**334 Money and Banking (I or II, 3)** Structure and functioning of monetary institutions. Analyses of monetary theories. The role of monetary policy. U.S. banking structure: its operations and functioning. (Lec. 3) Pre: 126 or permission of instructor. Barnett and Brown

**337 Business and Government (I or II, 3)** Historical and present attitudes and policies of various levels of government toward the changing structure of American business. Emphasis on legal and economic concepts of business activity. (Lec. 3) Pre: 123 or 126 or permission of instructor. Dirlam and Hellman

**338 International Trade and Policy (I or II, 3)** Basic theory and major institutions of international economic relations. Includes determinants of foreign trade, the balance of payments, foreign exchange, foreign investment, protection and free trade (aid to underdeveloped countries). (Lec. 3) Pre: 123 or 126 or permission of instructor. Suzawa

**342 Public Finance (I or II, 3)** Examination of the theory and practice of public expenditures, revenues, and fiscal policy, with major emphasis on federal fiscal affairs. (Lec. 3) Pre: 123 or 126 or permission of instructor. Starkey

**351, 352 Assigned Work (I and II, 3 each)** Special work in economics when it can be arranged to meet the needs of individual students who desire independent work. (Lec. 3) Pre: 123 or 126 or permission of instructor. SIU credit. Staff

**361 A Survey of Economic Thought (I or II, 3)** Economic thought from middle ages to present; characteristics of classical, neo-classical and contemporary doctrinal developments. (Lec. 3) Pre: 123 or 126 or permission of instructor. Schurman

**363 Economic Growth and Development (I or II, 3)** Basic problems in economic growth and development of so-called backward or pre-industrial countries. Emphasis on population trends, agrarian reforms, capital formation, international aid programs, respective roles of private and public enterprise. (Lec. 3) Pre: 123 or 126 or permission of instructor. Suzawa

**375 Introduction to Quantitative Methods I (I, 4)** Mathematical techniques used in modern economic theory. Linear algebra, the calculus of several variables, constrained maximization and differential equations. Application to economic problems. (Lec. 3, Lab. 2) Pre: 123 or 125, 126 and MTH 141, or permission of instructor. Hume

**376 Introduction to Econometrics (I or II, 4)** Application of econometric methods to economic problems. Econometric tools applied to micro- and macro-

economic problems. (Lec. 3, Lab. 2) Pre: 126 or permission of instructor. Staff

**401 Poverty in the United States (I or II, 3)** Economic analysis of the determinants and distribution of poverty in the U.S. Evaluation of social welfare programs and various other proposals for the elimination of poverty. (Lec. 3) Pre: 123 or 126, or permission of instructor. Latos

**402 Urban Economics (I or II, 3)** Analysis of selected economic problems of urban areas. Development of methodological approaches through discussion of policy issues. (Lec. 3) Pre: 123 or 126, or permission of instructor. Haller

**403 Theory and Topics in the Economics of Crime (I or II, 3)** Application of economics analysis to various aspects of criminal activity. Consideration of economic determinants of income generating crime, economic behavior of participants and cost to society. (Lec. 3) Barnett

**464 Comparative Economic Systems (I or II, 3)** Economic organization in capitalist and socialist countries with particular emphasis on Soviet-U.S. comparisons, market and planning mechanisms, industrial structure, growth rates, and allocation of economic resources. (Lec. 3) Pre: 123 or 126, or permission of instructor. Schurman

**503 Development of the United States Economy (I, 3)**

**512 History of Economic Analysis (II, 3)**

**515, 516 Economic Research (I and II, 1-3 each)**

**527 Macroeconomic Theory (I, 3)**

**528 Microeconomic Theory (I, 3)**

**532 Industrial Organization and Public Policy (II, 3)**

**538 International Economics: Theory and Policy (I or II, 3)**

**539 Welfare Economics (I or II, 3)**

**543 Public Finance and Fiscal Policy (I, 3)**

**552 Monetary Theory and Policy (II, 3)**

**566 Economic Planning and Public Policy in Developing Nations (II, 3)**

**575 Introduction to Mathematical Economics (I, 4)**

**576 Econometrics I (II, 4)**

**577 Econometrics II (II, 3)**

**595 Problems of Modernization in Developing Nations (II, 3)**

## Education (EDC)

Chairman: Professor R. MacMillan

**102 Introduction to American Education (I and II, 3)** Introduction to the fundamental structure, functions, and problems of American education. Emphasis on education as both a socio-cultural phenomenon and an embodiment of philosophical commitments. (Lec. 3) Staff

**103 Introduction to Education (I and II, 3)** Parallels 102. Integrated series of professional laboratory experiences. (Lec. 3, Lab. 1) Pre: permission of department. Staff

**279 Career Development Seminar (I and II, 1)** Individualized approach to career concerns, skill identification, self-awareness, career development theory, decision-making. Emphasis on understanding long/short-term goals. (Seminar) Montgomery

**302 Topics in Educational Studies (I and II, 3)** Consideration of basic purposes, values, and changes in American education as a means of analyzing selected topics drawn from foundational studies in education. Topics vary.

(Lec. 3) Pre: sophomore standing or permission of the instructor. Staff

**312 The Psychology of Learning (I and II, 3)** Principles of psychology as related to learning and teaching processes. (Lec. 3) Pre: 102, PSY 113. Staff

**313 The Psychology of Learning (I and II, 3)** Parallels 312. Integrated series of professional laboratory experiences. (Lec. 3, Lab. 1) Pre: 102 and PSY 113. Required for and open only to students admitted into the general teacher education curriculum. Staff

**329 Music for the Elementary School Teacher**  
See Music 329.

**367 School Health Program**  
See Health 367.

**371 Educational Measurements (I and II, 3)** Aptitude, achievement tests, and other measuring instruments used in classification and guidance of pupils, improvements of instruction and other activities of the teacher. Principles applied in construction and use of tests and to interpretation and evaluation of scores. (Lec. 3) Pre: 312 or 313. Allen

**372 Educational Measurements (I and II, 3)** Parallels 371. Integrated series of professional laboratory experiences. (Lec. 3, Lab. 1) Pre: 102 and concurrent registration in 313. Required for and open only to students admitted into the general teacher education curriculum. Allen and Soderberg

**401 Development and Utilization of Instructional Materials (I and II, 3)** Methods of developing and making classroom application of selected materials: non-projected, projected, and audio. Specific attention to utilization in the social sciences, English, reading, the natural sciences, the humanities, arithmetic and mathematics. (Lec. 1, Lab. 4) Pre: senior standing and six hours of education. Howard

**403 History of Education (I, 3)** Study of main currents of educational thought in historical perspective; relevance of educational movements and practices of the past to the contemporary school. (Lec. 3) Pre: junior standing. Calabro

**407 Philosophy of Education (I and II, 3)** Examines influence of philosophical ideas upon education. Questions on reality, knowledge, and value examined from different views to analyze controversial issues in theory and practice. (Lec. 3) Pre: junior standing. Russo

**410, 411 Seminar and Supervised Field Practicum in Education of the Aging (I and II, 3 each)** Adult educational methods as applied to older adults, including pre-retirement education, current education programs for the elderly, and evaluation of educational activities with the aging. Supervised field practicum of 150 hours. (Lec. 2, Lab. 3) Pre: 581 or permission of department. Staff

**424 Teaching of Reading (I and II, 3)** Philosophy, materials and methods underlying the teaching of reading with special emphasis upon developing understanding. (Lec. 3) Pre: 313 or graduate standing. Aukerman and Bumpus

**425 The Use of Trade Books in the Reading Program (I, 3)** Understanding and using children's literature as an extension of elementary school textbooks with emphasis upon broadening the classroom teacher's instructional philosophy. (Lec. 3) Staff



- 427 Methods and Materials in Elementary Teaching I (I and II, 3)** Language Arts/Reading-Principles and practices of guiding children in skillful use of basic means of communication (speaking, listening, writing, and reading). (Lec. 3) Pre: PSY 113 and 232, EDC 313, concurrent registration in EDC 428, permission of department. Open only to students in elementary education curriculum. Not for graduate degree program credit. Nagel, Nally, Kelly, and Sullivan
- 428 Methods and Materials in Elementary Teaching II (I and II, 3)** Principles and practices of developing skills and knowledge in social studies, math, and science with elementary children. (Lec. 3) Pre: PSY 113 and 232, EDC 313, concurrent registration in EDC 427, permission of department. Open only to students in the elementary education curriculum. Not for graduate degree program credit. Nagel, Nally, Kelly, and Sullivan
- 430 Methods and Materials in Secondary Teaching (I and II, 3)** Principles of education and human sciences as related to curricular materials and classroom situations. (Lec. 3) Pre: 102 and 313, PSY 232, senior standing and permission of instructor. Open only to students admitted into the secondary education curriculum. Sectioned by academic major: business, English, mathematics, modern language, science, social studies. Sem. II: Business Administration students only. Not for graduate degree program credit. Staff
- 441 Methods and Materials of Teaching Business Subjects (I, 4)** Current trends in teaching office occupations and social business subjects. (Lec. 4) Not for graduate degree program credit. Staff
- 444 Teaching of Agri-Business and Natural Resources (I, 3)** Organization of instructional programs; development of resource units, teaching plans, methods, techniques, and occupational experience programs. (Lec. 3) Pre: 103 and 313. Not for graduate degree program credit. McCreight
- 450 Introduction to Counseling (I and II, 3)** Principles and techniques of guidance, study of philosophies of counseling, history and development of counseling movement, counseling methods and general organization of student personnel facilities. (Lec. 3) Pre: graduate standing or permission of department. Staff
- 451 Death, Dying and Bereavement (II, 3)** Exploration of human death, dying, and bereavement. Focus on biomedical, psychological, and sociocultural dimensions of the topic. (Lec. 3) Knott
- 478, 479 Problems in Education (I and II, 0-3 each)** Advanced work in education, conducted as seminars or as supervised individual projects. (Lec. or Lab.) Pre: permission of department. Staff
- 484 Supervised Student Teaching (I and II)** Under selected and approved critic teachers, students participate in classroom teaching and other school activities for a period determined by credit to be earned. Areas include: Secondary non-vocational, S/U credit; Elementary Education, S/U credit; Home Economics, S/U credit; Resource Development; Business; Music; Physical Education; Theatre. Pre: methods course(s) of department involved. Not for graduate degree program credit. Staff
- 485 Seminar in Teaching (I and II, 3)** Practicum for teachers, their immediate problems, use of resource materials and cooperative help of other members of seminar. Areas include: Secondary non-vocational, Elementary Education, Home Economics, Resource Development, Business, Music, Physical Education, Theatre. (Lec. 3) Pre: concurrently with 484, permission of department. Not for graduate degree program credit. Staff
- 501 Comparative Education in International Perspective (I or II, 3)**
- 502 The Modern Curriculum Movement (I, 3)**
- 503 Education in Contemporary Society (I and II, 3)**
- 504 Adult Basic Education (I and II, 3)**
- 505 Principles and Practices of Leadership Development for Youth and Adult Programs (I or II, 3)**
- 510 Practicum in Incorporating Televised Media (I, 3)**
- 511 Evaluation of Film and Recorded Material (I, 3)**
- 512 Organization and Administration of Audiovisual Programs (II, 3)**
- 513 Research and Theory in Instructional Technology (II, 3)**
- 514 Current Trends in Elementary Education (I, 3)**
- 516 Teaching English as a Second Language to Adults (II, 3)**
- 520 Teaching of Arithmetic (I, 3)**
- 523 Physical Factors Related to Reading Disability (I, 3)**
- 526 Teaching the New Grammars (I, 3)**
- 528 Teaching Language Arts (II, 3)**
- 529 Foundations of Educational Research (I and II, 3)**
- 534 Mathematics in the Secondary School (II, 3)**
- 541 Reading in Secondary School Content Subjects (I and II, 3)**
- 543 Reading in the Open Classroom (I, 3)**
- 546, 547 Field Practicum in Reading (I and II, 3 each)**
- 548 The Application of Secondary School Content Area Reading Skills (II, 3)**
- 550 Vocational Information and Career Development (I and II, 3)**
- 551 Counseling Techniques (I and II, 3)**
- 552 Group Procedures in Counseling (I and II, 3)**
- 553 Counseling Practicum (I and II, 3)**
- 554 Individual Appraisal in Guidance (II, 3)**
- 555, 556 Supervised Field Work and Seminar in Guidance and Counseling (I and II, 3 each)**
- 557 Principles and Practices of Student Personnel Services in Higher Education (I, 3)**
- 558 Organization and Administration of Student Personnel Services in Higher Education (II, 3)**
- 559 Practicum in Group Counseling (I, 3)**
- 561 Analysis of Reading Disabilities (I, 3)**
- 562 Techniques in Remedial Reading (II, 3)**
- 563 Reading Programs for the Disadvantaged (I, 3)**
- 564 Beginning Reading Programs (II, 3)**
- 565 Analysis and Evaluation of Current Research in Reading (II, 3)**
- 566, 567 Practicum in Reading (I and II, 3 each)**
- 568 Reading and Learning Disabilities (I and II, 3)**
- 570 Elementary School Curriculum (II, 3)**
- 571 The Secondary School Curriculum (II, 3)**
- 572 Cooperative Supervision (I and II, 3)**
- 573 Seminar—Educational Research (I and II, 1)**
- 574 Current Trends in Secondary Education (I and II, 3)**
- 575, 576 Supervised Field Study and Seminar in Elementary or Secondary Education (I and II, 3 each)**
- 577 Organization and Administration in Elementary School (I, 3)**
- 580 Organizing and Administering Youth Programs (I or II, 3)**
- 581 Organizing and Administering Programs of Adult Education (I or II, 3)**

- 582 Curriculum Development in Vocational-Technical and Extension Education (I, 3)**  
**583 Analyzing Community Needs and Resources for Youth and Adult Programs (I, 3)**  
**584 The Adult and the Learning Process (I and II, 3)**  
**585 Seminar on Leadership for Youth and Adult Programs (II, 3)**  
**586, 587 Problems in Education (I and II, 0-3 each)**  
**588, 589 Supervised Field Practicum and Seminar in Youth and Adult Education (I and II, 3 each)**  
**590 Social Issues in Urban Education (II, 3)**  
**594 Organization and Supervision of Reading Programs (II, 3)**  
**596 Organization Development in Education (II, 3)**

## Electrical Engineering (ELE)

Chairman: Professor Polk

- 205 Microprocessor Laboratory (I, 3)** Hands-on familiarization with computer and microprocessor software and hardware. Computer architecture and interfacing with input and output devices. (Lec. 1, Lab. 4) Pre: permission of instructor and MTH 141 which may be taken concurrently. Staff
- 209 Concepts in Electrical Engineering (I, 3)** Discussion of many important basic physical processes, principles and laws. Importance of precise vocabulary and language of description and communication. Translation of basic knowledge into technical applications, examples from many important areas in electrical engineering. (Lec. 3) Pre: MTH 142. Seely, Poularikas
- 210 Introduction to Electricity and Magnetism (I, 3)** Static electric and magnetic fields; Gauss's and Coulomb's laws; capacitance and inductance. Behavior of electric charges in stationary and moving fields. Lumped vs. distributed parameters, electric and mechanical circuit concepts, topological circuit principles and circuit theorems. (Lec. 3) Pre: MTH 141 and 142. Staff
- 211 Linear Systems and Circuit Theory I (II, 3)** Application of Kirchoff's laws and mathematical models for circuit elements to predict responses of electrical circuits to input signals and to initial condition. Complexity is limited to first and second order differential equations. (Lec. 3) Pre: 210 or PHY 214. Staff
- 214 Introductory E.E. Laboratory (I, 1)** Principles of measurement, theory of errors of measurement. Treatment and presentation of data. Concepts of modeling and models. Experimental practices and procedures. (Lab. 3) Pre: 209 to be taken concurrently. Staff
- 215 Electrical Measurements (II, 2)** Methods of measurement, theory of operation and proper use of certain electrical instruments, nature and theory of errors of measurement, and treatment of data. (Lec. 1, Lab. 3) Pre: 210 or PHY 214. Staff
- 220 Passive and Active Circuits (II, 3)** Electrical circuit laws and theorems, transient and steady state response, phasors, frequency response, resonance. Diode and transistor circuits, digital logic devices. Not for students concentrating in electrical engineering. (Lec. 3) Pre: PHY 214 or ELE 210. Daly
- 221 Electronic Instruments and Electromechanical Devices (I, 3)** Amplifiers, frequency response, feedback, field effect transistors, operational amplifier applica-
- tions, electrical measurements. Magnetic circuits, transformers, electromechanical transducers, and systems, DC and AC machines. (Lec. 3) Not for students concentrating in electrical engineering. Pre: 220. Daly
- 300 Electrical Instrumentation for Biology and Health Sciences (I, 3)** Principles of operation and use of electrical instruments employed in medicine and biology. Designed principally for students in the respiratory therapy program. (Lec. 2, Lab. 3) Pre: MTH 141 and PHY 112 or equivalent. Staff
- 312 Linear Systems and Circuit Theory II (I, 4)** Continuation of 211 including analysis of more complicated circuits by mesh and node methods, phasor methods for the sinusoidal steady state, and Laplace transform techniques. (Lec. 3, Lab. 3) Pre: 211. Staff
- 313 Linear Systems (II, 3)** Fourier series, Fourier transform, bilateral Laplace transform, transfer function, transient and steady state response, natural response and stability, signal flow graphs, convolution integral, introduction to state-space analysis. (Lec. 3) Pre: 312. Staff
- 322 Electromagnetic Fields I (I, 3)** Electrostatics and magnetostatics, forces on charged particles. Analysis employs vector algebra and vector calculus in orthogonal coordinates. Simple applications to engineering problems. (Lec. 3) Pre: MTH 243. Staff
- 323 Electromagnetic Fields II (II, 3)** Magnetostatics continued. Introduction to electrodynamics. Maxwell's equations, wave equation, plane wave propagation, reflection and refraction phenomena. (Lec. 3) Pre: 322. Staff
- 331 Electrical Engineering Materials I (I, 3)** Properties of solids, chiefly semiconductors, which are utilized in modern electronic devices. The physics of these materials and devices is stressed, but some time is devoted to fabrication technology and applications. (Lec. 3) Pre: PHY 341 or equivalent. Staff
- 342 Electronics I (II, 4)** Introduction to diode, transistor, FET and vacuum tube circuits, equivalent circuits, amplification, stability, small and large signal behavior. (Lec. 3, Lab. 3) Pre: 211 and 215. Staff
- 391, 392 Honors Work (I and II, 1-3 each)** Independent study and seminar-type work under close faculty supervision. Discussion of advanced topics in electrical engineering in preparation for graduate work. Pre: junior standing and permission of department. Staff

Prerequisites for all 400-, 500-, and 600-level electrical engineering courses: mathematics through calculus (MTH 243) and at least 6 credits in circuit theory and 3 credits in electromagnetic fields. Additional prerequisites as indicated with each course. Some circuits and fields prerequisites may be waived for 481, 482, 505, 537, 586, 587, 588, and 589 for students with suitable backgrounds.

**401 Lasers, Optical Systems and Communication (I or II, 3)** Laser fundamentals and light amplification. Diffraction and Fourier optical transformations with applications to engineering. Optical signal processing. Holography and applications. Optical systems and communications. (Lec. 3) Pre: 323 or equivalent. Poularikas

**403 Optical Systems and Communications Laboratory (I or II, 3)** Optical measurements with applications to diffraction, refraction, spatial filtering, optical information processing and holography. (Lec. 1, Lab. 4) Pre: 401, which may be taken concurrently. Poularikas

- 405 Digital Computer Design (II, 3)** Hardware implementation of digital computers. Arithmetic circuits, memory types and uses, control logic, basic computer organization, microprogramming, input/output circuits, microcomputers. Pre: 342 or permission of instructor. Staff
- 417 Direct Energy Conversion (II, 3)** Physical understanding of processes by which energy is converted directly to electricity. Fuel cells and thermoelectric, thermionic, photovoltaic, and magnetohydrodynamic generators. (Lec. 3) Pre: background in electricity and magnetism, thermodynamics of fluid systems and modern physics; permission of instructor. Poularikas
- 427 Electromechanical Devices (I, 3)** Principles of electromechanical energy conversion. Development of models for stationary and rotating electromagnetic devices. Introduction to special transducers and sensors. (Lec. 2, Lab. 3) Pre: 313, 322. Staff
- 432 Electrical Engineering Materials II (II, 3)** Continuation of 331. Further application of semiconductors and P-N junction devices and theory of dielectric and magnetic materials. (Lec. 3) Pre: 331 or equivalent. Staff
- 433 Electrical Engineering Materials Laboratory (II, 3)** Supplements 331 and 432. Students fabricate simple devices, measure their electrical and/or optical properties or study basic properties of some solid, usually semiconducting samples. Practical aspects of solid state engineering. (Lec. 1, Lab. 4) Pre: credit or registration in 432. Staff
- 436 Communication Systems (II, 3)** Representation of signals and noise. Basic principles of modulation and demodulation. Waveform and digital transmission systems. (Lec. 3) Pre: 312 and 313 or equivalent knowledge of linear circuit theory, elementary electronics and transform methods. Staff
- 443 Electronics II (I, 5)** Continuation of 342. Application of signal flowgraphs as an aid to design. Thermal stability of stages. Applications of circuit analysis program, ECAP. Design of multiple transistor circuits. Feedback. (Lec. 3, Lab. 5) Pre: 342. Staff
- 444 Electronics III, Pulse and Digital Circuits (II, 4)** Extension of the fundamental ideas of 342 and 443 to the analysis and design of pulse forming and switching circuits. Piece-wise linear approach to the non-linear behavior of electronic devices. (Lec. 3, Lab. 3) Pre: 443. Staff
- 457 Feedback Control Systems (I, 3)** Fundamental techniques for the analysis and design of linear feedback systems. Stability, sensitivity, performance criteria, Bode diagrams, Nyquist criterion, root locus techniques, state variables and compensation methods. (Lec. 3) Pre: 313. Staff
- 458 Systems Laboratory (II, 3)** Analytical, experimental, and computer simulation studies of typical control, communication, and biosystems problems. (Lec. 1, Lab. 4) Pre: 457. Staff
- 481, 482 Biomedical Engineering Seminar I and II (I and II, 1 each)** Selected topics in biomedical engineering research from current scientific literature. Presented by students and invited staff. Pre: permission of department. 481 not prerequisite for 482. Ohley or Jaron
- 484 Modeling of Physiological Systems (II, 3)** Physiology of selected systems, development of dynamic models to describe their behavior. Projects concerned primarily with the nervous system. Data collected from initial laboratory experiments with animals used for later experiments with analog computer modeling. (Lec. 2, Lab. 3) Pre: 345, MTH 141. In alternate years, next offered 1978-79. Staff
- 491, 492, 493 Special Problems (I and II, 1 each)** Special engineering problems assigned to student according to his or her interests and capabilities. (Lec. or Lab.) Pre: permission of instructor. Staff
- 495 Electrical Engineering Practice I (I, II or SS, 3)** Industrial experience in electrical engineering at companies or government laboratories selected by department. Student works on a design or other engineering project under supervision of engineers from industry and URI faculty. Major written report required. Pre: permission of department and completion of the junior year in electrical engineering. Not for graduate degree credit. Staff
- 496 Electrical Engineering Practice II (II, 6)** Industrial experience in electrical engineering at companies or government laboratories selected by department. Student works on a major design or other engineering project under supervision of engineers from industry and URI faculty. Pre: 495 and permission of department. Not for graduate degree credit. Staff
- 501 Linear Transform Analysis (I, 3)**
- 503 (or MCE 503) Linear Control Systems (I, 3)**
- 504 (or MCE 504) Optimal Control Theory (II, 3)**
- 505 (or CSC 505) Design of Digital Circuits (I, 3)**
- 506 Digital Signal Processing (II, 3)**
- 508 Computer Architecture (I and II, 3)**
- 509 Systems with Random Inputs (I or II, 3)**
- 510 (561) Communication Theory (II, 3)**
- 511 Electromagnetic Fields (I, 3)**
- 513 Solar to Electric Energy Conversion (II, 3)**
- 514 Microwave Electronics (I or II, 3)**
- 515 Quantum Electronics (I or II, 3)**
- 516 Planetary Electrodynamics (I or II, 3)**
- 517 Magnetofluidmechanics (I or II, 3)**
- 520 Fourier Optics (I or II, 3)**
- 531 Solid State Engineering I (I and II, 3)**
- 532 Solid State Engineering II (I and II, 3)**
- 535 Transistor Circuits (I and II, 3)**
- 536 Semiconductor Electronics (I or II, 3)**
- 537 Electronic Instrumentation and Control Circuits (I and II, 3)**
- 538 Principles of Remote Sensing (I or II, 3)**
- 539 Infrared Imaging Techniques (I or II, 3)**
- 542 Analog Filter Design (I or II, 3)**
- 545 Optimization and Variational Problems in Electrical Engineering (I or II, 3)**
- 560 (or OCE 560) Introduction to Data Collection Systems (I, 3)**
- 571 (or OCE 571) Underwater Acoustics I (I, 3)**
- 575 Electroacoustical Engineering I (I and II, 3)**
- 576 Electroacoustical Engineering II (I and II, 3)**
- 581 (or CSC 581) Artificial Intelligence (I or II, 3)**
- 582 (or CSC 582) Robotics (I or II, 3)**
- 583 (or CSC 583) Computer Vision (I, 3)**
- 584 (or CSC 584) Pattern Recognition (II, 3)**
- 585 Clinical Engineering (II, 3)**
- 586 Biomedical Electronics I (I and II, 3)**
- 587 Biomedical Electronics II (I and II, 3)**
- 588 Biomedical Engineering I (I and II, 3)**
- 589 Biomedical Engineering II (I and II, 3)**
- 591, 592 Special Problems (I and II, 1-3 each)**

**Engineering (EGR)**

**101 Introduction to Engineering (I and II, 1)** Survey of the field of engineering, the different branches in particular. Introduction to methods and means of computation for solving engineering problems. (Lec. 1) Staff

**102 Basic Graphics (I and II, 1)** Theory of orthographic projection and principles of descriptive geometry, construction of exact drawings of three-dimensional objects including auxiliary views, pictorial drawings, cross-sections and dimensioning, free-hand sketching. (Lab. 3) Bachelder and Staff

**110 The Energy Crisis (I or II, 1)** Energy sources available, their conversion by internal combustion engine, gas turbine, steam turbine, fuel cell, nuclear reactor, and other means. Problems of supply and demand, potential exhaustion and pollution. Future availability of nonpolluting energy sources. (Lec. 3 for one-third semester) Pre: high school physics or chemistry. Staff

**111 Mathematical Formulation of Engineering Problems (I or II, 1)** Recapitulation of high school mathematics, emphasizing and testing student's ability to employ the material. Carefully selected and challenging problems drawn from simple engineering, physics and everyday life. (Lec. 3 for one-third semester) Pre: high school algebra and trigonometry. Lengyel or Tufts

**112 Radio Propagation and Antennas (I or II, 1)** Preview of advanced engineering courses concerned with questions concerning tall towers used as broadcast antennas, "dishes" employed as radar antennas and in microwave relays of the telephone company, radio reception differences at night and during the day, etc. (Lec. 3 for one-third semester) Pre: high school algebra and trigonometry. Polk

**114 Environmental Pollution Control (I or II, 1)** Sources, effects and control of pollution. Problems involved in water, atmospheric and solid waste pollution. Technological, political and economic factors. (Lec. 3 for one-third semester) Pre: high school chemistry or physics. Sussman and Poon

**115 Structural Engineering: Past, Present and Future (I or II, 1)** Historical development of structural engineering, effects of building codes on present structures, structures of the future. (Lec. 3 for one-third semester) Marcus and Fang

**117 The Scanning Electron Microscope (II, 1)** Theory and operation of the scanning electron microscope. Applications to biological, oceanographic and zoological sciences, as well as to physics, chemistry and engineering fields. Includes demonstrations on instruments. Pre: science background. Black

**203 Engineering Graphics (I and II, 1)** Advanced theory of descriptive geometry with applications to engineering problems, including line and plane problems, plane curves, ruled, warped and double-curved surfaces, intersections and developments, axonometric and perspective projections. (Lab. 3) Pre: 102. Bachelder and Staff

**204 Technology and Society (I and II, 3)** Historical development of technology and its interrelationship with social conditions, including a survey of the technological basis of modern society. Technology and its importance for non-engineers and for engineers. Appreciation of their profession for engineers. No prior engineering or science required. (Lec. 3) Bradbury

**English (ENG)**

Chairman: Professor J.Y. Miller

**103 Introduction to Literature (I and II, 3)** The experience of literature through readings in fiction, poetry and drama. Discussion and critical writings of six to eight essays (Lec. 3) Staff

**110 Composition (I and II, 3)** Emphasizes correctness in writing and clear presentation of ideas. Reading exercises in exposition, and composition of essays. (Lec. 3) Not a prerequisite for 120. Not for English concentration credit. Staff

**112 Composition (Foreign) (I and II, 3)** Same as 110, but restricted to students whose mother tongue is not English who have need of special and closely supervised assistance in expressing themselves in English. (Lec. 3) Pre: admission upon recommendation of department. R.M. Tutt

**113 Composition (Fisheries) (I, 3)** Same as 110. Admission restricted to students in the special two-year fisheries program upon recommendation by the College of Resource Development. (Lec. 3) Staff

**120 Literature and Composition (I and II, 3)** Continuation of 110. Extensive reading in various forms of writing. Training in appreciation and criticism of good literature. Regular written criticism and literary exercises. (Lec. 3) 110 not a prerequisite for 120. Not for English concentration credit. Staff

**122 Literature and Composition (Foreign) (I and II, 3)** Continuation of 112 for foreign students demonstrating need. R.M. Tutt

**205 Creative Writing (I and II, 3)** Various types of creative composition: essays, stories and poetry. Students analyze work by class members and by professional writers. Only students with an aptitude for writing should elect this course. (Lec. 3) Pre: permission of instructor. Clark, Mathews and Petrie

**241, 242 American Literature (I and II, 3 each)** 241: Selections from American literature, beginnings to the Civil War. 242: Selections from American literature, latter part of the nineteenth century to the present. (Lec. 3) 241 not prerequisite for 242. Staff

**243 The American Short Story (I and II, 3)** Critical study of the short story in America from early nineteenth century to the present. (Lec. 3) Staff

**251, 252 English Literature (I and II, 3 each)** 251: Selections from English literature, beginnings to 1798. 252: Selections from English literature, 1798 to the present. Staff

**261, 262 World Literature (I and II, 3 each)** Introduction to some masterpieces of literature other than English and American. 261: Selective literary history of civilization revealed through Greek, Roman, Italian, and Spanish literature. 262: Selections from great works of French, Russian, German, and Scandinavian literature. Reading is done in translation. (Lec. 3) 261 is not prerequisite for 262. Staff

**263 Introduction to Poetry (I and II, 3)** Promotes intelligent reading of various forms of poetry which have developed through the ages. (Lec. 3) Staff

**264 Introduction to Drama (I and II, 3)** Various forms of Western drama. Designed to promote an intelligent understanding of drama as a literary art form. (Lec. 3) Staff

- 265 Introduction to the Novel (I and II, 3)** Introduction to the novel form which will include appreciation of fictional themes and methods as well as significant shifts of mode, the comic, sentimental, Gothic, novel of purpose, and others. (Lec. 3) Staff
- 270 Literature of the Bible (II, 3)** Introduction to poetry and narrative in the Old Testament and the Apocrypha, primarily in the Authorized (King James) Version. (Lec. 3) Sorlien
- 300 Literature into Film (II, 3)** Analysis of themes, techniques, and form in literature and film aimed at developing critical appreciation of printed and film narratives. Emphasis to alternate between fiction and drama. Staff
- 305 Advanced Creative Writing (II, 3)** Provides further training for students especially talented in creative writing. Increased emphasis on independent projects in longer forms of prose and poetry. (Lec. 3) Pre: 205 and permission of department. Clark, Mathews and Petrie
- 310 Techniques of Critical Writing (I or II, 3)** Practice in the writing of literary criticism. Methods of literary analysis illustrated and applied to specific works. (Lec. 3) Staff
- 330 Introduction to American English (I, 3)** Approaches to traditional and contemporary grammar and usage for use in literary study and the teaching of English. (Lec. 3) Arakelian
- 332 The Development of the English Language (I, 3)** Historical study of the development of the English language. (Lec. 3) Arakelian
- 345 Black Literature: 1700-1940 (I and II, 3)** Survey of Afro-American literature 1700-1940. Social, political, and cultural thought of such writers as Wheatley, Chesnut, Dubois, Toomer, Hughes, and growth of racial consciousness from slavery to the Harlem Renaissance. (Lec. 3) Clark
- 346 Black Literature: 1940 to the Present (I or II, 3)** Intensive study of major contributions to black literature from 1940 to the present. (Lec. 3) Clark
- 347 American Romanticism (II, 3)** Poetry and prose of the American Romantic Movement, focus on Irving, Poe, Emerson, Thoreau, Hawthorne, Melville and others. (Lec. 3) In alternate years, next offered 1978-79. Staff
- 348 American Literature, Civil War-1914 (I, 3)** Major developments in American Realism and Naturalism. Emphasis on the work of Twain, Howells, Crane, James, Dreiser. (Lec. 3) Staff
- 349 American Literature since 1914 (II, 3)** Poetry, drama, and fiction of the period during and since the First World War. Emphasis on major figures such as Frost, Eliot, Stevens, O'Neill, Faulkner, Hemingway and others. (Lec. 3) Staff
- 360 Women and Literature (I and II, 3)** Critical study of selected topics. (Lec. 3) Stein and-Hills
- 366 Greek and Roman Drama (I, 3)** Survey of Greek and Roman drama with special emphasis on art and achievement of major dramatists: Aeschylus, Sophocles, Euripides, Aristophanes, Plautus, Terence, and Seneca. (Lec. 3) In alternate years, next offered 1979-80. Gullason
- 367 The Classical Epic (I, 3)** Survey of Greek and Latin epic poetry in translation, beginning with Homer and attempting to determine some principles of epic art. (Lec. 3) In alternate years, next offered 1979-80. Staff
- 368 Development of the English Drama (I, 3)** Development of English drama from its beginnings to present day. Plays read will be selected on basis of their historical importance and intrinsic worth. (Lec. 3) In alternate years, next offered 1979-80. Staff
- 370 The English Middle Ages (II, 3)** Introduction to various types of medieval literature, usually read in modern English versions. Chronicle and romance, lyric and satire, visionary and homiletic writings, drama. (Lec. 3) Malina, Neuse
- 371 The English Renaissance (I, 3)** Early developments of sonnet form and blank verse as illustrated by work of Wyatt, Surrey, Sidney and others. Attitudes and theories of period as expressed in More's *Utopia* and Bacon's *Essays* are examined in detail. (Lec. 3) Pre: junior or senior standing. In alternate years, next offered 1978-79. Neuse and Sorlien
- 372 The Seventeenth Century (II, 3)** Poetical and prose works of Bacon, Johnson, Donne, Milton, and others. (Lec. 3) In alternate years, next offered 1979-80. Sorlien
- 373 The Restoration Period (II, 3)** Major trends and developments in the second half of the seventeenth century as reflected in the verse, satire, prose and drama of Dryden, Bunyan, Pepys, Locke, Congreve and others. (Lec. 3) In alternate years, next offered 1979-80. Kunz and Sorlien
- 374 The Eighteenth Century (I, 3)** Major trends in fiction, poetry, and drama with emphasis on Swift, Defoe, Goldsmith, Boswell, Johnson, and Sterne. (Lec. 3) Pre: junior or senior standing. In alternate years. Reaves
- 376 The Romantic Movement, 1798-1832 (II, 3)** Major poetry and significant non-fiction prose of Wordsworth, Coleridge, Scott, Byron, Shelley, Hunt, Landor, and Keats. (Lec. 3) Pre: junior, senior or graduate standing. In alternate years, next offered 1978-79. Petrie and Tutt
- 377 Early Victorian Literature (I, 3)** The poetry, non-fiction prose, and selected novels of the early and mid-Victorian period. Emphasis will be on the work of Tennyson, Browning, Arnold, Carlyle, Dickens, Thackeray, and others. (Lec. 3) In alternate years, next offered 1979-80. Goldman and Seigel
- 378 Late Victorian and Edwardian Literature (II, 3)** Literature of the late nineteenth century and early twentieth century. Emphasis on Rossetti, Swinburne, Meredith, Hardy, Hopkins, Housman, Wilde and others. (Lec. 3) In alternate years, next offered 1978-79. Goldman and Seigel
- 379 Modern British Literature since 1914 (II, 3)** Poetry, drama, non-fiction prose, and selected fiction of the modern period. Emphasis on the work of Conrad, Joyce, Lawrence, Woolf, Yeats, Auden, Thomas, and others. (Lec. 3) Pre: junior or senior standing. In alternate years, next offered 1978-79. Goldman, Mathews, and McCabe
- 385 Women Fiction Writers (II, 3)** Analysis of the fiction of women writers. Emphasis on nineteenth-century, twentieth-century, or contemporary authors. Course may be repeated for credit when taken with different emphasis. (Lec. 3) Staff
- 394, 395 Independent Study (I and II, 1-3 each)** Extensive individual study and research, culminating in a substantial essay. (Lec. 3) Pre: permission of department. Total cumulative hours permitted: 6. Staff

- 399 Special Topics in Literature (I and II, 3)** Specialized topics in the study of literature offered by specialists in the field. (Lec. 3) Fall 1979: Religion and Literature. Malina. Spring 1980: Nature in Literature. Sorlien
- 430 Structure of Modern American English (I, 3)** The structure and analysis of present-day American English and American-English dialects. (Lec. 3) Arakelian
- 436 The Language of Literature (II, 3)** Recent applications of linguistic theories to literary style, meaning and evaluation. Intensive study of the language of a particular writer or work. Pre: 330 or LIN 201 or permission of instructor. (Lec. 3) Arakelian
- 440 Literary Heritage of New England to 1860 (I, 3)** Literature of New England through the colonial, national, and romantic periods to the Civil War. Field trips will be taken to important literary sites. (Lec. 3) Pre: 241 or permission of department. In alternate years, next offered 1979-80. Schoonover
- 444 The American Writer and the Negro (II, 3)** General survey of writings about Negroes in American literature by white as well as black authors. Study of representative works from all of American literature, providing an aesthetic and social view of the American Negro. (Lec. 3) Clark
- 446 Modern American Drama (II, 3)** Major contributions and movements in modern American drama. (Lec. 3) Miller
- 447 Twentieth Century American Poetry (I and II, 3)** Major contributions and movements in American poetry from 1900 to the present. (Lec. 3) Not acceptable for master's program credit in English. Goldman and Potter
- 448 The Nineteenth Century American Novel (I, 3)** Survey of the American novel through nineteenth century. (Lec. 3) Not acceptable for master's program credit in English. Staff
- 449 The Twentieth Century American Novel (I and II, 3)** Survey of the American novel since 1900. (Lec. 3) Not acceptable for master's program credit in English. Staff
- 454 Modern British and European Drama (I, 3)** Critical study of representative plays by modern English, Irish, and continental playwrights. (Lec. 3) In alternate years, next offered 1978-79. Staff
- 455 Twentieth Century British Poetry (I and II, 3)** Major contributions and movements in British poetry from 1900 to the present. (Lec. 3) Not acceptable for master's program credit in English. In alternate years, next offered 1979-80. Staff
- 458 The British Novel (I, 3)** Survey of English novel through first quarter of nineteenth century. Emphasis on Defoe, Richardson, Fielding, Smollet, Sterne, and Austen. (Lec. 3) Not acceptable for master's program credit in English. In alternate years, next offered 1979-80. Staff
- 459 The British Novel of the 19th Century (II, 3)** Study of such novels as *Wuthering Heights*, *Vanity Fair*, *Great Expectations*, *Middlemarch*, *Tess of the D'Urbervilles*. Closed to graduate students. Staff
- 460 The British Novel of the 20th Century (II, 3)** Study of such novels as *Sons & Lovers*, *Portrait of the Artist*, *To the Lighthouse*, *Passage to India* and others. Closed to graduate students. (Lec. 3) Staff
- 462 The Medieval and Modern Epic (II, 3)** The epic tradition with emphasis on Dante's *Divine Comedy* and Joyce's *Ulysses*. (Lec. 3) In alternate years, next offered 1978-79. Staff
- 468 The European Novel to 1850 (I, 3)** Major developments of European novel through early nineteenth century. Special attention to Cervantes, LeSage, Goethe, Stendhal, Balzac, and Gogol. (Lec. 3) Not acceptable for master's program credit in English. In alternate years, next offered 1978-79. Gullason
- 469 The European Novel after 1850 (II, 3)** Important contributions of nineteenth and early twentieth century novel. Special attention to Flaubert, Turgenev, Dostoevsky, Tolstoy, Zola, and Gide. (Lec. 3) Not acceptable for master's program credit in English. In alternate years, next offered 1979-80. Gullason
- 470 Chaucer (I, 3)** Selections from Chaucer's major poems, read in Middle English. (Lec. 3) Not acceptable for master's program credit in English. In alternate years, next offered 1978-79. MacLaine, Malina and Neuse
- 472, 473 Shakespeare (I and II, 3 each)** 472: Introduction to plays of Shakespeare as living theatrical productions. One or more examples from each main type. Character delineation, plot construction, and stagecraft devices emphasized. 473: A second course in Shakespeare. Critical study of those plays not included in 472. (Lec. 3) Pre: junior standing. 472 not prerequisite for 473. Not acceptable for master's program credit in English. Smith, Barker, Hills and Mathews
- 474 Milton (II, 3)** Poetry and prose of John Milton, with special emphasis on *Paradise Lost*. (Lec. 3) Pre: junior or senior standing and permission of department. Not acceptable for master's program credit in English. In alternate years, next offered 1979-80. Neuse
- 477 The Elizabethan Drama (II, 3)** Critical study of outstanding plays written by Shakespeare's predecessors, contemporaries and successors, with emphasis on Elizabethan playhouse practice. (Lec. 3) Pre: junior or senior standing. In alternate years, next offered, 1979-80. Barker, Hills and Smith
- 478 English Drama of the Restoration and Eighteenth Century (I, 3)** Concentrated study of English drama 1660 to 1800 as represented by the plays of Dryden, Congreve, Goldsmith, Sheridan, and others. (Lec. 3) In alternate years, next offered, 1978-79. Kunz, Reaves, and Sorlien
- 485 American Authors (I or II, 3)** Intensive study of the work of one or two outstanding American writers. May be repeated barring duplication of writers being studied. (Lec. 3) Fall 1978: O'Neill. Smith. Fall 1979: O'Neill. Smith. Spring 1980: Stevens and Williams. Potter.
- 486 British Authors (I or II, 3)** Intensive study of the work of one or two outstanding British writers. May be repeated, barring duplication of writers being studied. (Lec. 3) Fall 1979: Burns and Byron. MacLaine. Spring 1980: Wilde, Shaw and Yeats. Jacobs
- 499 Senior Seminar (I and II, 3)** Intensive study of literature and literary criticism as a discipline through selected works and authors, English and American, culminating in a substantial research project. (Lec. 3) Open only to seniors concentrating in English. Spring 1979: Theories of American Fiction. Stineback. Spring 1980: Comic Modes in Literature. Campbell. Fall 1979: Social Reform in Victorian Literature. Seigel

- 510 **Bibliography and Literary Research** (II, 3)  
 530 **History of the English Language** (I, 3)  
 531 **History of Critical Theory** (II, 3)  
 532 **Modern Literary Criticism** (I, 3)  
 535 **Old English** (I, 3)  
 536 **Problems in Linguistics and Literature** (II, 3)  
 540 **Modern American Novel** (I, 3)  
 545 **Problems in American Realism and Naturalism** (I, 3)  
 546 **Problems in American Romanticism** (II, 3)  
 547 **Early American Literature to 1800** (I, 3)  
 548 **American Poetry to 1900** (I, 3)  
 549 **Modern American Poetry** (II, 3)  
 550 **Middle English Literature** (II, 3)  
 551 **The Metaphysical Poets** (I, 3)  
 554 **Modern British Poetry** (I, 3)  
 555 **Modern British Novel** (I, 3)  
 556 **English Literature of the Sixteenth Century** (I, 3)  
 557 **English Literature of the Seventeenth Century** (II, 3)  
 558 **English Literature of the Eighteenth Century** (I, 3)  
 559 **English Literature of the Romantic Period** (II, 3)  
 560 **English Literature of the Victorian Period** (II, 3)  
 561 **Modern European Novel** (II, 3)  
 570 **Anglo-Irish Writers** (II, 3)  
 571 **Problems in Chaucer** (I, 3)  
 572 **Spenser** (I, 3)  
 573 **Problems in Shakespeare** (II, 3)  
 574 **The Scots' Poetic Tradition through Robert Burns** (II, 3)  
 575 **Modern Southern Literary Renaissance** (II, 3)  
 576 **English Novel of the Eighteenth Century** (I, 3)  
 577 **English Novel of the Nineteenth Century** (II, 3)  
 578 **Problems in Milton** (II, 3)  
 590 **Selected Topics** (I and II, 3)

## Environmental Health Science (EHS)

Chairman: Professor Worthen (Pharmacognosy and Environmental Health)

- 562 **Interdisciplinary Seminar** (I, 2)  
 563 **Public Health Administration** (II, 3)

## Experimental Statistics (EST)

Chairman: Professor Hemmerle (Computer Science and Experimental Statistics)

- 220 **Statistics in Modern Society** (II, 3) Elementary concepts in sampling, polls, surveys, random samples. Foundations of statistical inference; estimation, comparison prediction. Statistics for the consumer, quality of data, credibility of statistical evidence. Environmental measurements and experiments. (Lec. 3) Staff  
 408 **Statistical Methods in Research I** (I and II, 3) Descriptive statistics, presentation of data, averages, measures of variation, skewness, kurtosis. Elementary probability, binomial and normal distributions. Sampling distributions. Statistical inference, estimation, confidence intervals, testing hypotheses, linear regression and correlation. (Lec. 3) Pre: MTH 109. Staff  
 409 **Statistical Methods in Research I** (I and II, 3) Same as 408, but for students who have better mathematical preparation. (Lec. 3) Pre: MTH 142. Staff

- 412 **Statistical Methods in Research II** (II, 3) Multiple linear regression and correlation analysis, curvilinear regression. Analysis of variance and covariance. Analysis of enumerative data. Some nonparametric methods. (Lec. 3) Pre: 408 or 409. Staff  
 413 **Data Analysis** (II, 3) Exploring data from experimental trials, sample surveys, multivariate studies; weighing chances, detecting patterns, identifying outliers, finding models; elementary computational procedure. (Lec. 3) Pre: 408 or 409 and CSC 201. Staff  
 491, 492 **Problems in Experimental Statistics** (I and II, 1-3 each) Advanced work in experimental statistics. Conducted as seminars or as supervised individual topics. Pre: permission of department. Staff  
 500 **Nonparametric Statistical Methods** (II, 3)  
 511 **Linear Statistical Models** (I, 3)  
 520 **Fundamentals of Sampling and Applications** (II, 3)  
 532 (or ASC 532) **Experimental Design** (II, 3)  
 541 **Multivariate Statistical Methods** (I, 3)  
 550 **Ecological Statistics** (I, 3)  
 576 (or ECN, REN 576) **Econometrics I** (I, 3)  
 577 (or ECN, REN 577) **Econometrics II** (II, 3)  
 584 (or ELE 584) **Pattern Recognition** (I or II, 3)  
 591, 592 **Problems in Experimental Statistics** (I and II, 1-3 each)

## Finance (FIN)

Chairman: Professor Poulsen (Finance and Insurance)

- 306 **Managerial Economics** (II, 3) Role of risk, product development, marketing and promotional policies, pricing, cost control, planning of capital expenditures, forecasting, the alternative nature of decision-making. (Lec. 3) Pre: ECN 126. Staff  
 321 **Financial Management** (I and II, 3) Forms and sources of financing business firms, large and small, corporate and non-corporate. Emphasis is on financial planning and decision-making. Financial policies considered in their social, legal and economic effects. (Lec. 3) Pre: ECN 125, 126, ACC. 201 and MGS 201. Staff  
 322 **Security Analysis** (I, 3) Problems of investing funds from point of view of individual and institutional investors. Particular attention to current market theories. (Lec. 3) Pre: 321. Staff  
 330 **Dynamic Financial Decisions** (II, 3) Computer-assisted study of selected advanced problems in business finance. Case problems. (Lec. 3) Pre: 321. Staff  
 341 **Fundamentals of Real Estate** (I, 3) Nature and importance of real estate; principles of land utilization, urban development, property rights, markets, government regulations. (Lec. 3) Pre: junior standing. Staff  
 396 **Financial Institutions and Markets** (I and II, 3) Comprehensive analysis of financial institutions and the markets in which they operate. The internal operations of the institutions as well as their impact on money and capital markets are examined. (Lec. 3) Pre: ECN 125 and 126, ACC 202 and MGS 202. Staff  
 420 **Speculative Markets** (I and II, 3) Examination of the concept of forward pricing and its applications in the areas of commodity futures, security options, Treasury Bill futures, and foreign exchange. Readings and cases. Pre: senior or graduate standing. Staff

**433 Bank Financial Management (I, 3)** Nature of the financial decisions facing the management of an individual bank. Current bank financial practices, research, and appropriate banking models considered. (Lec. 3) Pre: 396 or permission of instructor. Staff

**440 Portfolio Theory and Management (II, 3)** Examination of specific industries, companies, and securities from the individual and institutional point of view. Techniques of investment analysis, management of risks, return on investment values. Annual reports and current cases. (Lec. 3) Pre: 322. Staff

**452 Multinational Finance (II, 3)** Methods of financing multi-national corporations. Foreign exchange, international cash flow, multinational funds flow and international liquidity. Problems of international financial control. (Lec. 3) Pre: permission of instructor and junior or senior standing. Staff

**491, 492 Directed Study (I and II, 3 each)** Directed readings and research work involving financial problems under the supervision of a member of the staff. Pre: permission of instructor and junior or senior standing. Staff

**495 Advanced Financial Management (I and II, 3)** Intensive research on selected current topics relating to financial management. (Lec. 3) Pre: senior or graduate standing or approval by instructor. Staff

**496 Advanced Financial Institutions and Capital Markets (II, 3)** Intensive research on selected current topics relating to financial institutions and markets. (Lec. 3) Pre: senior or graduate standing or approval by instructor. Staff

**540 Theory of Finance (I and II, 2)**

## Fisheries and Marine Technology (FMT)

Chairman: Associate Professor Motte

**013 Shipboard Work I (I, 2)** Principles of vessel operation and twine work. Operating vessels, equipment and gear. Twine knitting and repair. (Lab. 6) Gamache, Hillier and Stout

**014 Shipboard Work II (II, 1)** Work aboard training vessels at sea and in port. Rigging and working common gear used in the commercial fishing industry. (Lab. 3) Pre: 013, 101 and 118. Gamache

**101 Shipboard Safety (I, 3)** Fire prevention, fire fighting, accident prevention and first aid medical treatment at sea; marine distress and emergency communications; abandon-ship, search-and-rescue operations. (Lec. 3) Stout

**110 Marine Technology (II, 4)** Application of basic principles of statics, dynamics, heat, light and sound to problems encountered in vessel operations, fishing gear, fish handling, and engineering systems. (Lec. 3, Lab. 3) Pre: MTH 109. Johnson

**113 Vessel Operations (II, 1)** Conduct and handling of vessels and small craft with emphasis on procedures and seamanship for safe and efficient operation. Actual operations in port and at sea. (Lab. 3) Pre: permission of department. Staff

**118 Introduction to Commercial Fisheries (I, 3)** Survey of world, United States, New England fisheries; commercial species, exploitation and use. Introductory fisheries

science. Principal commercial fishing methods, vessels, and gear. (Lec. 3) Johnson and Sainsbury

**121 Fishing Gear I (II, 3)** Detailed study of bottom trawls; emphasis on construction, repair and use of different rigs and net designs. (Lec. 2, Lab. 3) Pre: 013. Hillier

**131 Seamanship (II, 3)** Principles and practice of seamanship. Watch standing, vessel maneuvering, rules of the road. Vessel maintenance, rigging safety, wire and fibre work. (Lec. 2, Lab. 3) Pre: 013, 101 or permission of the instructor. Stout

**222 Fishing Gear II (II, 3)** Detailed study of the purse seine, midwater trawl, gillnet, trap, longline, dredge. Construction, repair and use of various arrangements and designs. (Lec. 2, Lab. 3) Pre: 121. Gamache and Hillier

**235 Fisheries Meteorology (I, 2)** Basic practical meteorology and weather forecasting for the mariner. Tropical revolving storms; icebergs, ice, and icing-up conditions. World meteorological organization. (Lec. 2) Not open to students who have taken GEG 403. Motte

**241 Diesel Engineering Technology (I, 4)** Detailed study of marine diesel engines. Emphasis on principles and practice of operation, maintenance and testing of systems, engines and components. (Lec. 3, Lab. 3) Pre: 110 or PHY 111 or permission of instructor. Wing

**242 Fluid Power Technology (II, 4)** Detailed study of fluid power systems with application to marine use. Emphasis on principles and practice of design, selection, operation and maintenance of systems and components. (Lec. 3, Lab. 3) Wing

**261 Marine Electronics (I, 4)** Basic electricity applied to fishing. Basic solid state and vacuum tube electronics, DC and AC machinery, ship wiring, communications, depth and fish finders, radar, electronic navigation systems. Noise control, siting and preventive maintenance of equipment. (Lec. 3, Lab. 3) Pre: MTH 109, FMT 110 or PHY 112. Merriam

**281 Navigation I (I, 4)** Chartwork and dead reckoning. Tides, current and wind effects. Compass error and the deviascope. Position by observation and computation. Navigational instruments and sailing. (Lec. 2, Lab. 4) Pre: MTH 109. Motte

**293 Fishing Operations Practicum (II, 1)** Fishing vessel operation; planning and working nearby fishing grounds for principal commercial species; rigging and handling gear and vessel. Conducted at sea in nearby waters. (Pract. 6) Pre: 014, 121 and 131. Gamache and Hillier

**351 Fish Preservation (I, 3)** Introduction to microbiology and biochemistry of fish spoilage. Preservation methods at sea and ashore including icing, mechanical refrigeration, freezing, salting, smoking, dehydration, canning, plant sanitation, and quality control. (Lec. 3) Johnson

**371 Ship Technology (II, 4)** Principles of naval architecture and ship construction applied to smaller vessels, with special emphasis on fishing craft. Basic ship geometry and calculations, stability, powering and propellers. Construction methods and materials, vessel planning. (Lec. 3, Lab. 3) Pre: MTH 109, PHY 111 or FMT 110, or permission of instructor. Sainsbury

**382 Navigation II (II, 4)** Celestial navigation and nautical astronomy. Position fixing and compass error determination by observation of celestial bodies. The sextant



and other navigational instruments. Electronic aids to navigation. (Lec. 3, Lab. 3) Pre: 261, 281 or permission of instructor. Motte

**391, 392 Special Problems and Independent Study (I and II, 1-3 each)** Special work to meet individual needs of students in various fields of fisheries and marine technology. (Lec. and/or Lab. according to nature of project) Pre: permission of department. Staff

**393 Fishing Operations (II, 3)** Commercial fishing procedures as they relate to the vessel operator, in the use of navigation, engineering, vessel layout, economics, marketing, fishing gear, accounting, and on-board fish processing. (Lec. 3) Pre: 281 and 293. Gamache

**416 Marine Transportation (II, 3)** Marine transport and the carriage of seaborne cargoes: trade and cargo patterns, ship types, international and governmental organizations, business, legal and insurance aspects, position of U.S. merchant marine, ports. (Lec. 3) Pre: permission of instructor. Motte

**452 Industrial Fishery Technology**  
See Animal Science 452.

**518 Marine Fisheries Technology (I, 3)**

**521 Fishing Gear Technology (II, 3)**

**591, 592 Special Problems (I and II, 1-3 each)**

## Food Science & Technology, Nutrition and Dietetics (FSN)

Chairman: Associate Professor Bergan

**101 (FNS) Introductory Food Study (I and II, 3)** Basic principles of food selection in today's market and preparation to retain maximum nutritive values and palatability. (Lec. 2, Lab. 3) Staff

**150 (FNS) Food in Affluence and Poverty (I, 2)** Relationships between food and current problems including the world food problem, hunger and malnutrition, food fads and misinformation, food processing and additives, food ecology, food and nutrition improvement programs. (Lec. 2) May not be taken after 207 for credit. Caldwell and Staff

**207 (FNS) General Nutrition (I and II, 3)** Fundamental concepts of the science of nutrition with application to world, community and personal aspects. (Lec. 3) Staff

**221 (FNS) Meal Management (I and II, 3)** Managing human and material resources in planning and serving nutritious attractive meals at different socioeconomic levels. Consumer awareness and analysis of the factors affecting selection of food for the home. (Lec. 2, Lab. 3) Pre: 101. Staff

**237 (FNS) Introductory Food Science (I, 3)** Survey of basic principles of food science and technology. New foods and technology of food products. Food utilization in well-fed and under-fed countries. Current world food issues. (Lec. 3) Constantinides

**331 (FNS) Advanced Food Study (I and II, 3)** Food systems. Physical and chemical changes occurring in food during preparation, serving and storage. Laboratory application including assessment of food quality. (Lec. 1, Lab. 6) Pre: 101, CHM 124 or permission of instructor. Staff

**333 (FNS) Quantity Food Production (I and II, 3)** Application, analysis and evaluation of producing, distributing and serving quality food in quantity. Experience in a food service facility. (Lec. 1, Lab. 4) Pre: 101 and junior standing, or permission of department. Goshdigan

**334 (FNS) Quantity Food Purchasing and Cost Control (I or II, 3)** Production, distribution, storage, cost analysis of food supplies to serve as basis for institutional purchasing by specification. Investigation and analysis of existing purchasing systems. (Lec. 3) Pre: previous or concurrent registration in 333 and junior standing, or permission of department. Goshdigan

**335 (FNS) Food Service Management (I or II, 3)** Administrative responsibilities in organizing, planning, analyzing, controlling and evaluating. Technical operations of sub-units in relation to the whole in food service systems. (Lec. 3) Pre: 101 and junior standing, or permission of department. Goshdigan

**347 (FNS, FST) Nutritional Evaluation of Food Processing (I, 3)** Effect of processing from origin to consumption upon the nutrient content of food. Emphasis on relationship between food processing and nutrient retention and availability. (Lec. 3) Pre: 207, 237, organic chemistry. In alternate years, next offered 1979-80. Bergan and Lee

**378 (FNS, FST) Sensory Evaluation of Foods (I, 3)** Nature of the sensory response; chemistry of compounds responsible for flavor and odor; measurement of taste, odor, color, and texture; design and methodology of panel testing. (Lec. 2, Lab. 2) Staff

**411 (FST) (or PLS 411) Soil Chemistry and Fertilizers (I, 3)** Laboratory analysis of soils. (Rec. 2, Lab. 3, TBA) Pre: junior standing, PLS 212 or equivalent. Quantitative analysis advised. Staff

**412 (FST) (or PLS 412) Soil Biochemistry (II, 3)** Origin, chemical and physical characteristics, and transformations of organic compounds and biological polymers in soils. Previous courses in organic chemistry and soils advised. (Lec. 1, Lab. 6) Pre: junior standing. In alternate years, next offered 1978-79. Felbeck

**421 (FST 441) Food Analysis (I, 4)** Principles and procedures for the chemical and physical analysis of foods. Emphasis on the determination of common food constituents and the instrumentation for their analysis. (Lec. 1, Lab. 6) Pre: organic chemistry. Rand

**431 (FST) Biochemistry of Foods (I, 3)** Introduction to food science with special emphasis on the chemistry and biochemistry of the essential components common to foods of plant and animal origin. (Lec. 3) Pre: organic chemistry. Simpson and Rand

**432 (FST) Biochemistry of Food Processing (II, 3)** Biochemical changes involved in behavior of processed foods and in unit operations such as fermentation, canning, irradiation, freezing, dehydration, enzyme technology and enzyme immobilization for processing and preservation of foods. (Lec. 2, Lab. 2) Pre: organic chemistry. Rand and Simpson

**433 (FST 444) Food Quality (II, 3)** Technological problems of procurement, manufacture, transportation, grading, packaging and storage of food products. Field trips required. (Lec. 2, Lab. 2) Pre: MIC 201 or 211. Staff

**438 (FNS) Experimental Food Science (II, 3)** Principles and instrumentation techniques of basic and applied food research. Investigation of special food problems.

Writing and evaluation of technical reports on research findings. (Lec. 1, Lab. 6) Pre: CHM 124 or permission of department. Constantinides

**441 (FNS) Advanced Human Nutrition (I, 3)** Comprehensive study of principles of nutrition. Physiological and metabolic processes and interrelationships involving nutrients. Factors affecting nutritional health status and requirements during life span. (Lec. 3) Pre: 207, CHM 124, ZOO 242, BCP 331 or permission of department. Dymsha

**444 (FNS) Nutrition and Disease (II, 3)** Effect of disease on metabolism and nutritional requirements, implications for dietary change and factors affecting acceptance of such change. (Lec. 2, Lab. 3) Pre: 441 or permission of department. Caldwell

**445 (FNS) Readings and Reports in Nutrition (II, 3)** Survey of literature and available resource materials. Written reports and discussion of scientific, social, regulatory and political developments affecting nutritional status and health. (Lec. 3) Pre: 441 or permission of department. Dymsha

**451, 452 (FNS) Field Experience in Food and Nutrition (I and II, 1-3 each)** Individual supervised field experiences and seminar in community, educational, government, health-oriented or commercial activities and services related to food and nutrition. (Lec. and Lab.) Pre: permission of department. Maximum total of 4 credits. Not for graduate degree program credit. Goshdigian and Staff

**472 (FST 452) Plant Biochemistry (II, 3)** Basic biochemistry of plant metabolism with emphasis on laboratory study of plant constituents. (Lec. 2, Lab. 3, TBA) Pre: organic chemistry and junior standing. Staff

**491, 492 (FST) Special Projects (I and II, 1-3 each)** Advanced work under supervision of staff member. Arranged to suit individual requirements of student. (Lab. 9) Pre: permission of department. Staff

**502 (FNS) Advanced Experimental Foods (II, 3)**

**503 (FNS) Nutrition Research Methods (I, 3)**

**505 (FNS) Marine Foods Seminar (I and II, 1)**

**511, 512 (FNS) Food Science and Nutrition Seminar (I and II, 1 each)**

**521 (FST) Pesticide Chemistry (I, 3)**

**526 (FST) (or MCH 526) Lipid Chemistry (II, 3)**

**531 (FNS) Teaching of Nutrition (I or II, 3)**

**542 (FNS) Minerals and Vitamins (II, 3)**

**591, 592 (FNS) Special Research Problems (I and II, 2-4 each)**

and assigned readings. (Lec. 2, Lab. 4) Not for credit in any concentration in the Department of Languages. In alternate years, next offered spring 1980. Staff

## Forest and Wildlife Management (FOR)

Chairman: Associate Professor Gould

**301, 302 General Forestry (I and II, 3 each)** Scope of forestry, professional opportunities, forest conditions and problems. Small forest management covering identification and characteristics of R.I. forest trees, surveying and inventory of tracts, management of various R.I. timber types, forest protection and marketing of forest products. Laboratory field application of forest techniques. (Lec. 2, Lab. 2) Pre: for 302: 301. Brown and Gould

**305 General Wildlife Management (I, 3)** Introduction to wildlife management. Typical forest and farm game species. Forest and farm habitats analyzed, management principles emphasized. (Lec. 2, Lab. 2) Pre: BOT 111, ZOO 111, or BIO 101 and 102. Gould

**306 General Wildlife Management (II, 3)** Continuation of 305 with introductory wetlands management. Typical furbearers, waterfowl and fish. Emphasis on habitat management. (Lec. 2, Lab. 2) Pre: 305. Gould

**401 Forest Influences (I, 3)** Effects of forest vegetation on local climate, the hydrologic cycle, soil, and man; relationships to water yield and runoff. Measurement of precipitation, runoff and other variables. (Lec. 3) Pre: junior standing; one course in field botany recommended. In alternate years. Brown

**402 Wildlife Populations (II, 3)** Ecological presentation of characteristics of exploitable animal populations and mechanisms that regulate their numbers through time. Methods used in wildlife population research. (Lec. 2, Lab. 3) Pre: ZOO 111 or BIO 102; ZOO 463 recommended. Kupa

**423 Wetland Ecology (I, 4)** Origin, development and characteristics of inland and tidal wetlands. Topics include geology, hydrology, soils, plant ecology, succession. Wetlands of North America and the world, with emphasis on the glaciated northeast. (Lec. 2, Lab. 4) Pre: BOT (ZOO) 262 and ESC 105 or GEL 103; BOT 323 or permission of instructor. Golet

**424 Wetlands and Land Use (II, 3)** In-depth study of land use involving wetlands, values of wetlands to society and mechanisms for wise management of wetlands. Wetland classification, inventory, evaluation, legislation. Field project on wetland evaluation. (Lec. 2, Lab. 3) Pre: 423. Golet

**491, 492 Special Projects (I and II, 1-3 each)** Special work to meet the needs of individual students in the fields of forestry and wildlife management. (Lec. and/or Lab. according to nature of project) Pre: permission of department. Staff

## Foreign Language Film (FLF)

**271 Foreign Narrative Film (II, 3)** The cultural significance of the film in Europe, Latin America, Africa and Quebec, studied through selected motion pictures with English subtitles, and assigned readings. (Lec. 2, Lab. 4) Not for credit in any concentration in the Department of Languages. In alternate years, next offered spring 1979. Staff

**272 Rhetoric of Film (II, 3)** Comparative study of major works of two or three film directors of international stature, studied through discussion of selected foreign language motion pictures with English subtitles, lectures

## French (FRN)

Acting Section Head: Assistant Professor Morello

**101, 102 Elementary French (I and II, 3 each)** Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Staff

**103, 104 Intermediate French (I and II, 3 each)** Development of facility in reading texts of moderate difficulty; supplemented by further work in grammar, conversation, and composition. (Lec. 3) Pre: 102. Staff

**111, 112 Intensive French I, II (I and II, 5 each)** Intensive grounding in the fundamentals of French grammar and pronunciation. Students with any previous experience in the language may not register. (Lec. 5) May not be taken concurrently with 101, 102. Staff

**113 Intensive French III (I and II, 4)** Grammar review, further exercise in conversation and reading of easy texts. (Lec. 4) Pre: 112 or two or more years of high school French or permission of instructor. May not be taken concurrently with 103, 104. Staff

**114 Intensive French IV (I and II, 4)** Development of facility in reading texts of moderate difficulty, with continued practice in writing and speaking. (Lec. 4) Pre: 113 or two or more years of high school French or permission of instructor. May not be taken concurrently with 103, 104. Staff

**123, 124 French for Reading Knowledge (I and II, 3 each)** Grammar and vocabulary emphasized in the first semester, reading of texts of increasing difficulty in the second semester. 123 presupposes no previous knowledge of French. 124 may be taken without 123 if the student has had two years of high school French or equivalent. Staff

**205, 206 Conversation and Composition (I and II, 3 each)** Comprehension of spoken French; speaking with ease and an acceptable accent on assigned topics; oral reports on articles read in newspapers and periodicals and frequent written compositions. (Lec. 3) Pre: 104 or equivalent. Staff

**301, 302 The Civilization of France (I and II, 3 each)** Geographical, historical, economic, social and esthetic factors contributing to the cultural development of France. (Lec. 3) Pre: for 301, 206; for 302, 301 or permission of department. Recommended for French majors in the General Teacher Education curriculum. Staff

**305 Composition (I, 3)** Writing of literary French. Frequent compositions and critiques with emphasis on the stylistic devices. Recommended for those concentrating in French. (Lec. 3) Pre: 206 or equivalent. Porter

**306 Oral Expression in French (II, 3)** Discussion, short speech-making, pronunciation, everyday vocabulary and improvement of conversation. Matters of current interest in France selected by instructor and students. (Lec. 3) Pre: 206 or equivalent. Staff

**317 Grammar (II, 3)** Grammatical concepts and the linguistic means available for their expression. (Lec. 3) Pre: 205 or permission of instructor. Porter

**325 Introduction to Literary Forms (I, 3)** The novel, poetry, theater and the essay. *Explication de texte* and short compositions. (Lec. 3) Pre: 206. 206 may be taken concurrently by permission of instructor. Staff

**326 Introduction to Literary Movements (II, 3)** Evolution of literary movements from the Middle Ages to the present. *Explication de texte*, exposes and short compositions. (Lec. 3) Pre: 206. 206 may be taken concurrently, by permission of instructor. Staff

**391 Literature up to 1789 in Translation (I and II, 3)** Major developments in French literature from the Middle Ages through 1789. Reading in translation of selected literary works from representative authors. (Lec. 3) May not be taken for credit toward concentration requirements in French. Kuhn

**392 Nineteenth-Century Literature in Translation (I or II, 3)** Reading in translation of selected literary works from representative nineteenth-century authors. (Lec. 3) May not be taken for credit toward concentration requirements in French. Kuhn

**393 Twentieth-Century Literature in Translation (I or II, 3)** Reading in translation of selected literary works from representative twentieth-century authors. (Lec. 3) May not be taken for credit toward concentration requirements in French. Kuhn

**394 Literary Topics in Translation (I or II, 3)** Selected topics in French literature in translation. (Lec. 3) May not be taken for credit toward concentration requirements in French. Spring 1979: Black French Novel. Waters

**402 French Phonetics (II, 3)** Introduction to articulatory phonetics, phonetic notation, and phonetic transcription. Rudiments of recognizing and reproducing French intonation patterns. Laboratory in phonetics and intonation. (Lec. 3) Pre: 205 or permission of instructor. Rogers

**411 Medieval Literature (I, 3)** Representative works of the late eleventh century through the fourteenth century. (Lec. 3) Pre: 325 or 326 or permission of instructor. Rogers

**422 Sixteenth-Century Literature (I or II, 3)** The French Renaissance as seen in the writings of Rabelais, Montaigne and contemporary poets. (Lec. 3) Pre: 325 or 326 or permission of instructor. Rothschild

**433 Seventeenth-Century Literature (II, 3)** General survey of the writers of the period including Corneille, Molière, Racine, Pascal, and the Moralists. (Lec. 3) Pre: 325 or 326 or permission of instructor. Morello

**443 Eighteenth-Century Literature (I, 3)** Principal literary movements as illustrated by Voltaire, Diderot, Rousseau, and other leading writers. (Lec. 3) Pre: 325 or 326 or permission of instructor. Rothschild

**453 Nineteenth-Century Literature until 1848 (I, 3)** General survey of poets and prose writers of the period including the major Romantics (Lamartine, Vigny, Hugo, Musset and novelists such as Stendhal and Balzac). (Lec. 3) Pre: 325 or 326 or permission of instructor. Touloudis

**454 Nineteenth-Century Literature since 1848 (II, 3)** General survey of poets and prose writers of the period including the major Realists (Flaubert, Zola) and Symbolists (Baudelaire, Verlaine, Rimbaud). (Lec. 3) Pre: 325 or 326 or permission of instructor. Chartier

**461 Twentieth-Century Theater (I, 3)** Representative dramatists. (Lec. 3) Pre: 325 or 326 or permission of instructor. Waters

**465 Twentieth-Century Prose (I, 3)** Major prose works of this period including those of Proust, Gide, Mauriac, Colette, Sartre, Camus, the new novelists and others. (Lec. 3) Pre: 325 or 326 or permission of instructor. Kuhn

- 473 French Canadian Literature (I, 3)** Early historical and biographical works, but primarily the novel, poetry and theater of the twentieth century. (Lec. 3) Pre: 325 or 326 or permission of instructor. Chartier
- 474 Black Literature in French (I, 3)** Authors of Africa and the Diaspora; includes Camara, Cécaille, Dadié, Senghor. (Lec. 3) Pre: 325 or 326 or permission of instructor. Waters
- 497, 498 Directed Study (I and II, 3 each)** For the advanced student. Individual research and reports on problems of special interest. Pre: acceptance of a project by a member of the staff and departmental approval. Staff
- 501 Advanced Composition (I, 3)**
- 503 History of the French Language (I and II, 3)**
- 513 Seminar in Medieval Literature (I, 3)**
- 523 Seminar in Sixteenth-Century Literature (I, 3)**
- 533 Seminar in Seventeenth-Century Literature (I, 3)**
- 544 Seminar in Eighteenth-Century Literature (II, 3)**
- 554, 555 Seminar in Nineteenth-Century Literature (I and II, 3)**
- 564 Seminar in Modern Poetry (I, 3)**
- 565 Seminar in Twentieth-Century Theatre (II, 3)**
- 566 Seminar in Twentieth-Century Prose (I, 3)**
- 594 Special Topics (I and II, 3)**
- 901, 902 Reading Course in French for Graduate Students (I and II, 0)**

## Genetics

Coordinator: Assistant Professor Mottinger

### Animal Science

- 352 General Genetics  
354 Genetics Laboratory  
470 Population Genetics

### Botany

- 352 General Genetics  
354 Genetics Laboratory  
554 Cytogenetics  
579 Advanced Genetics Seminar

### Microbiology

- 552 Microbial Genetics

### Plant and Soil Science

- 472 Plant Improvement

### Zoology

- 471 Evolution  
476 Human Genetics  
576 Ecological Genetics  
579 Advanced Genetics Seminar

## Geography (GEG)

Chairman: Professor Alexander (Geography and Marine Affairs)

Note: For additional courses, see Earth Science.

- 100 The Geography of Human Ecosystems (I and II, 3)** The evolution of human environments from the Stone Age to the contemporary megalopolis and the emergent world city in terms of man-earth-space-resource relationships. (Lec. 3) West

**102 Geography of Social Issues (I and II, 3)** Geographic perspective of socio-economic processes in the city. Emphasis on spatial patterns of social mobility, ethnic diversity, class interaction and problems of adaptation to the urban-industrial environment. Simulation games. (Lec. 2, Rec. 1) Krausse

**103 Economic Geography (I and II, 3)** Surveys the geographic backgrounds of economic activities. Populations and the resources of agriculture, industry, and commerce in terms of their world and regional distribution. (Lec. 2, Rec. 1) Staff

### 104 Geographical Earth Science

See Earth Science 104.

**131 Political Geography (I and II, 3)** Pattern of political units throughout the world, special emphasis on boundaries, newly independent nations, and other aspects of political control over territory. (Lec. 3) Alexander

**331 Geography of Europe (II, 3)** Physical and cultural elements of Europe, excluding the Soviet Union, with special emphasis on economic and political aspects of individual countries since World War II. (Lec. 3) Pre: one 100-level geography course or permission of department. In alternate years, next offered 1979-80. Krausse

**333 Geography of the United States and Canada (II, 3)** Survey of geographic regions of United States and Canada, emphasizing interdependence of these regions and their potentials for future economic development. (Lec. 3) Pre: 100 or permission of department. In alternate years, next offered 1978-79. Staff

**337 Southeast Asia and Oceania (II, 3)** Regional analysis of Southeast Asia and the Pacific Islands. Focus on geographic aspects of the Pacific Ocean basin, physical characteristics, island ecosystems, discovery and exploitation, economic and cultural diversity. (Lec. 3) Pre: one 100-level geography course or permission of department. In alternate years, next offered 1978-79. Krausse

**403 Meteorology and Climatology I (I, 3)** Introduction to the basic meteorological processes, their spatial and temporal variations. Energy and moisture budgets at the surface of the earth. (Lec. 3) Pre: ESC 104 or permission of department. Havens

**404 Meteorology and Climatology II (II, 3)** Continuation of 403, with emphasis on applied aspects of meteorology and climatology. (Lec. 3) Pre: 403. Havens

**405 Introduction to Synoptic Meteorology and Climatology (I, 3)** Theoretical and practical approaches to the forecasting problem. (Lec. 3) Pre: 403 or equivalent. Havens

**406 Microclimatology (II, 3)** The climate near the ground, stressing material appropriate to the backgrounds of the students. (Lec. 3) Pre: 403 or equivalent. In alternate years, next offered 1978-79. Havens

**411 Urban Geography (I, 3)** Growth and spatial organization of urban places at macro- and micro-regional scales of investigation in cross-cultural contexts. Evolution of internal socio-cultural patterns, the role of urbanization in modernization processes. (Lec. 3) Pre: one 100-level geography course or permission of department. Krausse

**421 Introductory Cartography (I and II, 3)** Principles and methods of map design and construction for geographic analysis. Emphasis on compilation, generaliza-

tion, scaling, and symbolizing quantitative and qualitative data. (Lec. 1, Lab. 2) Krausse

**422 Advanced Cartography (II, 3)** Advanced map construction, preparation of graphs and diagrams, and a final individual project. Applications of aerial photographs and other forms of imagery. Terrain representation models. (Lec. 2, Lab. 1) Pre: 421 or permission of department. In alternate years, next offered 1978-79. Krausse

**432 Seminar in Political Geography (II, 3)** Special problems of territorial control, including the changing nature of international boundaries, elements of unity and diversity within nations, and concepts of geopolitics. (Lec. 3) Pre: 131 or permission of department. Alexander

**446 Geography of the Polar Regions (II, 3)** Systematic and regional surveys of the physical and biological environments of the Arctic and sub-Arctic. Recent contributions to the geography of the Antarctic. (Lec. 3) Pre: permission of department. In alternate years, next offered 1979-80. Havens

**452 Transportation Geography (II, 3)** Passenger and commodity transportation. Analysis of the relationship between transportation services and the spatial distribution of activities. Emphasis on location theory, analytical methodologies, and urban transportation problems. (Lec. 3) Pre: one 100-level geography course or permission of department. In alternate years, next offered 1978-79. Staff

**461 Coastal Zone Uses (I, 3)** Activities in the coastal zones of both developed and developing countries, and the impacts of these activities on the environment. Techniques of accommodating conflicting uses. (Lec. 3) Pre: 103, BOT or ZOO 262 or permission of the department. West

**471 Island Systems (II, 3)** Man's impact on the use, alteration, and control of island ecosystems. Emphasis on socio-political and technological developments as they effect changes in the oceanic and coastal island environment. (Lec. 3) Pre: MAF 210 or permission of instructor. In alternate years. Not for program credit toward MMA or MAMA. Krausse

**472 Marine Recreation (II, 3)** Analysis of supply and demand of marine-related recreational activities in an urban and exurban context. Analysis of qualitative and quantitative characteristics of user behavior, socioeconomic and environmental impact. (Lec. 3) Pre: 103 or permission of instructor. In alternate years. West

**481 History and Philosophy of Geography (I, 3)** History of geographic thought from early Greek writings to the present; survey of major contributors and contributions. Major philosophical themes in the recent past and philosophical issues in modern geography. (Lec. 3) Pre: one 100-level geography course or permission of department. In alternate years, next offered 1979-80. Staff

**482 Quantitative Methods in Geography (I, 3)** Introduction to application of descriptive and inferential statistics in geographic research. The geographer's use of techniques up to and including simple regression and correlation, using examples from geographic journals. (Lec. 3) Pre: EST 220 (or preferably EST 408 or its equivalent) and one 100-level geography course; permission of department. In alternate years, next offered 1978-79. West

**491, 492 Special Problems in Geography (I and II, 3 each)** Individual guidance in major readings in geography and methods of geographic research. (Lec. 3) Pre: permission of department. Staff

**499 Directed Study (I and II, 1-3)** Individual research and reports on problems of special interest, including honors thesis research. Pre: acceptance of a project by a member of the staff and departmental approval. Staff

**502 Research Methods in Geography (I, 3)**

**503 Seminar in Climatology (I or II, 3)**

**512 Seminar in Urban Geography (I, 3)**

**542 Seminar in Economic Geography (II, 3)**

**545 Geography of the North Atlantic Basin (II, 3)**

**571 Marine Geography (I, 3)**

**572 Geography of Ocean Regions (II, 3)**

**591, 592 Directed Study or Research (I and II, 3 each)**

**595 Problems of Modernization in Developing Nations (II, 3)**

## Geology (GEL)

Chairman: Professor J.A. Cain

Note: For additional courses, see Earth Science.

**100 (or ESC 100) Environmental Geology (I and II, 3)** Geologic processes and how they affect society; geologic hazards, earthquake impact, shoreline development, off-shore oil, waste disposal, water resources, nuclear power plant siting; local issues emphasized. (Lec. 3) Boothroyd and Fisher

**101 (or ESC 101) Geological Field Trips (I, 1)** Field trips to coastal, glacial and rock exposures. The relation of structures and materials to the history of the earth, mineral resources, and our environment. (Lab. 2) In alternate years, next offered 1978-79. Staff

**103 Physical Geology (I, 3)** Physical processes on and within the earth; its composition, development and modification of surficial features and their relationship to internal processes; resource and environmental aspects. (Lec. 3) Not open to students who have passed 105. Pre: registration in 106. Cain and Hermes

**104 Historical Geology (II, 3)** Development of continents and ocean basins, method of preservation of fossils, their classification, and introduction to study of fossil plants and animals. (Lec. 2, Lab. 2) Pre: 103 or 105, 106, or permission of instructor. Tynan

**105 Geological Earth Science**  
See Earth Science 105.

**106 (or ESC 106) Introductory Geology Laboratory (I, II, 1)** Introduction to minerals and rocks, their physical properties and mode of origin; geologic and topographic map interpretation. (Lab. 2) Pre: prior or concurrent registration in 103 or 105. Staff

**301 Geology of Mineral Resources (I, 3)** Origin, distribution, and importance of various mineral resources; energy sources, metals, building and industrial materials, water. Strategic minerals, their world distribution and part played in world affairs. (Lec. 3) Pre: 103 or 302, or ESC 105 and 106 or permission of instructor. Cain

**302 Engineering Geology (II, 3)** Introduction to principles of geology, geologic problems confronting civil engineers. General characteristics of common mineral and

rock types, rock deformation, coastal and river processes, earthquakes, groundwater, etc. (Lec. 3) Frohlich

**320 Mineralogy (I, 4)** Crystallography, physical and optical properties of minerals as related to crystal structure and composition. Laboratory: crystal morphology; hand sample and microscopic identification of the geologically most important minerals. (Lec. 2, Lab. 4) Pre: 103, or 105, and 106, PHY 112 or 214, and CHM 101 or 103, or permission of instructor. Hermes

**330 Petrology (II, 4)** Composition, classification and genesis of igneous, sedimentary and metamorphic rocks. Interpretation of mineral assemblages and textures in both hand specimen and thin section. (Lec. 3, Lab. 2) Pre: CHM 104 or 112, GEL 320 or permission of instructor. Cain

**370 Structural Geology (II, 4)** Stress and strain relationships as they pertain to rocks. Manifestations of these phenomena in geologic structures and criteria for recognizing them. (Lec. 3, Lab. 2) Pre: 103 or 104, or ESC 105 and 106, PHY 213 and 285 or 111, or permission of instructor. Frohlich

**410 Geomorphology (I, 4)** Classification of landforms, their development, distribution and associated geologic processes. Cycles of development of coastal, glacial and fluvial landforms. Laboratory: landform analysis of topographic maps, aerial photographs, and field studies. (Lec. 3, Lab. 2) Pre: ESC 104 and GEL 103 and 104, or ESC 104, 105 and 106, or permission of instructor. Fisher

**415 Glacial Geology (II, 4)** Investigation of late Cenozoic glaciation including areas with presently-existing glaciers. Primary stress on sedimentology and geomorphology of glacial deposits. Field trips in New England area. (Lec. 3, Lab. 2) Pre: 100, 103, or 105 and junior standing, or permission of instructor. Offered in spring of even calendar years. Staff

**425 Principles of Geochemistry (I, 3)** Applications of basic chemical concepts to geological problems: historical geochemistry, crystal chemistry, the phase rule, geochemistry of natural rock systems, isotope geochemistry, distribution of the elements, and geochemical cycles. (Lec. 3) Pre: 320, CHM 112, 114 (may be taken concurrently) or permission of instructor. Offered in spring of odd calendar years. Hermes

**440 Introduction to Paleontology (I, 4)** History, methods, nature and problems. Systematic survey of animal organisms found as fossils with particular emphasis on their morphology, taxonomy and geologic distribution. (Lec. 3, Lab. 2) Pre: 104 or ESC 105 and 106, ZOO 111 or BIO 102, or permission of instructor. Tynan

**450 Introduction to Sedimentation and Stratigraphy (I, 4)** Principles underlying formation, composition, sequence, and correlation of sedimentary rocks. Methods, procedures, and techniques to study sedimentary processes, depositional environments, stratigraphic relationships, and stratigraphic correlation. (Lec. 3, Lab. 2) Pre: 103, 104 and 106, or 105 and 106, or permission of instructor. Boothroyd

**465 Introduction to Geophysics (I, 3)** Introduction to physical properties of the earth and application of geophysical exploration techniques. Seismic, gravity, magnetic and electrical field techniques; basic methods of interpretation. (Lec. 2, Lab. 2) Pre: 103 or ESC 105 and 106, PHY 112 or 214, MTH 142, or permission of instructor. Frohlich

**475 Geology of Petroleum (II, 3)** Introduction to the geology of petroleum; the origin, migration and accumulation of hydrocarbons. Reservoir characteristics; traps; surface, and subsurface exploration methods; drilling methods; and products. (Lec. 2, Rec. 2) In alternate years. Pre: 103 and/or 105. Tynan

**490 Senior Thesis (I and II, 3)** Independent research. Student selects an area of study and works in close conjunction with a faculty member of his or her choice. (Lab. 6) Pre: senior standing and permission of instructor. Not for graduate degree program credit. Staff

**510 Coastal Geomorphology (II, 3)**

**525 Advanced Mineralogy and Petrography (I, 3)**

**527 Analytical Geochemistry (II, 3)**

**530 Igneous Petrology (II, 3)**

**531 Metamorphic Petrology (I, 3)**

**541 Animal Micropaleontology (I, 3)**

**542 Plant Micropaleontology (II, 3)**

**550 Sedimentary Processes (I, 3)**

**553 Basin Analysis (II, 3)**

**555 Biostratigraphy (I, 3)**

**565 Advanced Interpretation in Applied Geophysics (II, 3)**

**566 Seismology and Plate Tectonics (II, 3)**

**581 (or OCE 581) Coastal Engineering Geology (II, 3)**

**585 Geohydrology (I, 3)**

**590 Special Problems (I and II, 1-3)**

## German (GER)

Section Head: Associate Professor Dornberg

**101, 102 Elementary German (I and II, 3 each)** Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation. (Lec. 3) Staff

**103, 104 Intermediate German (I and II, 3 each)** Development of facility in reading narrative and expository prose; exercises in grammar, listening comprehension, and speaking. (Lec. 3) Pre: 102 or equivalent. Staff

**105, 106 Basic Conversation I and II (I and II, 1 each)** 105: Practice in conversational skills. Pre: 103 or concurrent registration in 103. 106: Continued practice in conversational skills. (Lec. 1) Pre: 104 or concurrent registration in 104. Staff

**205, 206 Conversation and Composition (I and II, 3 each)** Development of facility in spoken and written German using contemporary writings and topics; special emphasis on general classroom discussion. (Lec. 3) Pre: 104 or equivalent. Staff

**305 Advanced Conversation (I, 3)** Intensive practice in spoken German based upon matters of current interest in the German-speaking countries. (Lec. 3) Pre: 206 or equivalent. In alternate years, next offered 1979-80. Kalinke

**306 Advanced Composition (II, 3)** Training in various forms of writing by means of frequent compositions and critiques. (Lec. 3) Pre: 206 or equivalent. In alternate years, next offered 1979-80. Kalinke

**315, 316 Language Study Abroad (I and II, 3-5 each)** Credit for advanced language study in a German-speaking country. Pre: 206 or equivalent and permission of department. Staff

**325 Introduction to Modern German Literature: Genres (II, 3)** Traditional and recent forms of narrative, drama,

and lyric as illustrated by leading writers from 1885 to the present. (Lec. 3) Pre: 104 or equivalent. In alternate years, next offered 1979-80. B.A. Woods

**326 Introduction to Modern German Literature: Movements (II, 3)** Literary and cultural developments as reflected by leading writers from 1885 to the present. (Lec. 3) Pre: 104 or equivalent. In alternate years, next offered 1978-79. B.A. Woods

**391 Masterpieces of German Literature (I, 3)** Literary works from the Middle Ages through 1800 in English translation. (Lec. 3) May not be used toward a concentration in German. In alternate years, next offered 1978-79. Kalinke

**392 Masterpieces of German Literature (II, 3)** Literary works from 1800 to the present in English translation. (Lec. 3) May not be used toward a concentration in German. Staff

**393 Topics in German Literature (I or II, 3)** Selected topics in English translation. (Lec. 3) May not be used toward a concentration in German. Staff

**409 History of the German Language (I, 3)** Development of the German language from early Germanic to modern German. Emphasis on cultural influences on linguistic change. (Lec. 3) Pre: 206 or permission of department. In alternate years, next offered 1979-80. Kalinke, B.A. Woods

**431 German Literature from 800 to 1700 (II, 3)** Literary works from the Old High and Middle High German periods through the age of Baroque. Readings in modern German. (Lec. 3) Pre: 206 or equivalent. In alternate years, next offered 1979-80. Kalinke

**441, 442 German Literature of the Eighteenth Century (I and II, 3 each)** Principal literary movements of the century as illustrated by leading writers of the time. (Lec. 3) Pre: 206 or equivalent. 441 is not a prerequisite for 442. In alternate years, next offered 1978-79. Grandin

**451, 452 German Literature of the Nineteenth Century (I and II, 3 each)** Principal literary movements of the century as illustrated by leading writers of the time. (Lec. 3) Pre: 206 or equivalent. 451 is not a prerequisite for 452. In alternate years, next offered 1979-80. Dornberg

**485, 486 Special Studies (I and II, 3 each)** Special topics in German literature not emphasized in other courses. (Lec. 3) Pre: one semester of German at the 300 level or permission of department. In alternate years, next offered 1978-79. Sem. I: Anglo-American Influence in Twentieth-Century German Literature. B.A. Woods

**497, 498 Directed Study (I and II, 3 each)** Designed particularly for the advanced student. Individual research and reports on problems of special interest. Pre: acceptance of a project by a member of the staff and permission of department. Staff

## Greek (GRK)

Section Head: Instructor Campbell

**101, 102 Introductory Greek (I and II, 3 each)** Grammar and syntax of ancient Attic Greek combined with reading practice. In the second semester a text of standard Attic prose is read. (Lec. 3) Cashdollar

**109, 110 Introduction to Ancient Greek Culture (I, II, 3)** Aspects of Greek culture — literature, religion, myth, philosophy, art, private life, archaeology and etymology — studied through readings in English translation, color slides and lectures. (Lec. 3) Cashdollar

**301, 302 Directed Readings in Greek (I, II, 3-12)** Study of Ancient Greek writers selected in accordance with the needs and background of the student. May be repeated with different topic for additional credit. (Lec. 3-12) Pre: 102 or equivalent and permission of instructor. Staff

**497, 498 Directed Study (I and II, 3)** Individual research and reports on problems of special interest. Pre: acceptance of a project by a member of the staff and departmental approval. Staff

## Health (HLT)

Chairman: Professor Reid (Physical Education, Health and Recreation)

**123 Foundations of Health (I and II, 3)** Development of attitudes and practices that lead to more healthful living. Personal and community health problems are studied. (Lec. 2, Discussion 1) Staff

**172 First Aid (I or II, 1)** Basic instruction and practice in accident prevention and first aid procedure. Students successfully meeting requirements will receive a Standard First Aid Certificate. (Lec. 1) Staff

**272 Advanced First Aid (I and II, 2)** Instruction and practice in advanced first aid and emergency care techniques and skills. Fulfills requirements for Red Cross Advanced First Aid Certificate. (Lec. 1, Lab. 2) Staff

**356 Methods and Materials in Health Education (I and II, 3)** Curricular materials for school and public health education; evaluation of techniques and current methodology for use in elementary and secondary schools. (Lec. 3) Staff

**357 Principles of Community Health (II, 3)** Principles of community health with emphasis on problems of health departments, public and private agencies and schools in the community health education program. (Lec. 3) Pre: 123, 367 or permission of department. Staff

**358 Current Problems of Safety and First Aid (I, 3)** Major emphasis on content, methods, procedures and techniques of teaching safety. Reports on the latest developments in teachers' liability and responsibilities for accidents to school children. (Lec. 3) Staff

**359 Field Work in Health (II, 3)** Directed participation in community health education in cooperation with community health organizations. Weekly seminars. (Lab. 6) Pre: 357 or permission of department. Staff

**367 (or EDC 367) School Health Program (I, 3)** Organization of the school health program in relation to the community health program. Emphasis on health instruction, health services and healthful school environment. (Lec. 3) Staff

**372 Instructor's First Aid (I or II, 1)** For students and teachers who have completed the advanced course within two years, and desire to certify pupils in Junior, Standard and Advanced First Aid courses. (Lec. 1) Staff

## History (HIS)

Chairman: Professor Gutchen

**103 Special Topics in Western Civilization (I and II, 1-3)** Topical approach to, rather than a survey of, Western civilization. Topics vary from semester to semester. (Lec. 3) Staff

**111 History of Ancient Greece and Rome (I, 3)** From the Greek and Latin settlements to the Germanic invasions with emphasis on political, social, economic and aesthetic developments. Includes rise of the Christian church. (Lec. 3) Daniel

**112 History of Medieval Europe (II, 3)** Primary western Europe. Follows 111. Medieval church, feudalism, revival of town life, commerce, industry and money economy, rise of national states and development in the arts. (Lec. 3) Daniel

**113 History or Western Civilization from the Late Middle Ages to 1789 (I and II, 3)** Introductory course treating Western Civilization in its broadest sense from the late Middle Ages to the French Revolution and the beginnings of industrialization. (Lec. 3) Not open to students who have taken 101. Staff

**114 History of Western Civilization Since 1789 (I and II, 3)** Continuation of 113. Western Civilization of the present time. (Lec. 3) Not open to students who have taken 102. Staff

**118 Women in European History (II, 3)** Attitudes toward women, their role in society, women's work, and the feminist movement. Emphasis on nineteenth and twentieth centuries with background material from earlier periods. (Lec. 3) Schach-Cook

**122 History of England since 1500 (I or II, 3)** Emphasis on constitutional conflicts and developments, commerce, agricultural and industrial revolutions, artistic, intellectual, and social developments. (Lec. 3) Gutchen

**132 Introduction to Russian and Soviet History (I or II, 3)** Selected topics in the development of Russian civilization since the ninth century. (Lec. 3) Thurston

**141 History of the United States to 1877 (I or II, 3)** Colonial and Revolutionary periods, and economic, social and political development of the United States through the Civil War and Reconstruction. (Lec. 3) Staff

**142 History of the United States since 1877 (I or II, 3)** General social, economic and political development to the present. (Lec. 3) Staff

**143 Special Topics in the History of America (I and II, 1-3)** Topical approach to, rather than a survey of, American history. Topics vary from semester to semester. (Lec. 3) Staff

**145 Women in American History (I or II, 3)** American women from the colonial period to the present. Emphasis on institutionalization of the Victorian ideal, women in the labor force, and origins of liberation ideology. (Lec. 3) Strom

**150 Introduction to Afro-American History (I or II, 3)** Survey of Negro American history from African origins to the current racial confrontation. (Lec. 3) Weisbord

**171 East Asian Culture and History (I or II, 3)** Introduction to the culture and history of East Asia. Emphasis on the literary, artistic and philosophical traditions of East

Asia especially as those aspects relate to and influence contemporary developments. (Lec. 3) Kim

**174 Islamic Civilization in Asia, 570 to the Present (I, 3)** Cultural history of the Muslim people of Asia with emphasis on the religion, social organization, architecture, painting and music of the Arab, Turkic and Persian peoples. (Lec. 3) Roughton

**175 Islamic Civilization in Africa and Spain, 570 to the Present (II, 3)** Cultural history of the Muslim peoples of Africa and Spain with emphasis on religion, social organization, architecture, painting and music. (Lec. 3) Roughton

**180 Introduction to Latin American Civilization (I or II, 3)** Social, cultural and political history of the Latin American region from the pre-conquest era to the present time. (Lec. 3) Bryan

**314 Seventeenth- and Eighteenth-Century European Cultural History (I, 3)** Intellectual and social movements of the Age of Reason and the Age of Enlightenment. (Lec. 3) Briggs

**315 Nineteenth- and Twentieth-Century European Cultural History (II, 3)** Intellectual and cultural movements from Romanticism through Existentialism. (Lec. 3) Honhart and Thurston

**316 History of Science to 1700 (I, 3)** Survey of the genesis and development of scientific thought, the formation of the scientific community, and the cultural influences of science from the Greeks to 1700. (Lec. 3) Briggs

**317 History of Science since 1700 (II, 3)** Continuation of 316 from about 1700 to the present. (Lec. 3) Briggs

**318 Diplomatic History of Europe since 1815 (I, 3)** Materials used in writing diplomatic history, review of the major crises with their causes and consequences, and movements for the collective security. (Lec. 3) Schach-Cook

**321 History of England: 1485-1660 (I, 3)** Political, economic and religious change from the beginning of the Tudor dynasty to the Puritan Revolution and the Commonwealth. (Lec. 3) Gutchen

**322 History of England: 1660-1815 (II, 3)** Political, economic, religious and cultural change from the Stuart restoration to the emergence of Britain as a world power at the end of the Napoleonic wars. (Lec. 3) Gutchen

**323 History of England: 1815-1896 (I, 3)** Impact of industrialization and urbanization on political, economic, religious, and cultural forces in the Victorian age. (Lec. 3) Gutchen

**324 History of England since 1896 (II, 3)** History of Britain since 1896, with emphasis upon its changing role as a world power, the impact of economic change on politics and society, and the development of the social welfare state. (Lec. 3) Gutchen

**325 History of European Socialism (I, 3)** Historical development of socialism in Europe since beginning of the Industrial Revolution, emphasis on socialist movements and ideologies in Germany, France, Russia and England. (Lec. 3) Pre: sophomore standing. 102 or 114 advisable. Honhart

**327 German History since 1914 (II, 3)** The collapse of Germany's social and political order between 1914 and 1945 and the subsequent creation of antagonistic liberal



and socialist societies in West and East Germany. Emphasis on national socialism. (Lec. 3) Pre: junior standing or 114 and sophomore standing. Honhart

**330 History of France since 1815 (II, 3)** French political and social history from the end of the First Empire to the Fifth Republic. Complexities of class divisions and their repercussions on French political history. (Lec. 3) Silvestri

**333 History of the Soviet Union (II, 3)** Russian history from the revolutions of 1917 to the present. Emphasis on the reconstruction of Russian institutional life by the Bolsheviks, and political, economic, intellectual, and ideological developments. (Lec. 3) Pre: 102. Thurston

**335 American Colonial History to 1763 (I, 3)** American history from the founding of the colonies to the end of the French and Indian War, including developments within the colonies as well as their relationship with England. (Lec. 3) Pre: 141 or equivalent. Metz

**336 The American Revolution and Confederation, 1763-1789 (I, 3)** Social, political and economic aspects of the Revolution and Confederation periods. (Lec. 3) Pre: 141 or permission of instructor. Cohen

**337 The United States during the Early National Period, 1789-1850 (II, 3)** American history from the Constitution through the Federalist, Jeffersonian, and Whig periods with emphasis upon political developments and social economic aspects of the era. (Lec. 3) Pre: 141 or permission of instructor. Cohen

**339 Emergence of Industrial America, 1877-1917 (I, 3)** Growth and consolidation of business, urbanization and the Populist and Progressive movements. America's emergence as a world power. (Lec. 3) Pre: 142 or permission of instructor. Klein and Findlay

**340 United States History from 1917 to 1945 (I or II, 3)** Social, political, and economic developments between the World Wars. Emphasis on domestic affairs, special attention to the involvement of the United States in World War II. (Lec. 3) Klein and Findlay

**341 United States History since 1945 (I or II, 3)** Social, political, and economic developments since the end of World War II. Equal emphasis upon the domestic sphere and the role of the United States in the world. (Lec. 3) Klein and Findlay

**342 Social and Intellectual History of the United States to 1865 (I, 3)** Survey of social and intellectual development to the end of the Civil War, including literary, artistic, and scientific trends, reform movements and growth of the democratic ideal. (Lec. 3) Metz

**343 Social and Intellectual History of the United States, 1865 to the Present (II, 3)** Social and intellectual development after the Civil War, including literary, artistic, scientific trends. Particular attention to interaction between concepts and institutions during periods of social reform. (Lec. 3) Pre: 142 or permission of instructor. Klein

**344 History of the North American Indian (I or II, 3)** Native North Americans from pre-Columbian times to present. Emphasis on ideological conflict between Indians and whites. (Lec. 3) Costigliola

**345 History of the Negro Peoples (II, 3)** Survey of the history of the Negro peoples in the United States and Africa in the modern period. Emphasis on links between the "New World" Negro and the African; comparative slave systems and history of racist ideology. (Lec. 3) Pre: junior standing. Weisbord

**346 Immigration to Ethnicity in Modern America (I, 3)** Nature of population movements to U.S. in 19th and 20th centuries, formation of ethnic communities and their internal dynamics, role of ethnic groups in American social, cultural, and political history. (Lec. 3) Findlay

**347 American Women in the Twentieth Century (I, 3)** Emphasis is on nature of women's work, changes in sexual behavior, feminist movement, and images of women in popular culture. (Lec. 3) Pre: 145 or permission of instructor. In alternate years, next offered 1979-80. Strom

**350 Constitutional History of the United States (II, 3)** The origins, framing and development of the Constitution of the United States with particular attention to the social and economic influences that have shaped our form of government and our attitudes toward it. (Lec. 3) Pre: 141 and 142. Metz

**353 United States Diplomatic History to 1914 (I, 3)** Foreign relations of the United States from colonial times to the beginning of World War I. (Lec. 3) Pre: junior standing. Costigliola

**354 United States Diplomacy in the Twentieth Century (II, 3)** American foreign relations since the emergence of the United States as a world power. (Lec. 3) Pre: junior standing. Costigliola

**357 History of Religion in the United States (I, 3)** Background, emergence of evangelical protestant synthesis, disintegration of this synthesis and development of pluralistic religious community in modern America. (Lec. 3) Findlay

**358 Recent America in Film (II, 3)** An investigation of American culture and history since 1930 using films as the major resource for study, with emphasis on the Great Depression, WWII, sexual interaction and race relations. (Lec. 1, Lab. 4) Strom

**362 History of Rhode Island (II, 3)** History of Rhode Island from the first English settlement to the present day. Social, political, and economic aspects of internal development and the relation of the state to the region and the nation. (Lec. 3) Pre: 141 and 142. Metz

**363 American Urban History (I, 3)** Origins, development and role of cities in America from colonial times to the present. Emphasis on tensions between social change and social control generated by urban growth. (Lec. 3) Klein

**365 The Civil War in America (I, 3)** Emphasis on the polarization of American society between 1830 and 1865 and the effects of the Civil War on the American political economy. (Lec. 3) Strom

**366 Reconstruction in America (II, 3)** Origins of Reconstruction policies during the Civil War, the emergence of the Radical Republicans and the effects of war and Reconstruction on the peoples of the southern states through 1890. (Lec. 3) Strom

**373 (or ZOO 373) History of Biology (I or II, 3)** Development of basic ideas and paradigms of biology from the Greek world to the present. Emphasis on the period of the last three centuries. (Lec. 3) Briggs

**377 Southwest Asia and North Africa since 1683 (II, 3)** Southwest Asia and North Africa from the second siege of Vienna. Transformation of Ottoman and Iranian societies under the influence of Western ideas and institutions. Development of Arab, Turkish, and Iranian

nationalisms. (Lec. 3) Pre: junior standing or permission of instructor. Roughton

**379 Imperialism and Its Impact upon Colonized Peoples (I, 3)** Historical analysis of colonialism and imperialism, the struggle for independence and the problems confronting newly independent states, with emphasis on the Third World. (Lec. 3) Pre: junior standing or permission of instructor. Roughton

**381 History of Colonial Latin America (I, 3)** The interaction of American-Indian civilizations with European and African elements in the Spanish and Portuguese empires of the New World, concluding with the wars for independence. (Lec. 3) Bryan

**382 History of Modern Latin America (II, 3)** Historical analysis of the political, cultural, and social-economic dimensions of tradition, reform and revolution in Latin America since 1810. (Lec. 3) Bryan

**383 History of Modern Mexico (I or II, 3)** Social, economic and political development of Mexico from 1810 to the present, emphasizing the Revolution of 1910, its background and aftermath. (Lec. 3) Bryan

**384 The Caribbean: New World/Third World (I or II, 3)** Historical and contemporary development of the Caribbean world, emphasizing efforts by the regions' peoples to achieve political, economic and cultural independence from external domination. (Lec. 3) Bryan

**388 History of Sub-Saharan Africa (I, 3)** Ancient and medieval Africa, and the impact of Islam; the "Glorious Age" of the Sudanic empires; the slave trade and the age of exploration; the period of European partition and the rise of African nationalism. (Lec. 3) Pre: junior standing. Weisbord

**391 Directed Study or Research (I and II, 3)** Special work arranged to meet the needs of individual students who desire advanced work. (Lec. or Lab. ) Pre: permission of department. Staff

**393 Topics in History (I and II, 1-3)** Subject, course content, and years offered will vary according to expertise and availability of instructors. With departmental permission can be taken more than once. Staff

**395 Seminar in History (I or II, 3)** Introduction to historical research and writing. Topics vary. Required for history concentration. Pre: permission of department. Staff

**398 History through Science Fiction (II, 3)** Ideas about history in popular culture as seen in the literary genre of science fiction. (Lec. 3) Briggs, Klein

**405 Western Europe in the High Middle Ages (I, 3)** Primarily France and England in the twelfth and thirteenth centuries. Emphasis on the Medieval Gothic-Catholic culture, the rise of towns and the development of a money economy. (Lec. 3) Daniel

**406 The Renaissance (II, 3)** Europe in transition during the fourteenth through the early sixteenth centuries, the economic, social, and religious backgrounds of the Renaissance. Emphasis on cultural and artistic developments. (Lec. 3) Daniel

**408 History of Europe, 1648-1789 (I, 3)** Survey of the European states from the Peace of Westphalia to the French Revolution. Emphasis on relationship among social and economic conditions and political development. (Lec. 3) Silvestri

**409 The French Revolution and Napoleon (I, 3)** Examination of the Revolution and Napoleonic eras with em-

phasis on the connections among economic, social and political developments. Special attention to problems in interpretation. (Lec. 3) Silvestri

**410 History of Europe, 1815-1914 (I, 3)** Major political, economic, and intellectual developments in Europe from the defeat of Napoleon I to the outbreak of World War I, emphasis on the Revolutions of 1848, unification of Italy and Germany, impact of the Industrial Revolution, nationalism and imperialism, background of World War I. (Lec. 3) Schach-Cook

**411 History of Europe since 1914 (II, 3)** Detailed study of developments from 1914 to the present: wars, post-war adjustments, communist and fascist ideologies, history of individual states, and social and intellectual trends. (Lec. 3) Silvestri, Honhart, Schach-Cook

**426 German History, 1640-1914 (I, 3)** The evolution of modern German society from mid-17th century to the First World War. Topics include: absolutism, enlightenment, nationalism, industrialization, demographic trends, and changing patterns in social structure and social conflict. (Lec. 3) Pre: junior standing or above. In alternate years, next offered fall, 1978. Honhart

**432 History of Russia to 1917 (I, 3)** Russian origins in medieval Kiev and rise of autocracy in Muscovy. Imperial Russia's development in eighteenth and nineteenth centuries. Emphasis on social and cultural change. (Lec. 3) Thurston

**451 Historical Society and Museum Administration (II, 3)** Survey of historical societies, museums, and preservation agencies; the collection, care and interpretation of historical artifacts and documents; problems facing historical agencies. Student work programs and museum visits. (Lec. 3) Pre: permission of instructor. Klyberg

**469 The Protestant and Catholic Reformation I (I, 3)** Change of European society resulting from Protestant Reformation and Catholic Reaction; rise of secular states and emerging national states, effects of religious crisis upon culture and society. (Lec. 3) Daniel

**470 Protestant and Catholic Reformation II (II, 3)** Catholic and Counter Reformation, Northern Renaissance, wars of religion, social and cultural manifestations of the early Baroque. (Lec. 3) Daniel

**473 History of Modern China (II, 3)** Political, social, economic, and cultural development of China since 1800 with the emphasis on the development of Chinese nationalism and on the rise, theory, and practice of Chinese communism. (Lec. 3) Kim

**474 History of Modern Japan (I, 3)** Background and significance of the Meiji restoration (1868) and modernization; the development of Japanese militarism, the fall of the Japanese Empire and the emergence of the "New Japan." (Lec. 3) Kim

**475 History of Modern Korea (II, 3)** Eighteenth century Yi government and society; colonial totalitarianism under Japanese rule; the fall of the Japanese Empire, division and chaos; the Korean conflict and aftermath. (Lec. 3) Kim

**501 Colloquium in European History (I or II, 3)**

**502, 503 Special Readings in European History (I and II, 3)**

**515 Seminar in Twentieth-Century Diplomacy (II, 3)**

**521, 522 Readings and Research in European History (I and II, 3 each)**

- 535 **Colloquium in American History** (I or II, 3)  
 536, 537 **Special Readings in American History** (I and II, 3 each)  
 540 **Seminar in American Colonial History: the Seventeenth and Eighteenth Centuries** (I or II, 3)  
 541 **Seminar in Nineteenth-Century American History** (I and II, 3)  
 542 **Seminar in Twentieth-Century United States History** (I and II, 3)  
 543 **Seminar in the History of the United States Foreign Relations** (II, 3)  
 550 **Seminar in Black Nationalism and the International Race Problem** (I or II, 3)  
 560 **Research in Local History** (II, 3)  
 580 **Colloquium in Latin-American History** (I or II, 3)  
 588, 589 **Special Readings in Third World History** (I and II, 3 each)  
 591 **Directed Study or Research** (I and II, 3)  
 593 **Seminar in Historical Studies** (I and II, 3)

## Home Economics Education (HED)

Chairman: Professor P. Kelly

- 334 **Teaching-Learning Strategies** (I and II, 3) Instructional strategies for home economics areas. Selection of resource materials and techniques based on objectives, needs, and characteristics of learners and sound educational principles. (On-site observations and teaching experiences) Pre: EDC 101 and 12 credits in home economics, or permission of instructor. May
- 337 **Teaching Effectiveness** (I or II, 4) Development of curriculum materials specific to individualized instruction; focus on communication skills in an educational setting; implementation of advanced methods and techniques in a microteaching and school setting. (Lec. 2, Lab. 4) Pre: 334 Kelly and May
- 340 **Community Programming** (I or II, 3) Interpretation of census data to develop home economics programs based on state and community needs. Educational techniques used to reach the identified populations. (Lec. 3) Pre: SPE 101, ENG 110 and junior standing or permission of instructor. MacKenzie
- 478, 479 **Problems in Home Economics Education** (I and II, 1-3 each) Advanced work in home economics education. Seminars or supervised individual projects. (Lec. or Lab.) Pre: permission of department. Staff
- 482 **Field Experience** (I and II, 1-3) Supervised teaching experience in home economics in either a school or non-school setting. (Not synonymous with experience gained in 483 or EDC 484.) Not for graduate degree credit. Pre: 337 (or concurrent registration), 12 credits in a selected area or permission of department S/U credit. Staff
- 483 **Teaching Alternatives** (I, 8) Directed field experience in home economics related areas for students who do not wish teacher certification. Not available to teacher certification undergraduate students or for graduate degree program credit. (Field experience 240 hours) Pre: 337 (or concurrent registration), 12 credits in a selected area. Permission of department S/U credit. Staff
- 490 **Teaching Home Economics: Grades 1 through 6** (I and II, 2) Development of home economics curriculum for the elementary school with emphasis on integration of home economics objectives with existing school cur-

riculum. Guided field experience. May be taken concurrently with EDC 484, 485. (Lec. 4) Pre: 334, CDF 200, EDC 312 or permission of department. MacKenzie

- 491 **Teaching Home Economics: Adults** (I and II, 3) Planning and preparing curriculum materials for adult education classes in home economics, based on adult needs and interests. Participation in actual teaching. One-half semester course which may be taken concurrently with EDC 484. Pre: 334 or permission of department. P. Kelly and May
- 495 **Career Education Concepts in Home Economics** (I, 3) Concepts, components and phases of career education; national implications for change in education; ideology within vocational education framework; educational materials for classroom settings. (Lec. 3) Pre: 337 or permission of instructor. May
- 506 **Instructional Communications** (I or II, 3)  
 507 **Curriculum Development** (I or II, 3)  
 508 **Supervision of Student Teachers** (I or II, 3)  
 509 **Seminar in Home Economics Education** (I or II, 3)  
 531 (or FSN 531) **Teaching of Nutrition** (I or II, 3)  
 532 (or HMG 532) **Consumer Education** (II, 3)  
 586, 587 **Problems in Home Economics Education** (I and II, 3 each)

## Home Management (HMG)

Chairman: Assistant Professor Noring

- 210 **Management in Family Living** (I and II, 3) Interaction of resources, goals, and managerial processes in the home seen in the context of the larger community. Applications primarily in the area of human resources. (Lec. 3) Pre: sophomore standing or permission of department. Noring
- 320 **Family Economics** (I and II, 3) Factors affecting family financial decisions and their effect upon the individual family and the community. (Lec. 3) Christner
- 340 **Family Housing** (I, 3) Evaluation and study of types of housing in relation to the family and community. Emphasis on socioeconomic factors, housing laws, and aesthetic qualities concerned with housing. (Lec. 3) Noring
- 350 **Consumer Purchasing of Durable Goods** (II, 3) Decision-making concerning selection of consumer durables relative to feature availability, resource depletion, and natural energy use. (Lec. 2, Lab. 2) Christner
- 371 **Seminar in Home Management** (II, 3) Application and analysis of concepts of management in group living situations and assessment of community resources as they relate to use by individuals/families in resolving managerial problems. (Lec. 3) Pre: 210, CDF 355 or SOC 312. Noring
- 401 **Home Management Problems of Deprived Families** (II, 3) Seminar in understanding and assisting families faced with managerial problems due to social and economic deprivation. Some field experience provided. (Lec. 3) Pre: 320 and SOC 202 or permission of department. Christner
- 470 **Special Problems in Home Management** (I and II, 2-4) Special problems selected from home management theory, consumption economics, work simplification,

and equipment depending upon the specific interest of student. (Lab. TBA) Staff

**532 (or HED 532) Consumer Education (II, 3)**

**570 Special Problems in Home Management (I and II, 3)**

## Honors Colloquium (HCL)

Coordinator 1978-79: Professor Albert Lott

**401 Honors Colloquium I (I and II, 3)** Independent study, discussions, faculty conferences and attendance at Honors Colloquium Distinguished Lecture Series. Colloquium theme changes each year. Enrollment limited to University Honors Program students.

**402 Honors Colloquium II (I and II, 3)** Same as 401. Pre: 401.

**403 Honors Colloquium III (I and II, 3)** Same as 401. Pre: 402.

**404 Honors Colloquium IV (I and II, 3)** Same as 401. Pre: 403.

## Industrial Engineering (IDE)

Chairman: Professor C.F. James, Jr.

**220, 221 Industrial Engineering I, II (I and II, 4 each)** Introduction to industrial engineering. Elementary topics in production control, forecasting, motion and time-study, methods analysis, operations research and quantitative techniques, engineering economics, compensation systems and manufacturing processes. (Lec. 3, Lab. 3) Pre: MTH 142 for 220; credit or registration in CSC 201 for 220 and 221. Staff

**331 Industrial Manufacturing Processes I (I, 3)** Introduction to the fundamentals of chip forming processes in manufacturing and their relation to materials deformation produced by the interaction of the cutting tools with the materials. Emphasis on what the processes will do, how they do it, their accuracy, relative advantages and limitations, and relation to surface integrity of machine surface. (Lec. 3) Pre: RIJC 800-293. Staff

**332 Industrial Manufacturing Processes II (II, 3)** Application and practical fundamentals of forming, casting, joining processes in manufacturing and their relation to deformation, structure or state of material. Includes study of non-traditional processes, such as electrodischarge machining, etc. (Lec. 3) Pre: 331. Staff

**350, 351 Industrial Engineering Systems Design I, II (I and II, 3 each)** Design and analysis of systems of production facilities and materials handling. Compensation, production and inventory control systems. Applications of and case problems in operations research, probability and statistics, engineering economy and other foundation areas. Introduction to simulation. Design and analysis of industrial engineering systems. (Lec. 3) Pre: for 350-221, 412, 432; for 351-350, 433. Staff

**391, 392 Special Problems in Industrial Engineering (I and II, 1-3 each)** Independent study and seminar work under close faculty supervision. Discussion of advanced topics in preparation for graduate work. Pre: junior standing and permission of department. Staff

**404 Engineering Economy (I, 3)** Effects of economics on engineering decisions in design, selection, and replacement of equipment and evaluation of project proposals. Theory of depreciation and obsolescence. (Lec. 3) Pre: ECN 123, MTH 142. Not open to students with credit in 220. Staff

**411 Engineering Statistics I (I, 3)** Elementary probability theory, random variables, and probability distributions. Moment generating functions, expected values, bivariate normal distributions. Introduction to applied statistics in engineering. (Lec. 3) Pre: MTH 142. Staff

**412 Engineering Statistics II (II, 3)** Continuation of 411. Estimation, hypotheses tests, sampling theory, linear regression. Other engineering applications of applied statistics. (Lec. 3) Pre: 411. Staff

**422 Production Facilities Design (II, 3)** Analysis and design of production facilities. Line and manpower balancing. Design of material flow networks. Quantitative modeling and simulation applied to production facilities design. (Lec. 3) Pre: 411, 432. Staff

**430 Design and Analysis of Compensation Systems (II, 3)** Wage and employment theory, job evaluation, motivational systems, supplemental payments; labor force loading, leveling and scheduling. Analysis of influence of unions on labor price theory. (Lec. 3) Pre: senior standing. Staff

**432 Operations Research I (I, 3)** Introduction to major areas of operations research and their application to systems analysis. Linear programming, game theory, elementary network analysis and related topics. (Lec. 3) Pre: MTH 243, 215 or equivalent. Staff

**433 Operations Research II (II, 3)** Introduction to inventory and replacement models, queuing theory, simulation, simple stochastic models, and their relation to selected problems. (Lec. 3) Pre: 412, MTH 243. Staff

**435 Introduction to Operations Research (I and II, 3)** Major areas of operations research and their application in systems analysis: development of models and techniques for solving problems such as linear programming, networks, queuing, inventory and simulation. (Lec. 3) Pre: MTH 243 or equivalent. Not for undergraduate concentration credit in industrial engineering. Staff

**440 Materials Processing and Metrology I (II, 3)** Analyses of material behavior characteristics under dynamic loading conditions for tools and cutting materials. Thermal analyses, mechanics of machine systems, power and efficiency. Processing control systems such as digital control, analog control, and numerical control. Design and analyses of systems of metrology. (Lec. 2, Lab. 3) Pre: CHE 333 or 437, CVE 220. Staff

**491, 492 Special Problems (I and II, 1-6 each)** Advanced work under the supervision of a member of the staff and arranged to suit the individual requirements of the student. (Lec. or Lab. according to nature of problem.) Credits not to exceed a total of 12. Pre: permission of department. Staff

**500 Network Application in Industrial Engineering (II, 3)**

**510 Human Factors (II, 3)**

**513 Statistical Quality Control (I, 3)**

**517 Applied Control Theory in Industrial Engineering (I, 3)**

**520 Material Handling (I, 3)**

- 525 **Simulation** (II, 3)  
 533 **Advanced Statistical Methods for Research and Industry** (I, 3)  
 535 **Industrial Reliability Engineering** (II, 3)  
 540 **Production Control and Inventory Systems** (I, 3)  
 541 **Materials Processing and Metrology II** (I, 3)  
 545 **Manufacturing Engineering: Design, Analysis, Synthesis** (II, 3)  
 550, 551 **Advanced Topics in Probabilistic Operations Research I and II** (I and II, 3 each)  
 555 **Engineering Applications of Mathematical Programming I** (I, 3)  
 556 **Engineering Applications of Mathematical Programming II** (II, 3)  
 565 **Theory of Scheduling** (II, 3)  
 570 **Operations Research Modeling in Health Care** (II, 3)  
 591, 592 **Special Problems** (I and II, 1-6 each)

## Insurance (INS)

Chairman: Professor Poulsen (Finance and Insurance)

- 301 **Fundamentals of Risk Management and Insurance** (I and II, 3) Risk management and insurance which provides an introduction to all areas of insurance: property, liability, life and health. (Lec. 3) Staff
- 313 **Property Insurance** (II, 3) Insurance coverage for direct and indirect damage to real and personal property with emphasis on fire and marine perils and major package policies. (Lec. 3) Staff
- 314 **Liability Insurance** (I, 3) Insurance coverages for commercial and personal lines with emphasis on liability, workmen's compensation, suretyship and other coverages. (Lec. 3) Staff
- 322 **Automobile Insurance** (II, 3) Detailed study of the law of negligence and automobile liability insurance, automobile physical damage insurance; financial responsibility laws; manuals; forms. (Lec. 3) Staff
- 325 **Life Insurance** (II, 3) Functions of life insurance, types of contracts, settlements options, simple programming, computation of premiums and reserves, dividends, contract interpretation. Industrial life, group insurance, pension plans, health insurance, company organization, state supervision. (Lec. 3) Note: course prepares for R.I. state licensing examining in life and accident and health insurance and for Part I of charter life underwriter examination. Staff
- 333 **Social Insurance** (I, 3) Federal, state and private programs of economic security and social insurance including workmen's compensation, non-occupational disability, pension plans, survivor's insurance, unemployment compensation, health insurance, employee benefit programs, guaranteed wages, etc. (Lec. 3) Pre: ECN 125 and 126. Staff
- 491, 492 **Directed Study** (I and II, 3) Directed readings and research work including insurance problems under the supervision of a member of the staff. Pre: permission of instructor and junior or senior standing. Staff
- 560 **Management of Insurance Enterprises** (I, 3)  
 570 **Risk Management** (II, 3)

## Italian (ITL)

Section Head: Associate Professor Viglionese

- 101, 102 **Elementary Italian** (I and II, 3 each) 101: Elements of the language, pronunciation, grammar, inductive reading; exercises in reading, writing, and conversation. 102: Continuation. (Lec. 3) Staff
- 103, 104 **Intermediate Italian** (I and II, 3 each) 103: Development of facility in reading texts of moderate difficulty, supplemented by further work in grammar, conversation, and composition. 104: Continuation. (Lec. 3) Pre: 102 or permission of department. Staff
- 205, 206 **Conversation and Composition** (I and II, 3 each) Intensive course in conversation and composition. Promotes facility in speaking and understanding idiomatic Italian. (Lec. 3) Pre: 104 or permission of department. Staff
- 302 **The Civilization of Italy** (I or II, 3) The most important historical, geographical, social and artistic aspects of Italian civilization which contribute to the character of contemporary Italy. (Lec. 3) Pre: 104 or permission of department. In alternate years, next offered spring 1980. Capasso
- 305 **Advanced Conversation and Composition** (I or II, 3) Intensive practice in spoken and written Italian. (Lec. 3) Pre: 206 or permission of instructor. In alternate years, next offered fall 1978. Viglionese
- 325, 326 **Introduction to Italian Literature** (I and II, 3 each) Appreciation of literature. Representative texts of Italian narrative, drama, and lyric poetry. Elements of the methods of criticism. (Lec. 3) Pre: 104. Trivelli
- 391, 392 **Masterpieces of Italian Literature** (I and II, 3 each) Reading in English translation of selected Italian authors of greatest significance. 391: Medieval and Renaissance. 392: Post-Renaissance to twentieth century. (Lec. 3) May not be used for concentration credit in Italian. Capasso
- 393 **Contemporary Italian Fiction** (I or II, 3) Readings in translation of selected novels by twentieth-century authors. (Lec. 3) May not be used for concentration credit in Italian. In alternate years, next offered fall 1979. Trivelli
- 395 **Dante's Divine Comedy** (I or II, 3) Reading in English translation of Dante's chief work. (Lec. 3) May not be used for concentration credit in Italian. In alternate years, next offered spring 1980. Viglionese
- 408 **The Italian Language** (I or II, 3) Advanced study of the structure of the Italian language. Analysis of linguistic elements as found in representative authors from thirteenth to twentieth century. (Lec. 3) Pre: 104 or permission of instructor. In alternate years, next offered fall 1978. Trivelli
- 433 **Prose Forms in Italian Literature** (I or II, 3) Advanced study of the development of the form of Italian prose, especially novels and short stories. A selection of works studied in depth. (Lec. 3) Pre: 325 or 326 or permission of instructor. In alternate years. Trivelli
- 444 **Poetic Forms in Italian Literature** (I or II, 3) Advanced study of a selection of Italian poets. Particular attention given to the development of poetic style. (Lec. 3) Pre: 325 or 326 or permission of instructor. In alternate years, next offered fall 1979. Viglionese

**453 Literature of the Italian Theater** (*I or II, 3*) Selected plays from various periods will serve as the basis for a study of the development of Italian dramatic forms. (*Lec. 3*) Pre: 325 or 326 or permission of instructor. In alternate years, next offered spring 1980. Capasso

**455 Selected Italian Authors** (*I or II, 3*) Works of one or more major authors of Italian literature. Specific author(s) designated the semester before the course is to be given by the department. (*Lec. 3*) Pre: 325 or 326 or permission of instructor. In alternate years, next offered fall 1979. Staff

**465 Topics in Italian Literature** (*I or II, 3*) Special topics or themes in Italian literature not treated or emphasized in other courses. (*Lec. 3*) Pre: 325 or 326 or permission of instructor. In alternate years, next offered spring 1980. Staff

**481, 482 The Works of Dante Alighieri** (*I and II, 3*) Dante's works with special attention given to the analysis and interpretation of *Divina Comedia* from the social, religious, philosophical, and political viewpoints of the Middle Ages. (*Lec. 3*) Pre: 325 or 326 or permission of instructor. In alternate years, next offered 1978-79. Viglionese

**497, 498 Directed Study** (*I and II, 3 each*) Designed particularly for the advanced student. Individual research and reports on problems of special interest. (*Lec. 3*) Pre: acceptance of a project by a member of the staff and department approval. Staff

## Journalism (JOR)

Acting Chairman: Associate Professor Doctor

**210 Introduction to Mass Communications** (*I and II, 3*) Communications media viewed as an institutional order; relationship to other social orders, including political, industrial, and the military; role of ideas in shaping media policy, structure, and content. Recommended for majors in English, social sciences, and marketing. (*Lec. 3*) Staff

**212 News Writing and Reporting** (*I and II, 3*) Fundamentals of news gathering and factual writing for the mass communications media. Practice in writing news and feature stories, with evaluation of each student's work. Students required to type. (*Lec. 2, Lab. 2*) Pre: sophomore standing or permission of department. Staff

**215 Pictorial Journalism** (*I and II, 3*) Introduction to use of graphic arts in journalism. Emphasis on photography as a communications medium, with instruction and practice in basic techniques of picture taking, processing, and editing. (*Lec. 2, Lab. 2*) Pre: permission of department. Staff

**300 Media Criticism in America** (*II, 3*) Contemporary and historic methods and perspectives for monitoring the performance of newspapers, magazines, motion pictures, broadcasting, and advertising. Examination of journalism reviews and press council operations. (*Lec. 3*) Staff

**301 The Minority Media** (*II, 3*) Journalistic and social factors in minority communications. Analysis of the Afro-American and other selected media with special attention to editorial processes, roles and peculiar problems. (*Lec. 3*) Offered in alternate years. Staff

**324 Magazine Article and Feature Writing** (*II, 3*) Practice in planning, researching, and writing articles and feature stories for magazines and newspaper feature sections. Analysis of markets, freelance and job opportunities. Articles written and submitted to publications. (*Lec. 3*) Pre: junior standing and permission of department. Staff

**325 Copy Editing** (*I and II, 3*) Practice in news selection and display copy editing, headline writing, illustration, and page make-up of newspapers and other periodicals. (*Lec. 2, Lab. 2*) Pre: 212 or permission of department. Staff

**326 Advanced Reporting** (*I and II, 3*) Supervision in planning, developing and writing news stories for publication and/or broadcasting. Class sessions and outside assignments include press conferences with newsworthy individuals, investigative and interpretive reporting, and reporting in depth. (*Lec. 2, Lab. 2*) Pre: 212, junior standing and permission of department. Staff

**334 History of Journalism in the United States** (*I, 3*) Development of the newspaper during the early, middle and later periods of the nation's growth; rise of other media; effects of economic and social changes on the press; future of journalism in the United States. (*Lec. 3*) Pre: 210 or 212, and junior standing. Staff

**371 Broadcast Journalism I** (*I and II, 3*) Gathering and processing news for radio broadcast. Principles of aural writing and reporting. Producing and programming public affairs, and techniques of broadcast presentation. Laboratory work includes newscasts with actuality segments. (*Lec. 2, Lab. 2*) Pre: 212 or permission of instructor. Staff

**372 Broadcast Journalism II** (*I and II, 3*) Gathering and processing news for television. Principles of television writing and reporting, television presentations and production. Alternative public affairs formats. Laboratory work includes field recordings and studio newscasts. (*Lec. 2, Lab. 2*) Pre: 371 or permission of instructor. Staff

**399 Field Work in Newspaper Publication** (*II, 1*) Practicum in the preparation of an entire edition of a daily newspaper, including reporting, editing, photography, editorial writing, and page makeup. (*Lab. 3*) S/U credit. Pre: junior standing and permission of the department. Staff

**400 Opinion and Interpretation in Journalism** (*I, 3*) Editorial page policy, opinion columns, journals of opinion and alternative media as vehicles for subjective accounts of events. Practice in organizing, researching and writing articles of opinion and interpretation. (*Lec. 2, Lab. 2*) Pre: 212 and junior standing. Staff

**434 Contemporary Issues in Mass Communications** (*II, 3*) Major contemporary problems in mass communications analyzed in their relationship to selected social, national and international issues. (*Lec. 3*) Pre: senior standing or permission of department. Staff

**435 Theory of Communication** (*I, 3*) Principles of communication. Emphasis on the effects of mass communications, propaganda techniques in the mass media and public opinion formation and change. (*Lec. 3*) Pre: senior standing or permission of department. Staff

**436 Fundamentals of Communication Research** (*II, 3*) Introduction to the techniques of concept formation, data collection and analysis with special reference to mass communication content, structure, and process. (*Lec. 3*) Pre: senior standing or permission of department. Staff

**438 Governmental and Legal Aspects of Mass Communications (I, 3)** Role of government and the law in the communication of news. Legal problems of the mass media including basic laws affecting freedom of the press, press privileges and responsibilities. Case studies. (Lec. 3) Pre: senior standing or permission of department. Staff

**441 International Communications (I, 3)** Comparison of the major mass media systems of the international community: their development, structure, and content as well as their roles in national and international relations. (Lec. 3) Pre: senior standing or permission of department. Staff

**442 Independent Study and Projects in Mass Communications (I and II, 1-3)** Individual reading programs, research or projects in journalism and mass communications. Pre: junior standing, acceptance of a project by a member of the staff, and department approval. Staff

**452 Public Relations Principles and Publications (I, 3)** Principles and procedures in public relations: emphasis on role of the public relations practitioner as a specialist in communications; analysis of publications produced as a part of public relations. (Lec. 3) Pre: 212, senior standing or permission of department. Staff

**461 (361) Internship in News Writing and Reporting (I and II, 3)** Assignment to an approved sponsor for reporting and/or writing experience. Fifteen working days of practice time and a one-hour weekly meeting. Usually involves, but not limited to, newspaper work; if special interest warrants, a student may be assigned to another medium. S/U credit. (Lec. 1, Prac. 8) Pre: 326 or 324 or 436; senior standing and permission of department. Doctor

**462 (362) Internship in Editing (I and II, 3)** Assignment to an approved sponsor for editing and/or related work experience. Fifteen working days of practice time and one-hour weekly meeting. Involves readying of copy for publication. S/U credit. (Lec. 1, Prac. 8) Pre: 325 and 326, senior standing and permission of department. Doctor

**463 Internship in Broadcast Journalism (I and II, 3)** Assignment to an approved sponsor for practicum in gathering and processing news for broadcast, or for development and/or production of public affairs materials for broadcast. Fifteen working days of practice time and a one-hour weekly meeting. S/U credit. (Lec. 1, Prac. 8) Pre: 371 (for radio assignment), 371 and 372 (for TV); senior standing and permission of department. Staff

## Languages (LAN)

Chairman: Associate Professor Dornberg

**191, 192 A Beginning Foreign Language (I and II, 3)** Fundamentals of grammar and pronunciation; exercises in reading, writing, and conversation in a foreign language not included in regular departmental offerings. (Lec. 3) Pre: 191 or equivalent prerequisite for 192. May be repeated for different languages. Staff

## Latin (LAT)

Section Head: Associate Professor Cashdollar

**101, 102 Elementary Latin (I and II, 3 each)** Latin grammar and syntax. Exercises in reading prose. (Lec. 3) Sussman

**301, 302 Directed Readings in Latin (I and II, 3-12)** Study of Latin writers selected in accordance with the needs and background of the student. May be repeated with different topics for additional credit. (Lec. 3-12) Pre: 102 or equivalent and permission of instructor. Staff

**497, 498 Directed Study (I and II, 3 each)** Individual research and reports on problems of special interest. Pre: acceptance of a project by a member of the staff and departmental approval. Staff

## Library Science (LSC)

Dean: Professor Schlessinger

**500 Introduction to Libraries and Librarianship (I and II, 3)**

**502 Library Administration (I and II, 3)**

**503 Selection of Library Materials (I and II, 3)**

**504 Basic Reference (I and II, 3)**

**505 Cataloging and Classification (I and II, 3)**

**506 Technical Services (I and II, 3)**

**510 History of Books and Printing (I or II, 3)**

**511 Comparative Librarianship (I and II, 3)**

**513 Intellectual Freedom and Censorship (I or II, 3)**

**514 The Library in Society (I, 3)**

**515 The Library and the Communication Process (I, 3)**

**516 History of Libraries and Librarianship to the Renaissance (I, 3)**

**517 History of Libraries and Librarianship from the Renaissance to the Present (II, 3)**

**520 The School Library (I and II, 3)**

**521 Public Library Service (I or II, 3)**

**522 College and University Library Service (I or II, 3)**

**523 Special Library Service (I or II, 3)**

**526 Automation in Libraries (I or II, 3)**

**527 Seminar in Library Administration (I and II, 3)**

**528 Multi-Media and the Library (I and II, 3)**

**529 Library Cooperation (II, 3)**

**530 Reading Interests of Children (I or II, 3)**

**531 Reading Interests of Adolescents (I or II, 3)**

**532 Reading Interests of Adults (I or II, 3)**

**533 Children's Library Materials (I and II, 3)**

**536 Storytelling (I, 3)**

**540 Library Materials in the Humanities (I and II, 3)**

**541 Library Materials in the Social Sciences (I and II, 3)**

**542 Library Materials in Science and Technology (I and II, 3)**

**543 Government Publications (I or II, 3)**

**544 Information Science for Librarians (I or II, 3)**

**545 Technical Information Centers (I and II, 3)**

**550 Advanced Cataloging (I or II, 3)**

**551 Organization of Nonprint Materials (II, 3)**

**560 Research in Librarianship (I or II, 3)**

**562 Administration of Special Collections, Archives, and Manuscripts (I or II, 3)**

**564 Introduction to Library Conservation (I or II, 3)**

**570 Library Buildings and Facilities (I or II, 3)**

**591, 592, 593 Independent Work (By Appt., 1-3 each)**

**595 Professional Field Experience (I, II, 3-6)**

## Linguistics (LIN)

Section Head: Associate Professor Rogers

**201, 202 Introduction to the Study of Language (I and II, 3 each)** 201: Basic principles of descriptive linguistic science. 202: Principles of historical linguistics. (Lec. 3) Porter

**302 Principles of Morphology (II, 3)** Thorough survey of the general principles of linguistic morphology. Extensive practical exercises. (Lec. 3) Pre: 201. Porter

**330 Dynamics of Language Distribution (II, 3)** Geolinguistic survey of present-day distribution of languages, and of factors affecting their spread and decline. Minority and colonial languages; language maintenance efforts; language contact phenomena. (Lec. 3) Pre: 201. Rogers

**414 Romance Linguistics (II, 3)** Evolution of the major literary Romance languages from late Latin with emphasis on phonology and morphology. The diffusion and dialectal fragmentation of Romance. (Lec. 3) Pre: 202 or FRN 205, SPA 205, ITL 205, or permission of department. Some knowledge of Latin recommended but not required. Not for graduate degree program credit. Rogers

**431 Applied Linguistics in the Language Laboratory (I, 1)** Principles of contrastive phonology and syntax and their application to the preparation, use, and evaluation of tape drills. Use of language laboratory equipment monitoring student exercises. Recommended for prospective teachers of language. (Lec. 1) Pre: 9 credit hours of language courses numbered 300 or above, or permission of department. Staff

**497, 498 Directed Study (I and II, 3 each)** Individual research and reports on problems of special interest. Pre: 201 and acceptance of a project by a member of the staff and departmental approval. Staff

The following are related courses offered in the Departments of Anthropology, English, Languages and Speech. They do not count as linguistics in Division A of the general education requirements.

- APG 200 Language and Culture
- APG 409 Anthropological Linguistics
- ENG 430 Structure and Development of Modern American English
- ENG 530 History of the English Language
- ENG 536 Problems in Linguistics and Literature
- FRN 503, 504 History of the French Language
- GER 409 History of the German Language
- ITL 408 Structure of the Italian Language
- PHL 440 Philosophy of Language
- SPA 409 History of the Spanish Language
- SPE 373 Phonetics
- SPE 375 Language Development
- SPE 410 Semantics

## Literature in English Translation

The following courses, offered within the Department of Languages, may not be used for major credit in either languages or English.

Coordinator: Associate Professor Kuhn (Languages)

### Classics

- 391 Masterpieces of Greek Literature
- 392 Masterpieces of Roman Literature
- 393 Literature of Greek Mythology

### French

- 391 Literature up to 1789 in Translation
- 392 Nineteenth-Century Literature in Translation
- 393 Twentieth-Century Literature in Translation
- 394 Literary Topics in Translation

### German

- 391, 392 Masterpieces of German Literature
- 393 Topics in German Literature

### Italian

- 391, 392 Masterpieces of Italian Literature
- 393 Contemporary Italian Fiction
- 395 Dante's Divine Comedy

### Russian

- 391, 392 Masterpieces of Russian Literature

### Spanish

- 391, 392 Spanish Literature in Translation
- 393 Contemporary Spanish-American Literature in Translation

The following courses are offered for major credit in English but may not be used for major credit in languages.

### English

- 261, 262 World Literature
- 366 Greek and Roman Drama
- 367 The Classic Epic
- 454 Modern British and European Drama
- 462 The Medieval and Modern Epic
- 468, 469 The European Novel
- 561 Modern European Novel

## Management (MGT)

Chairman: Associate Professor Overton

**300 Personnel Administration (I or II, 3)** Functions of human resources management including group behavior, interpersonal relations, recruitment and justice determination. Emphasis on developing analytical skills applied to personnel-related problems in organizational settings. (Lec. 3) Not open to business administration majors; no credit if 303 has been taken. Staff

**301 Fundamentals of Management (I and II, 3)** Management processes, organizational theory and behavior, quantitative aids, and environmental analysis. Emphasis on developing conceptual and analytical skills through examination of relevant theory, research and practice. (Lec. 3) Staff

**303 Personnel Administration (I or II, 3)** Role of the personnel function in an organization. Employer-employee problems at various internal levels and their impact on the organization and its environment. Covers such areas as manpower planning, the recruitment process, training, employee relations, pension planning and occupational safety in the public and private sector. Cases and lectures. (Lec. 3) Pre: 301 recommended. Staff

**304 Organizational Behavior: Individual (I or II, 3)** Interpersonal behavior in industry; human relations problems in complex organizations and analytical and inter-



personal skills to deal with the human variable. Case analysis, experiential labs and role playing. (Lec. 3) Staff

**305 Organizational Behavior: Group (I and II, 3)** Theory and practice of work groups in the industrial and business environment. Conceptual and managerial skills for analyzing behavioral effects of group settings on individual, group, and organizational performance. (Lec. 3) Pre: 301; for department majors, 304 or concurrent registration in 304. Staff

**321 Labor Problems (I, 3)** Historical development of labor unions, changing composition of the labor force. Factors determining wage levels and employment in the firm and market. Analysis of mobility and occupational and regional wage differentials; the power of unions to raise wages; the role of investments in the human agent as a factor in economic growth. (Lec. 3) Pre: ECN 126 or permission of instructor. Staff

**380 Business and Society (I or II, 3)** Business ideologies and practical strategies for the modern corporation in society. Crucial social issues confronting the contemporary manager: changing life-styles, equal employment opportunity, pollution, investment abroad, government regulation among others. (Lec. 3) Staff

**407 Organization and Management Theory (I and II, 3)** Analysis of complex organizational situations emphasizing managerial problems dealing with structure, coordination, control and integration. Conceptual skills for organizational analysis, including model and systems approaches. (Lec. 3) Pre: 301 or permission of instructor. Staff

**408 Organization Development and Change (I or II, 3)** Behavioral science applications to the planning of systematic organizational change and development. Theory, concepts, techniques, and cases for change agents and managers of change. (Lec. 3) Pre: 301, 407, or permission of instructor. Staff

**410 Business Policy (I and II, 3)** Analysis of the multifunctional organizational problems and issues confronting top management. (Lec. 3) Pre: 301, ACC 201, FIN 321, MMG 323, senior standing or permission of instructor. Staff

**422 Labor Law and Legislation (II, 3)** Federal and state labor relations statutes and court and agency decisions pertaining to private and public employment, regulations of trade unions, equal opportunity, wage and hour laws. (Lec. 3) Pre: 321 or permission of instructor. Staff

**423 Labor Relations (II, 3)** Public interest in labor relations and problems involved in effectuating collective bargaining. Major adjustments of public and private management to changes in labor policy of federal and state governments, community and labor unions. (Lec. 2, Lab. 2) Pre: 303. Staff

**431 Advanced Management Seminar (I or II, 3)** Integrated approach to problems in major areas of business management with emphasis on administrative and executive viewpoint. (Lec. 3) Pre: 301. Staff

**480 Small Business Management (I, 3)** Investigation and evaluation of the small business enterprise. Current literature studied to enable the student to understand and appreciate the small business. Required project performed with a small organization. (Lec. 3) Pre: senior standing in CBA or permission of instructor. Staff

**491, 492 Special Problems (I and II, 3 each)** Lectures, seminars, and instruction in research techniques, literature and other sources of data in the field of organizational management, industrial relations and law with application to specific individual projects. (Lec. 3) Pre: permission of department. Staff

**504 Business Policy (II, 3)**

**530 Principles of Management (I and II, 3)**

## Management Science (MGS)

Chairman: Professor Rogers

**101, 102 Introduction to Quantitative Analysis for Business and Economics (I and II, 3 each)** Selected mathematical tools and techniques for analysis of business and economic problems and as aid in process of decision making. Topics from finite and modern mathematics, applied differential and integral calculus. (Lec. 3) Pre: 101 for 102. Staff

**107 Introduction to Computing in Management (I and II, 3)** Computer applications in management and programming fundamentals in one of the common computer programming languages—FORTRAN, BASIC, or PL/I. Assigned problems are debugged and run on the computer. (Lec. 3) Staff

**201, 202 Managerial Statistics (I and II, 3 each)** 201: General statistical methods used in collection, presentation, analysis and interpretation of statistical data. Includes frequency distribution, measures of central tendency and dispersion, probability theory, sampling distribution, central limit theorem, law of large numbers, estimation and tests of hypothesis. Pre: 102 and 107. 202: Additional data analysis techniques including tests of independence and goodness of fit, regression, correlation, analysis of variance, time series, and index. (Lec. 3) Pre: 201. Staff

**301 Advanced Quantitative Foundations (I, 3)** Mathematical topics and applications useful in analysis of managerial problems, including optimization with constraints, optimization for functions of many variables, multiple integration, differential equations, matrix and linear algebra. (Lec. 3) Pre: 102 or permission of instructor. Staff

**309 Operations Management (I and II, 3)** Production and operations management problems, models for their solution. Problems include project management, design and measurement of work, facilities location and layout, quality control, forecasting, production planning and inventory control. (Lec. 3) Pre: 202 or permission of instructor. Staff

**310 Materials Management I (II, 3)** Intensified coverage of long-term and intermediate term planning in manufacturing and service industries. Topics include: forecasting, capacity planning, distribution aggregate planning, and master scheduling. (Lec. 3) Pre: 309 or permission of instructor. Staff

**311 Materials Management II (I, 3)** Intensified coverage of short-term planning in manufacturing and service industries. Topics include: inventory planning, operations scheduling, purchasing, material requirements planning, and quality control. (Lec. 3) Pre: 309 or permission of instructor. Staff

**364 Quantitative Analysis of Managerial Operations (I, 3)** Management science techniques for non-majors, including linear programming, decision theory, simulation, and queuing. Applications in the functional areas. (Lec. 3) Pre: 202 or permission of instructor. Staff

**365, 366 Management Science I and II (I and II, 3 each)** 365: Analysis of mathematical and statistical models used in decision making in management. Deterministic and probabilistic models. Various applications to business. Pre: 202 or permission of instructor. 366: Continuation. (Lec. 3) Pre: 365 or permission of instructor. Staff

**370 Topics in Managerial Statistics (II, 3)** Theory and managerial applications of selected topics in statistics, including forecasting techniques, multiple regression, analysis of variance and experimental and sample designs. (Lec. 3) Pre: 202 and 301 or permission of instructor. Staff

**375 Bayesian Statistics in Business (I, 3)** Bayesian decision theory as based on the concept of utility and personalistic interpretation of probability. Application of Bayesian inference to decision making under uncertainty in business. (Lec. 3) Pre: 202 or permission of instructor. Staff

**383 Data Processing Systems (I and II, 3)** Management of data and data processing systems, including the major managerial issues associated with design, implementation, and management of computer-based data processing systems. (Lec. 3) Pre: 107 or permission of instructor. Staff

**445 Managerial Applications of Simulation (I, 3)** Evaluation and design of deterministic and probabilistic computer simulation models for operational and strategic levels of management. (Lec. 3) Pre: 202 or permission of instructor. Staff

**458 Advanced Production Management (II, 3)** Analysis of company operations within an industry context. Definition of unique strengths and weaknesses of a company within the environment in which it operates. Specific techniques, e.g.: PERT, production planning, selected in terms of company strategy. (Lec. 3) Pre: 301 or permission of instructor. Staff

**476 Management System Analysis (II, 3)** Interrelation and integration of systems in management. Analysis of the framework of optimization of the system objective relative to its environmental constraints. (Lec. 3) Pre: 383 or permission of instructor. Staff

**491, 492 Special Problems (I and II, 3 each)** Lectures, seminars, and instruction in operations research techniques, emphasis on student research projects. (Lec. 3) Pre: permission of instructor. Staff

**579 Computing in Management (I, 2)**

**580 Quantitative Methods for Management Analysis (I and II, 3)**

**581 Management Statistics (I and II, 3)**

**585 Production and Operations Management (I, 3)**

## Marine Affairs (MAF)

Chairman: Professor Alexander (Geography and Marine Affairs)

**210 Human Use and Control of the Marine Environment (I, 3)** Introduction to man's activities occurring in

the marine environment and adjacent land areas. Discussion of marine geography and natural marine processes necessary to understand the controls on man's activities. (Lec. 3) Juda

**312 The Politics of the Ocean (II, 3)** Survey of decision-making with respect to the marine environment at the international, national, and local levels. Special emphasis on laws and treaties of the United States and the United Nations. (Lec. 3) Pre: 210. Juda

**410 Problems in Marine Affairs (II, 3)** Advanced work in the management of the marine environment, with special emphasis on case studies and student projects. (Lec. 3) Required for seniors in the marine environmental policy option. Pre: BOT (ZOO) 262. Not for graduate program credit. Cameron

**483 International Ocean Law (I, 3)** Principles of international law as they relate to ocean management problems. Jurisdiction in the territorial sea, contiguous zones, and the deep seabed will be examined within the international legal framework. (Lec. 3) Pre: 312, CPL 434, or permission of instructor. Juda

**521 Coastal Zone Law (II, 3)**

**523 Fisheries Law and Management (II, 3)**

**562 Admiralty Law (I, 3)**

**564 Port Geography and Policy (II, 3)**

**578 International Ocean Organizations (II, 3)**

**586 Environmental Impact Assessment and Analysis (II, 3)**

**591, 592 Directed Study (I and II, 1-3)**

## Marketing (MKT)

Chairman: Professor Alton

**323 (MMG) Marketing Principles (I and II, 3)** Marketing from a managerial viewpoint with consumer emphasis. Product, pricing, channels, promotion. Marketing institutions, social welfare, and legal considerations. (Lec. 3) Staff

**326 (MMG) Social Issues in Marketing (I, 3)** Functioning of the market in an affluent society. Effect of marketing decisions by firms placed in the perspective of the collective interest of all participants in society. (Lec. 3) Pre: 323 or permission of instructor. Staff

**331 (MMG) Analysis of Sales Methods (I, 3)** Analytical study of the knowledge and performance of the sales force. Economic, sociological, and psychological relationships to the sales efforts in the market place. (Lec. 3) Pre: 323 or permission of instructor. Staff

**332 (MMG) Sales Management (I, 3)** Planning, organization, and control of sales operations. Emphasis is placed upon the sales manager's functions and problems. Cases. (Lec. 3) Pre: 323. Staff

**334 (MMG) Consumer Behavior (I, 3)** Analysis and review of perception, motivation and communication behaviors of consumers as they relate to marketing with particular emphasis upon advertising and selling. (Lec. 3) Staff

**335 (MMG) Fundamentals of Advertising (II, 3)** Condensed but comprehensive introduction to advertising. Basic for advanced study of specific phases of advertising. (Lec. 3) Pre: 323 or permission of instructor. Staff

**355 (MMG) Advertising Copy and Layout (I, 3)** Practice in creation of effective advertising copy and layout for print and broadcast media. (Lec. 2, Lab. 3) Pre: 335 or permission of instructor. Staff

**410 (MMG) Product Management (I, 2)** Development of product policies and strategies in a competitive environment. Emphasis on organization of the product management function, planning and developing new products, adjusting product strategies, and deleting products. (Lec. 4 for one-half semester; independent work required) Pre: 323 or permission of instructor. Staff

**411 (MMG) Marketing Communications (I, 2)** The "communications mix" is explored in terms of a total promotional program. Characteristics of advertising media, sales promotion, public relations and publicity are surveyed. (Lec. 4 for one-half semester; independent work required) Pre: 323 or permission of instructor. Staff

**417 (MMG) Channels of Distribution (II, 2)** Functions of distribution channels in society with emphasis on forces which shape their configuration and efficiency. Study of channel management with focus on channel development, control, policy, and practice. (Lec. 4 for one-half semester; independent work required) Pre: 323 or permission of instructor. Staff

**419 (MMG) Pricing Decisions (II, 2)** Analysis of pricing problems and environmental factors influencing pricing decisions. Emphasis on behavioral dimensions of demand and the effects of cost, competition, product characteristics, and the firm's objectives. (Lec. 4 for one-half semester; independent work required) Pre: 323 or permission of instructor. Staff

**443 (MMG) Retail Store Management (I, 3)** Store organization, operation and control. (Lec. 3) Pre: 323. Staff

**452 (MMG) International Marketing (II, 3)** Planning and organizing for international marketing operations from a commercial point of view. Differences in market arrangements, legal, cultural, and economic factors in various countries. Strategy of product pricing, promotion, channels. (Lec. 3) Pre: 323. Staff

**462 (MMG) Marketing Research (II, 3)** Nature, scope and applications of marketing and advertising research. (Lec. 3) Pre: 202, 323. Staff

**464 (MMG) Marketing Policy and Problems (II, 3)** Summary course, emphasis on decision making in all marketing areas and on use of the case method. (Lec. 3) Pre: 323 and senior standing. Staff

**466 (MMG) Quantitative Marketing Management (II, 3)** Quantitative techniques and analytical models in marketing management. Selected models are explored emphasizing formulation and requirements for application to marketing problems. (Lec. 3) Pre: MGS 202 or equivalent, MKT 323. Staff

**474 (MMG) Advertising Seminar (I, 3)** Summary course covering advertising problems, innovations, ethics, laws and literature. Major paper required on a significant problem in the field (Lec. 3) Pre: 335 or graduate standing, or permission of instructor. Staff

**475 (MMG) Advertising Campaigns (II, 3)** Analyses and execution of advertising campaigns. Utilizes skills from other advertising and marketing studies. Field trips. (Lec. 3) Pre: 335, 462, or graduate standing, or permission of instructor. Staff

**481, 482 (MMG) Directed Study (I and II, 1-3 each)** Independent study supervised by department faculty. Seminar meetings concerned with specific marketing topics. Pre: permission of department. Staff

**550 (MMG) Marketing Theory and Practice (I and II, 2)**

## Mathematics (MTH)

Chairman: Professor Roxin

**107 Introduction to Finite Mathematics (I and II, 3)** Concepts and processes of modern mathematics concerned with logic, sets, and the theory of probability. Role of these concepts in the social and physical sciences of today. (Lec. 3) Not open to mathematics majors except for mathematics education students. Staff

**108 Topics in Mathematics (I and II, 3)** Introduces the non-mathematics student to the spirit of modern mathematics. Topics from number theory, topology, set theory, algebra; presupposes little mathematical background. Emphasis is on development of reasoning ability, not manipulative techniques. (Lec. 3) Not open to mathematics majors except for mathematics education students. Staff

**109 Algebra and Trigonometry (I and II, 3)** Sets and real numbers, introduction to elementary functions (polynomial, exponential, logarithmic and trigonometric functions), analytic geometry, complex numbers. (Lec. 3) Not open to students who have had four years of high school mathematics except with permission of department. Staff

**141 Introductory Calculus with Analytic Geometry (I and II, 3)** Integration of calculus and analytic geometry. Analytic geometry topics: graphing, straight line and conic sections; calculus: applications of the derivative in determining maxima and minima rates of change, study of rectilinear motion. Antidifferentiation introduced early and used to find area, volume, length of arc and surface area. (Lec. 3) It is recommended that students electing 141 have completed four units of high school mathematics including trigonometry. Staff

**141L Introductory Calculus Problem Solving Laboratory (I and II, 1)** Problem solving sessions to accompany 141. Topics include analytic geometry, derivatives, maxima and minima, rate of change, antidifferentiation, area, volume, arc length. Emphasis on application to physics and engineering problems. (Lab. 2) Pre: concurrent or prior registration in 141. Staff

**142 Intermediate Calculus with Analytic Geometry (I and II, 3)** Completes the integrated study of both plane analytic geometry and of differential and integral calculus. Applications related to trigonometric, logarithmic, and exponential functions, including polar coordinates and vector algebra. (Lec. 3) Pre: 141 or equivalent. Staff

**143 Computer Laboratory in Calculus (I and II, 1)** Illustration of some concepts of elementary calculus using computer, use of computer in some applications of calculus. Students will write simple programs. No previous computer or programming experience required. (Lab. 2) Pre: prior or concurrent registration in 141. Staff

**215 Introduction to Linear Algebra (I, 3)** Detailed study of finite dimensional vector spaces, linear transforma-

tions, matrices, determinants and systems of linear equations. (Lec. 3) Pre: 142 or equivalent. Staff

**217 Computer Laboratory in Linear Algebra (I and II, 1)** Illustration of some concepts of linear algebra using computer; use of computer in some applications of linear algebra. Students will do programming. No previous computer or programming experience required. (Lab. 2) Pre: prior or concurrent registration in 215. Staff

**243 Calculus and Analytic Geometry of Several Variables (I and II, 3)** Applications of analytic geometry and calculus to space of three dimensions, including multiple integration and partial differentiation. It also includes infinite series. (Lec. 3) Pre: 142. Staff

**244 Differential Equations (I and II, 3)** Classification and solution of differential equations involving one independent variable. Applications to all the physical sciences. Basic for further study in applied mathematics and for advanced work in physics and engineering. (Lec. 3) Pre: 243. Staff

**316 Algebra (II, 3)** Theory and structure of groups. Topics from ring theory, principal ideal domains, unique factorization domains, polynomial rings, field extensions and Galois theory. (Lec. 3) Pre: 215. Staff

**322 Concepts of Geometry (II, 3)** Survey of geometrical systems including non-Euclidean, affine, and projective spaces and finite geometries. A modern view of Euclidean geometry using both synthetic and analytic methods. (Lec. 3) Pre: 141 or equivalent. Staff

**335, 336 Advanced Calculus I, II (I and II, 3 each)** Sets and functions, real topology, continuity and uniform continuity, the Riemann integral, improper integrals, sequences and series of functions, implicit and inverse function theorems, transformation of multiple integrals. Detailed proofs emphasized. (Lec. 3) Pre: 243. Staff

**353 Foundations of Mathematics (I, 3)** Sets and relations. Construction of the integers, rational numbers, and real numbers from postulates. Completeness of the real number system. Axiom of choice. Transfinite cardinal and ordinal numbers. Transfinite induction (Lec. 3) Pre: 142 or equivalent. Staff

**361 Mathematics Methods for Scientists and Engineers (I, 3)** Introduction to differential equations and difference equations including Laplace transform and Z-transform. Functions of several variables, Lagrange multipliers, calculus of variations. (Lec. 3) Pre: 243. Staff

**362 Advanced Engineering Mathematics I (II, 3)** Algebra of complex numbers, matrices, determinants, quadratic forms. Linear differential equations with constant coefficients. Partial differential equations. (Lec. 3) Not for major credit in mathematics. Pre: 243. Staff

**363 Advanced Engineering Mathematics II (I, 3)** Laplace and Fourier transforms. Analytic functions, Cauchy's theorem and integral formula. Power series in the complex domain. Laplace and Fourier inverse integrals. Introduction to probability. (Lec. 3) Not for major credit in mathematics. Pre: 362 or equivalent. Staff

**381 History of Mathematics (I, 3)** General survey course in development and philosophy of mathematics. Provides a cultural background and foundation for advanced study in various branches of the subject. (Lec. 3) Pre: 142 or equivalent. Staff

**382 Number Theory (II, 3)** Some of the arithmetic properties of the integers including number theoretic func-

tions, congruences, diophantine equations, quadratic residues and classically important problems. (Lec. 3) Pre: 243. Staff

**391 Special Problems (I and II, 1-3)** Advanced work, under the supervision of a member of the staff and arranged to suit the individual requirements of the student. Pre: permission of department. Staff

**418 Matrix Analysis (II, 3)** Canonical forms, functions of matrices, characteristic roots, applications to problems in physics and engineering. (Lec. 3) Pre: 215 or 362 or permission of instructor. Staff

**425 Topology (I, 3)** Abstract topological spaces and continuous functions. Generalizations of some classical theorems of analysis. (Lec. 3) Pre: 243 or equivalent. Staff

**437, 438 Advanced Calculus and Application I, II (I and II, 3 each)** Sequences, limits, continuity, differentiability, Riemann integrals, functions of several variables, multiple integrals, space curves, line integrals, surface integrals, Green's theorem, Stokes' theorem, series, improper integrals, uniform convergence, Fourier series, Laplace transforms. Applications to physics and engineering emphasized. (Lec. 3) Pre: 243. Staff

**441 Introduction to Partial Differential Equations (I, 3)** One-dimensional wave equation. Linear second order partial differential equations in two variables. Separation of variables and Fourier series. Non-homogeneous boundary value problems. Green's functions. (Lec. 3) Pre: 244 or 361. Staff

**444 Ordinary Differential Equations (II, 3)** Introduction to fundamental theory of ordinary and functional-differential equations. Series and numerical methods. Topics from stability, periodic solutions, or boundary-value problems. Applications to physics, engineering, biology. (Lec. 3) Pre: 244 or 361 or 362. Staff

**451 Introduction to Probability and Statistics (I and II, 3)** Theoretical basis and fundamental tools of probability and statistics. Probability spaces, properties of probability, distributions, expectations. Some common distributions and elementary limit theorems. (Lec. 3) Pre: 243 or equivalent. Staff

**452 Mathematical Statistics (II, 3)** Continuation of 451 in the direction of statistics. Basic principles of statistical testing and estimation, linear regression and correlation. (Lec. 3) Pre: 451. Staff

**456 Probability (II, 3)** Continuation of 451 in the direction of probability theory. Further problems in probability theory and applications. Markov chains and other stochastic processes. Generating functions, integral transforms and other advanced techniques. (Lec. 3) Pre: 451. Staff

**461 Methods of Applied Mathematics (I, 3)** Topics selected from vector analysis, elementary complex analysis, Fourier series, Laplace transforms, special functions, elementary partial differential equations. Emphasis on development of techniques rather than mathematical theory. (Lec. 3) Pre: 244 or 361 or 362. Staff

**462 Functions of a Complex Variable (II, 3)** First course in the theory of functions of a single complex variable, including analytic functions, power series, residues and poles, complex integration, conformal mapping and applications. (Lec. 3) Pre: 243 or equivalent. Staff

**471 Introduction to Numerical Analysis I (I, 3)** Interpolation, solution of nonlinear equations, numerical evalu-

ation of integrals, special topics. (Lec. 3) Pre: 243, CSC 201 or equivalent, or permission of instructor. Staff

**472 Introduction to Numerical Analysis II (II, 3)** Numerical solution of ordinary differential equations, systems of linear equations, least squares, approximation, special topics. (Lec. 3) Pre: 243, CSC 201 or equivalent, or permission of instructor. Staff

**492 Special Problems (I and II, 1-3)** Advanced work, under the supervision of a member of the staff and arranged to suit the individual requirements of the student. Pre: permission of department. Staff

**513 Linear Algebra (I or II, 3)**

**515, 516 Algebra I, II (I and II, 3 each)**

**525 Topology I (I, 3)**

**526 Topology II (II, 3)**

**535, 536 Measure Theory and Integration (I and II, 3 each)**

**545, 546 Ordinary Differential Equations I, II (I and II, 3 each)**

**550 Probability and Stochastic Processes (I, 3)**

**551 Mathematical Statistics (I, 3)**

**561 Advanced Applied Mathematics (II, 3)**

**562 Complex Function Theory (I, 3)**

**572 Numerical Analysis (II, 3)**

**591, 592 Special Problems (I and II, 1-3 each)**

## Mechanical Engineering and Applied Mechanics (MCE)

Chairman: Professor Nash

**161 Mechanics I (I and II, 3)** Mechanics of particles including equilibrium of particles and systems of particles, kinematics and kinetics of the motion of particles, work-energy and impulse-momentum of particles. (Lec. 3) Pre: MTH 141. Staff

**162 Statics (I and II, 3)** Newton's laws of force systems in equilibrium and their effects on particles, systems of particles, and rigid bodies. Both scalar and vector methods of analysis developed. (Lec. 3) Pre: MTH 141. Kim and Staff

**212 Mechanical Engineering Laboratory I (II, 1)** For description of this course, see 316.

**261 Mechanics II (I and II, 3)** Mechanics of rigid bodies including equilibrium of rigid bodies, kinematics and kinetics of plane motion of rigid bodies, work-energy and impulse momentum of rigid bodies, centroids and moments-of-inertia. (Lec. 3) Pre: 161. Staff

**263 Dynamics (I and II, 3)** Kinematic and kinetic study of motion of particles, systems of particles, and rigid bodies, acted upon by unbalanced force systems, using both scalar and vector methods; development of methods of analysis based on the direct application of Newton's laws, work-energy and impulse-momentum principles. (Lec. 3) Pre: 162. Kim and Staff

**313 Mechanical Engineering Laboratory II (I, 1)**

**314 Mechanical Engineering Laboratory III (II, 1)**

**315 Mechanical Engineering Laboratory IV (I, 2)**

**316 Mechanical Engineering Laboratory V (II, 2)**

Courses 212 and 313 through 316 comprise an integrated

laboratory sequence from the sophomore through senior year. Subjects include statistical data analysis, curve plotting and fitting, techniques of engineering computations and report writing, computer techniques, basic measurement techniques and principles of error evaluation, and measurements in dynamics, fluid mechanics, stress analysis, sound, vibration, thermodynamics, heat transfer, lubrication, and other aspects of mechanical engineering. Comprehensive tests on prime movers and mechanical apparatus such as solar collectors, boilers, turbines, internal combustion engines, waterwheels, pumps, refrigeration equipment, wind tunnels, compressors, etc. The senior-year student carries out specialized tests and experiments of personal choice or engages in a research project. (Lab. 3 each) Parker, Hagist, Brown and Staff

**323 Kinematics (I, 3)** Analysis of mechanisms by analytical and related graphical methods; linkages, cams, gears, gear trains, differential mechanisms, escapements, computing, and miscellaneous mechanisms; vector methods including complex exponential representation of a vector in a plane. (Lec. 3) Pre: EGR 102, MCE 263. Hatch and Bradbury

**336 Introduction to Air Pollution Control (II, 3)** Meteorological and legal aspects, effects, sources, and control of air pollution. (Lec. 2, Lab. 3) Pre: permission of department. DeLuise

**341 Fundamentals of Thermodynamics (I and II, 3)** Basic principles and laws of thermodynamics and their relation to pure substances, ideal gases, and real gases. Use of thermodynamic property tables. Development of concepts of reversibility and availability. Thermodynamic diagrams and processes. (Lec. 3) Pre: 263 MTH 243, credit or registration in PHY 341. Brown, DeLuise, and Test

**342 Mechanical Engineering Thermodynamics (I and II, 3)** Continuation of 341 including mixtures of gases and vapors, topics of gas dynamics and chemical thermodynamics, applications of thermodynamics to power cycles and refrigeration processes. (Lec. 3) Pre: 341. Brown, DeLuise and Test

**354 Fluid Mechanics (I and II, 3)** Physical properties of fluids, development of continuity, energy, and momentum concepts using vector methods; application to problems involving viscous and non-viscous fluids including boundary layer flows, flows in closed conduits and around immersed bodies. (Lec. 3) Pre: 263 and MTH 244 or 461. Dowdell, Hagist, Lessmann, and White

**366 Introduction to Systems Engineering (II, 3)** Systems analysis emphasizing control and vibration. Time and frequency domain techniques. State variables. Multidimensional and stochastic systems. Reliability. Interaction with economic, environmental, and human operator systems. (Lec. 3) Pre: 372 and MTH 244, or permission of instructor. Palm

**372 Engineering Analysis I (I, 3)** Application of advanced mathematical methods to solution of mechanical engineering problems with emphasis on the techniques of engineering analysis. (Lec. 3) Pre: MTH 244, junior standing. Lessmann and Staff

**373 Engineering Analysis II (II, 3)** Continuation of 372. (Lec. 3) Pre: 372. Lessmann and Staff

**391, 392 Honors Work (I and II, 1-3 each)** Independent study under faculty supervision for honors students. Pre: admission to departmental honors program. Staff

**401 (or OCE 401) Introduction to Ocean Engineering Systems I (I, 3)** Basic ocean engineering principles with emphasis on mechanics, thermodynamics and fluid-flow applications. Motion and equilibrium under the action of ocean forces. Propulsion, structure, and corrosion aspects. (Lec. 3) Pre: 341 and 354, or permission of instructor. Not for graduate degree program credit. Schenck

**402 (or OCE 402) Introduction to Ocean Engineering Systems II (II, 3)** Continuation of 401. Flow of fluids in ocean systems. Psychrometry and mass transfer in pressurized environments: Human response to pressure. Design aspects of diving systems. Integrated system studies. (Lec. 3) Pre: 401. Not for graduate degree program credit. Schenck

**410 (or OCE 410) Basic Ocean Measurements (I or II, 3)** Four or five basic ocean measuring exercises: current and tide, dissolved oxygen, wave frequency spectra, soil characteristics from cores, water depth and bottom profiles. (Lec. 1, Lab. 6) Pre: senior standing in engineering or permission of instructor. Not for graduate degree program credit. Middleton and Schenck

**423 Design of Machine Elements (I, 3)** Design and analysis of machinery involving application of principles of strength of materials. General problem of determining adequacy of design; factor of safety, stress concentration, fatigue, creep temperature stress. Mechanical power transmission devices, gears, springs, shafts, fasteners, ball bearing reliability. (Lec. 3) Pre: 323, CVE 220. Hatch and Bradbury

**424 Dynamics of Machines (I, 3)** The forces in machinery, including linkages, intermittent motions, trains of mechanism, static, inertia and combined forces, balancing, critical speeds and gyroscopic effects. (Lec. 3) Pre: 323, MTH 244. Hatch

**425 Lubrication and Bearings (I, 3)** Theory of hydrodynamic lubrication and bearing design, chemical aspects of lubricants and additives, bearing metals and their surface properties, friction and wear. (Lec. 3) Pre: 354. Bradbury

**426 Advanced Mechanics of Materials (I, 3)** Introduction to continuum mechanics: stress, strain and deformation, constitutive equations. Theories of failure. Shear center and unsymmetrical bending of beam. Curved beams. Energy method. Torsion. Pre: CVE 220. Hatch and Kim

**427 (or ZOO 427) Modeling and Analysis of Dynamic Systems (I, 3)** Modeling and analysis of complex systems with emphasis on feedback characteristics, modeling techniques and computer simulations. Examples from ecological, biological, engineering and economic systems. (Lec. 3) Pre: MTH 142 and elementary computer programming. Palm

**428 Mechanical Control Systems (II, 3)** Analysis of mechanical, electromechanical, hydraulic, pneumatic, and thermal control systems; transient and frequency response of linear systems; Laplace transformation applied to automatic control systems, transfer functions, system stability; computer applications. (Lec. 3) Pre: 263 or equivalent and MTH 244. Palm

**429 Comprehensive Design (II, 3)** Creative design of engineering systems including possible socioeconomic and ecological considerations. Original design and analysis projects. Advanced topics in design: reliability and probability considerations, decision theory, op-

timum design, case studies of recent innovations. (Lec. 3) Pre: 423. Hatch

**432 Alternate Energy Systems (I, 3)** Topics include energy availability and analysis of conversion systems such as MHD, fuel cells, wind and ocean power, and solar generated electricity. (Lec. 3) Pre: 342, 354, PHY 341. Lessmann and Dowdell

**434 Thermal Environmental Engineering (II, 3)** Application of the principles of thermodynamics and heat transfer to environmental problems. Topics will include thermal control of living spaces, solar heating and cooling, heat pumps, minimum energy consumption. (Lec. 3) Pre: 342, 354, 448. Test, DeLuise, Lessmann

**437 Rocket Propulsion (II, 3)** Propellants and propellant systems. Rocket design based on principles of thermodynamics, fluid mechanics and heat transfer. (Lec. 3) Pre: 342, 354, 448, or permission of instructor. DeLuise

**438 Internal Combustion Engines (I, 3)** Principles, design and operation of internal combustion engines, including cycles, combustion, fuels, detonation, carburation, cooling, supercharging, ignition, friction and lubrication. Gasoline and diesel, two- and four-stroke cycles and performance of various engines including the Wankel rotary. (Lec. 3) Pre: 342. Brown

**439 Applied Energy Conversion (II, 3)** Modern power systems including steam and gas turbines, nuclear power stations, fuel cells, and thermionic and thermoelectric devices. (Lec. 3) Pre: 342 and 448 or permission of instructor. Brown

**448 Heat and Mass Transfer (I, 3)** Transfer of heat by conduction, convection and radiation in steady and unsteady states. Theory and application of dimensional analysis; heat and mass transfer in equipment such as heat exchangers and steam condensers. (Lec. 3) Pre: 341. Schenck and DeLuise

**455 Advanced Fluid Mechanics (I, 3)** Continuation of 354. Selected topics in advanced fluid mechanics including potential flows compressible flow, fluid machinery, and electric and magnetic field effects. (Lec. 3) Pre: 354. Dowdell, Hagist, Lessmann and White

**457 (or OCE 457) Fluidics (II, 3)** Description and analysis of various fluidic devices, special emphasis on jet attachment devices. Fluid circuit theory including design of fluidic systems for special applications. (Lec. 3) Pre: 354. Wilson

**463 Intermediate Dynamics (I, 3)** Dynamics of particles and rigid bodies developed by vector methods. Applications in planetary, projectile and gyroscopic motion, generalized coordinates, virtual work. Lagrange's equations and applications. (Lec. 3) Pre: 263, MTH 244. Staff

**464 Vibrations (II, 3)** Elementary theory of mechanical vibrations, including the one-degree-of-freedom system, multimass systems, vibration isolation, torsional vibration, beam vibration, critical speeds, and vibration instruments. (Lec. 3) Pre: 366 or permission of instructor. Hatch and Bradbury

**466 Advanced Mechanics of Solids (II, 3)** Introduction to plane elasticity: thick cylinders, rotating disks. Stress concentration, bending of plates and shells; finite difference and element analyses; plastic bending, yield criteria; elastic instability. Pre: 426 or permission of instructor. Kim

**491, 492 Special Problems** (I and II, 1-6 each) Advanced work, under the supervision of a staff member, arranged to suit the individual requirements of the student. (Lec. and Lab. according to nature of problem) Credits not to exceed total of 12. Pre: permission of department. Staff

- 501, 502 Graduate Seminar** (I and II, 1 each)  
**503 (or ELE 503) Linear Control Systems** (I, 3)  
**504 (or ELE 504) Optimal Control Theory** (II, 3)  
**515 (or CHE 515) Combustion** (II, 3)  
**517 (or ELE 517) Magnetofluidmechanics** (I or II, 3)  
**521 Reliability Analysis and Prediction** (I or II, 3)  
**524 Advanced Kinematics and Linkage Design** (I, 3)  
**531 (or OCE 531) Underwater Power Systems** (II, 3)  
**532 (or OCE 532) Coastal Zone Power Plants** (I, 3)  
**540 (or OCE 540) Environmental Control in Ocean Engineering** (II, 3)  
**541 Thermodynamics** (I, 3)  
**542 Statistical Thermodynamics** (II, 3)  
**545 Heat Transfer** (I, 3)  
**546 Convection Heat Transfer** (II, 3)  
**550 Theory of Continuous Media** (I, 3)  
**551 Fluid Mechanics I** (I, 3)  
**552 Fluid Mechanics II** (II, 3)  
**553 Flow of Compressible Fluids** (II, 3)  
**563 Advanced Dynamics** (I or II, 3)  
**564 Advanced Vibrations** (I, 3)  
**565 Advanced Vibrations** (II, 3)  
**572 Theory of Elasticity** (II, 3)  
**573 Theory of Plates** (I or II, 3)  
**575 Elastic Stability** (I or II, 3)

## Medical Technology (MTC)

Director: Professor C.W. Houston

**301 Medical Technology Seminar** (I, 1) Lectures discussions, and demonstrations to relate college course work to the hospital laboratory. (Lec. 1) Pre: junior standing and permission of instructor. Houston

## Medicinal Chemistry (MCH)

Chairman: Professor C.I. Smith

**342 Pharmaceutical Analysis** (I and II, 3) Principles and techniques of official and non-official procedures for the quantitative assay and qualitative control of drugs and pharmaceutical necessities. (Lec. 2, Lab. 3) Pre: third-year standing and permission of department. Smith

**443, 444 Organic Medicinal Chemistry** (I and II, 3 each) Selected compounds of medicinal and pharmaceutical importance. Uses, syntheses, incompatibilities, correlation of physical properties, structures and biological activity. (Lec. 3) Pre: CHM 228, and MCH 342 and/or permission of instructor. Abushanab, Panzica and Turcotte

**497, 498 Special Problems** (I and II, 1-5 each) Method of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Lab. 3-15) Pre: permission of department. Staff

- 501 Radiopharmaceuticals** (I, 3)  
**526 (or FNS 526) Lipid Chemistry** (I, 3)  
**533 Advanced Drug Assay** (I and II, 2-4)  
**548 (or PCG 548) Physical Methods of Identification** (II, 3)  
**549 Synthesis** (I and II, 3)

## Microbiology (MIC)

Chairman: Professor N.P. Wood

**201 Introductory Medical Microbiology** (I and II, 4) Required of all students in Nursing, Dental Hygiene, and Pharmacy. Lecture and laboratory designed to illustrate microbiological principles and techniques. For students in allied health professions. (Lec. 2, Lab. 4) Pre: 1 semester of biology and 1 year of chemistry. Not open to students who have had 211. Staff

**211 Introductory Microbiology** (I and II, 4) Introduction to microorganisms. Morphology, structure, metabolism, genetics, growth, populations in natural habitats, and their effects on the environment. For biological sciences major. (Lec. 2, Lab. 4) Pre: 2 semesters of biology, 1 semester of organic chemistry (can be taken concurrently). Not open to students who have had 201. Staff

**361 Soil Microbiology** (II, 4) Living microbial populations, microenvironments, decomposition and utilization of organic matters, mineralization, immobilization and microbial interactions. Isolation, enumeration and estimation of microbial activity. Emphasis on microbial aspects of soil processes. (Lec. 3, Lab. 3) Pre: 201 or 211; 1 semester organic chemistry. In alternate years, next offered 1978-79. Staff

### 401 Quantitative Cell Culture

See Biochemistry and Biophysics 401.

### 403 Introduction to Electron Microscopy

See Biochemistry and Biophysics 403.

**405 (or BCP 405) Electron Microscopy Laboratory** (I, 2) Introduction to the practical aspects of electron microscopy. Emphasis on acquisition of the following skills: tissue preparation, ultra-microtomy, operations of the electron microscope and darkroom procedures. (Lab. 6) Pre: prior or concurrent enrollment in 403. Hufnagel

**408 (or ZOO 408) Introduction to Protozoology** (II, 4) Survey of all classes of protozoa; concentration on class Ciliophora. Topics will include systematics, evolution, collection and culture, ecology, physiology, genetics, development and structure. Emphasis on recent publications. (Lec. 2, Lab. 6) Pre: 4 courses in biological science. Hufnagel

**411 Advanced Bacteriology** (I, 4) Advanced treatment of growth, cytology, physiology, genetics and classification of bacteria. (Lec. 2, Lab. 6) Pre: 201, BCP 311, or permission of instructor. Staff

**412 Food Microbiology** (II, 3) Analysis of water and milk; examination of dairy and other food products. (Lec. 2, Lab. 4) Pre: 201 or 211 and 1 semester organic chemistry (may be taken concurrently). Houston

### 422 Industrial Microbiology

See Plant Pathology-Entomology 422.

**432 Pathogenic Bacteriology** (II, 3) The more important microbial diseases, their etiology, transmission, diagnosis and control. Laboratory, emphasis on methods of diagnosis. (Lec. 2, Lab. 3) Pre: 201 or 211 and 1 semester organic chemistry. Sperry

**491, 492 Research in Microbiology** (I and II, 1-6 each) Special problems in microbiology. Student required to outline his problem, carry on experimental work and present his conclusions in a report. (Lab. 2 to 12) Open only to students in the microbiology curriculum. Staff

**495, 496 Seminar in Microbiology (I and II, 1 each)** Preparation and presentation of papers on selected subject in microbiology. (Lec. 1) Pre: permission of department. Staff

**521 Recent Advances in Cell Biology (I, 1)**

**533 Immunity and Serology (I, 3)**

**552 Microbial Genetics (II, 3)**

**567 (or OCG 567) Marine Bacteriology (I, 3)**

**593, 594 The Literature of Bacteriology (I and II, 2 each)**

Note: for Virology, see *Animal Pathology*; for Mycology, see *Botany*.

## Military Science (MSC)

Chairman: Professor McKeon

**100 Introduction to Leadership (I, 1)** Develops leadership ability by placing students in challenging situations which require quick judgments, decisions and teamwork. Includes leadership theory, rappelling, water survival and cold weather operations. (Lab. 2) Staff

**105 Orienteering (II, 1)** Introduction to orienteering, to include map reading, compass use and cross-country land navigation. Students will have the opportunity to compete in intercollegiate meets. (Lab. 3) Porter

**170 History of Modern Warfare (I, 3)** Study of warfare with emphasis on the period since the introduction of gunpowder. Influence of social systems, economics, leaders and the major battles on warfare will be explored. (Lec. 3) House

**180 The American Military and Society (II, 3)** A look at how society and the military interact. Examination of the historical development of the military, the military industrial complex, military justice, race relations, drug abuse. (Lec. 3) Staff

**260 Comparative Military Systems (II, 3)** In-depth look at the military systems of the U.S., U.S.S.R. and the People's Republic of China. Exploration of manpower sources, training, equipment, education, social position, mission and strategy. (Lec. 3) Staff

**270 Studies in Military Leadership (I, 3)** Analysis of historical and contemporary case studies in military leadership. Evaluation of basic principles influencing these cases. (Lec. 3) O'Halloran

**310, 320 Leadership and Management (I and II, 2 each)** Advanced courses: application of the principles of war, small unit tactics, leadership development, plan and execute tactical problems. (Lec. 2, Lab. 2) Pre: permission of department and successful completion of basic courses, or completion of basic camp or equivalent; for 320, 310. Heslin

**330, 340 Organizational Management and Law (I and II, 3 each)** Advanced courses; military law, obligations and responsibilities of an officer, Army readiness program, administrative management, world change and military implications, logistics, the military team, internal defense and development. (Lec. 3, Lab. 2) Pre: permission of department; for 330, 320; for 340, 310. Shugart

## Music (MUS)

Chairman: Professor Giebler

**050 Performance Preparatory (I and II, 0)** Class or private instruction. Select appropriate letter and voice or instrument from the list under 251 below and add to course number, as 050E Violin. May be repeated for a second semester if work of the first is satisfactory. (Lec. 1) Staff

**101 Introduction to Music (I and II, 3)** Fosters a better understanding and appreciation of the world's great music. Consideration of musical styles, techniques and forms from the listener's standpoint. (Lec. 3) Buck and Kent

**102 Music Masterworks (II, 3)** Selection of music masterworks from different eras stressing those elements which elevate these compositions above others. Discriminatory listening stressed. (Lec. 3) Pre: 101 or placement exam. Ceo

**111 Basic Musicianship (I and II, 3)** Use of folk, classical, and popular music to learn essentials of music reading and music theory. Not open to music majors. (Lec. 3) Green and Rankin

**113, 114 Diatonic Harmony and Ear Training (I and II, 3 each)** 113: Rhythmic, melodic, and harmonic elements of music. Scales, intervals, and the chord structure. Sight-singing, rhythmic articulation and melodic dictation. Part-writing, analysis, keyboard work, and harmonic dictation involving primary triads. (Lec. 2, Lab. 3) Pre: concurrent or previous keyboard experience. 114: Continuation, covering all diatonic triads, dominant and supertonic seventh chords, and modulation to closely related keys. (Lec. 2, Lab. 3) Pre: 113. Dempsey and Rankin

**117 Applied Composition (I and II, 1)** Private study in composition for students interested in original work in contemporary idioms. Emphasis on mastery of the basic craft and individual creative expression. May be repeated once for credit. (Lec. 1) Pre: determined by audition. Gibbs

**169 Percussion Instruments Class (II, 1)** Basic principles in performance and pedagogy of percussion instruments. (Lec. 1) Open only to students in the music education curriculum. Pollart

**170 Guitar for the Classroom Music Teacher (I, 1)** Development of the basic principles and pedagogy for use of guitar in the music classroom. (Lec. 1) Registration limited to music education majors. Staff

**171, 172 Piano Class (I and II, 1 each)** Development of basic techniques and musicianship for effective use of the piano in the music classrooms. (Lec. 1) Open only to students in the music education curriculum. Green

**173, 174 Voice Class (I and II, 1 each)** Basic principles and pedagogy of singing, physiology, breathing, tone production, diction. (Lec. 1) Open only to students in the music education curriculum. Abusamra

**175, 176 String Instruments (I and II, 1 each)** Basic principles in performance and pedagogy of violin or viola and violoncello or bass viol. (Lec. 1) Open only to students in the music education curriculum. Dempsey and Chapple

**177, 178 Woodwind Instruments Class (I and II, 1 each)** Basic principles in performance and pedagogy of wood-



wind instruments, with emphasis on clarinet and flute. (Lec. 1) Open only to students in the music education curriculum. Marinaccio, Valentine and Zeitlin

**179, 180 Brass Instruments Class (I and II, 1 each)** Basic principles in performance and pedagogy of trumpet, French horn, baritone, trombone, and tuba. (Lec. 1) Open only to students in the music education curriculum. Burns

**181, 182 Intermediate Piano Class (I and II, 1 each)** Further development of basic keyboard performance. Improvised accompaniments to folk songs. Sight transposition. Some score readings. Further development of reading skills using materials on the level of Bartok: Mikrokosmos, Books 2 and 3 and Clementi: Sonatinas, Op. 36. (Lec. 1) Open only to students in the music education curriculum. Pre: 172 or equivalent. Green

**215, 216 Advanced Harmony and Ear Training (I and II, 3 each)** 215: Advanced rhythmic, melodic and harmonic practice approached through sight-singing, dictation, analysis, keyboard work and part-writing including original work. Covers all seventh chords, chromatic alteration, chromatic progression and foreign modulation. (Lec. 2, Lab. 2) Pre: 114 or equivalent. 216: Continuation, covering ninth, eleventh and thirteenth chords, melodic elaboration. Introduction to contrapuntal textures and contemporary idioms. (Lec. 2, Lab. 2) Pre: 215. Gibbs

**218 Composing and Arranging for Jazz Ensemble (II, 3)** Modern and traditional jazz arranging and compositional techniques, with emphasis on solo and concerted ensemble writing, voicing techniques and mechanics of line writing; unique composing styles of recognized jazz composers. (Lec. 3) Pre: 215. Staff

**221, 222 History of Music (I and II, 3 each)** 221: Development of music primarily in Western culture from Ancient times through the Middle Ages, Renaissance and the Baroque periods. 222: Continuation to include the Rococo, Classical, Romantic, and Modern eras. (Lec. 3) Pre: 101 or placement exam. Kent

**241 Performance in Piano for Theory-Composition Majors (I and II, 2)** Reading scores at the piano and using the piano as a tool for composing or theoretical study and teaching. Private instruction. Four semesters. (Studio 6) Pre: 182 or equivalent. Staff

**242 Performance in Piano for Voice Majors (I and II, 2)** Reading as an adjunct skill for teaching voice, conducting choirs, or familiarizing oneself with the sound of accompaniment. Private instruction. Four semesters. Not open to students with credit for 251B (Studio 6) Pre: 182 or equivalent. Staff

**250 Recital Laboratory (I and II, 0)** Performance in and attendance at student afternoon recitals. Study of repertory and techniques of concert presentation including lectures by faculty and visiting artists. Staff

**251 Performance as Minor or Elective (I and II, 2)** Lower division. One private 40-minute lesson each week. Two levels, one per year, as prescribed in syllabi. Recital performances as required by department and instructor. (Studio 40 min.) May be repeated for credit. Pre: audition. Requirements for each instrument available from department. Staff

Select area of instruction from the following and add to course number as 251B, Piano:

A Voice	H Bass Viol	Q French Horn
B Piano	J Flute	R Trombone
C Organ	K Oboe	S Baritone Horn
D Harpsichord	L Clarinet	T Tuba
E Violin	M Bassoon	U Percussion
F Viola	N Saxophone	V Guitar
G Violoncello	P Trumpet	W Harp

**261 Performance Major (I and II, 3)** Lower division. One private 60-minute lesson each week. Two levels, one per year, as prescribed in syllabi. Recital performances as required by department and instructor. (Studio 60 min.) Pre: audition. Requirements for each instrument available from department. See under 251 for areas of study. Staff

**305 Folk Music (I, 3)** Folk songs, dances and instruments of the world with emphasis upon American sources. (Lec. 3) Staff

**311, 312 Conducting (I and II, 2 each)** 311: Choral conducting. Special techniques for direction and rehearsal of choral groups. Problems of tone, diction and balance; organization of school, church, community and professional groups. Analysis of major choral works from conductor's standpoint. (Lec. 2) Pre: 216. Abusamra. 312: Instrumental conducting. Problems of conductor; score reading, interpretation, techniques of rehearsal and direction. (Lec. 2) Pre: previous or concurrent registration in 216. Ceo

**317 Form and Analysis (I, 3)** Critical study of musical structure. Works of various composers are analyzed with reference to motive and phrase as generative elements in design. (Lec. 3) Pre: 216. Gibbs

**321 Orchestration (II, 3)** Range, timbre, transpositions and other characteristics of the instruments of the orchestra, singly and in combination. Exercises in writing for choirs of the orchestra and for full orchestra. Setting of one of small homophonic forms of full orchestra required. (Lec. 3) Pre: 317. Gibbs

**329 (or EDC 329) Music for the Elementary School Teacher (I and II, 3)** Fundamentals of music and methods employed in teaching music and making it a more meaningful and an integral part of the curriculum in the elementary school. (Lec. 3) Open only to elementary GTE students. Green

**341 (339) Vocal Methods and Materials I (I, 2)** Organization of the vocal music program in the elementary school with emphasis on method and introduction to materials. (Lec. 2) Pre: junior standing. Staff

**342 (339) Vocal Methods and Materials II (II, 2)** Organization of vocal music programs in the junior and senior high school with emphasis on method and introduction to materials. (Lec. 2) Pre: junior standing. Staff

**343 (340) Instrumental Methods and Materials I (I, 2)** Organization of programs in the elementary and junior high schools, articulation of instrumental instruction, and analysis of method and materials. (Lec. 2) Pre: junior standing. Burns

**344 (340) Instrumental Methods and Materials II (II, 2)** Organization of programs in the high school with analysis of method and introduction to materials. (Lec. 2) Pre: junior standing. Burns

- 345, 346 Honors Project (I and II, 1-3 each)** Independent study under faculty supervision for honors students. Pre: departmental approval of admission to honors program and acceptance of project by a member of the staff. Staff
- 391 University Symphony Orchestra (I and II, 1)** Audition required. (Lec. 3) Ceo
- 392 University Marching Band (I, 1)** Marching Band members also register for PEM 103 for 1 credit. Audition required. (Lec. 3) Pollart
- 393 University Chorus (I and II, 1)** Audition required. (Lec. 3) Abusamra
- 394 Symphonic Wind Ensemble (II, 1)** Audition required. (Lec. 3) Pollart
- 395 Concert Choir (I and II, 1)** Audition required. (Lec. 3) Abusamra
- 397 University Chamber Orchestra (I and II, 1)** An ensemble which offers the study and performance of standard and modern repertoire for the smaller orchestral group. Literature will be selected from the baroque, rococo, classic and contemporary periods. (Lec. 1) Pre: all prospective members will be selected by audition. String players must be members of the University Orchestra, while others may qualify with permission of the conductor. Music majors will be given preference for admission. Ceo
- 399 Chamber Music Ensembles (I and II, 1)** Chamber music ensembles are designated as A Keyboard Ensemble, B String Ensemble, C Woodwind Ensemble, D Brass Ensemble, E Percussion Ensemble, F Stage Band, G Madrigal Singers, H Guitar Ensemble. Select appropriate letter and small ensemble from list and add to course number, as 399B String Ensemble. Other ensemble combinations may be added. Small instrumental ensembles are normally restricted to one performer per part. Audition required. (Lec. 2) Staff
- 407 The Symphony (I, 3)** Survey of the development of the symphony from its beginnings in the mid-eighteenth century to the present. Includes a study of the evolution of the orchestra and the sonata form and considers cultural influences exerted upon the composers. (Lec. 3) Pre: 222. In alternate years, next offered spring 1979. Giebler
- 408 The Opera (II, 3)** History of the opera from its beginning in Florence at the turn of the seventeenth century to the present. (Lec. 3) Pre: 221, 222. In alternate years, next offered spring 1980. Gibbs
- 418 Composition (II, 3)** Original work in small binary, ternary, variation and sonatina forms for various instrumental and vocal groups. (Lec. 3) Pre: prior or concurrent registration in 317. In alternate years, next offered spring 1979. Gibbs
- 419 Composition (I, 2)** Continuation of 418, stressing original composition in larger forms and study of twentieth-century techniques. (Lec. 2) Pre: 418. Gibbs
- 420 Counterpoint (I, 3)** Systematic study of motive manipulation with reference to traditional contrapuntal devices. Emphasis on harmonic counterpoint of late Baroque, more recent practices considered. Creative work in canon, invention, fugue, and chorale-prelude. (Lec. 3) Pre: prior or concurrent registration in 317. In alternate years, next offered fall 1978. Giebler
- 422 Advanced Orchestration (II, 2)** Continuation of 321, emphasizing score reading and orchestrational styles. Transcription for orchestra of a major keyboard work required as a semester project. (Lec. 2) Pre: 321. Gibbs
- 423 Sixteenth Century Counterpoint (I or II, 3)** Modal polyphony based on the style of Palestrina and his contemporaries, covering cantus firmus techniques, imitation and various other contrapuntal devices in textures from two to four or more voices. (Lec. 3) Pre: 216. Giebler
- 431 The Baroque Era (I, 3)** Music of the so-called thorough-bass period (ca. 1600-1750) includes the emergence of opera and oratorio, autonomous instrumental music and the concerto style, culminating in works of Bach and Handel. (Lec. 3) Pre: 221, 222. In alternate years, next offered fall 1979. Giebler
- 432 The Classic Era (II, 3)** Music of the period (ca. 1725-1815) beginning with the decorative gallant style of the Rococo composers and culminating in the expressive architectonic textures in the works of Haydn, Mozart and early Beethoven. (Lec. 3) Pre: 221, 222. In alternate years, next offered spring 1980. Giebler
- 433 The Romantic Era (I, 3)** Music of the nineteenth century within the context of the Romantic movement (1815-1875). Major composers and their works in various media are considered with respect to their historical significance. (Lec. 3) Pre: 221, 222. In alternate years, next offered fall 1979. Gibbs
- 434 The Modern Era (I, 3)** Music of the twentieth century with emphasis on changing esthetics as revealed through the analysis of selected composition. (Lec. 3) Pre: 221, 222. In alternate years, next offered fall 1978. Gibbs
- 438 Topics in Elementary School Music (I, 3)** Open-ended course examining significant materials, approaches and current trends. Topics cover such areas as aesthetic education, process of musical development, eurythmics, Orff and Kodaly or an overview. May be repeated with credit with change of topic. Pre: MUS (EDC) 329, 341 or equivalent. In alternate years, next offered spring 1979. Staff
- 441 Special Projects (I and II, 3)** Advanced work in research or of a creative nature in the field of history, literature, theory, composition, and education. Advisory basis, permission of department and instructor required for registration. Pre: completion of the most advanced undergraduate course in the field. Staff
- 446 Teaching General Music (II, 2)** Examination of philosophies, objectives, activities/experiences, and evaluative devices relating to general music study in the junior high school/middle school setting. (Lec. 2) Pre: 341 or 343, or teaching experience. Motycka
- 451 Performance as Minor or Elective (I and II, 2)** Upper division. One private 40-minute lesson each week. Two levels, one per year, as prescribed in syllabi. Recital performances as required by department and instructor. (Studio 40 min.) May be repeated for credit. Pre: completion of performance minor lower division and permission of department. See under 251 for areas of study. Staff
- 452 Upper Level Performance as Minor (I and II, 2)** Extends lesson time for 451 to 60 minutes. Pre: four prior credits in 451, concurrent registration in 451, and permission of instructor. Staff
- 455 Senior Recital (I or II, 0)** Performance of a public program of at least 20 minutes performing time after

faculty examination. Pre: concurrent registration in 451 and four or more prior credits of 451. Staff

**461 Performance as Major (I and II, 4)** One private 60-minute lesson each week. Two levels, one per year, as prescribed in syllabi. Recital performances as required by department and instructor. (Studio 60 min.) Pre: completion of performance major lower division and permission of department. See under 251 for areas of study. Staff

**465 Senior Recital for Performance Majors (I or II, 0)** Performance of a public program of at least 50 minutes performing time after faculty examination. Pre: concurrent registration in 461 and eight or more prior credits in 461. Staff

**481, 482 Piano Literature and Pedagogy (I and II, 2 each)** 481: Intensive study of keyboard literature from 1700 to 1825. Analysis of styles and forms and their implications for performance. Teaching methods and materials. (Lec. 2) Pre: 216, 222, and 251B or 261B or permission of department. 482: Continuation involving literature from the nineteenth century to the present. (Lec. 2) Pre: same as for 481. In alternate years, next offered 1979-80. Fuchs

**483, 484 Vocal Literature and Pedagogy (I and II, 2 each)** 483: Concentrated study of vocal literature of the Baroque and Classic eras. Analysis of styles, forms and texts and their influences in performance. Diction, teaching methods and materials. (Lec. 2) 484: Continuation encompassing literature from the nineteenth century to the present. (Lec. 2) In alternate years, next offered fall 1979. Pre for 483 and 484: 216, 222, 251A or 261A or permission of department. Langdon

**539 Advanced Principles of Music Education (I, 3)**

**540 Advanced Principles of Music Education II (II, 3)**

**545 Musical Aptitude and Achievement (I, 3)**

**548 Research in Music (II, 3)**

**551 Performance as Minor or Elective (I and II, 2)**

## Nuclear Engineering (NUE)

Chairman: Professor Treybal (Chemical Engineering)

**538 (or CHE 538) Nuclear Metallurgy (II, 3)**

**581 (or CHE 581) Introduction to Nuclear Engineering (I and II, 3)**

**582 (or CHE 582) Radiological Health Physics (I, 3)**

**583 (or CHE 583) Nuclear Reactor Theory (II, 3)**

**585 (or CHE 585) Measurements in Nuclear Engineering (I, 3)**

**586 (or CHE 586) Nuclear Reactor Laboratory (II, 3)**

## Nursing (NUR)

Dean: Professor Tate

**101 Basic Concepts for Helping Professionals (I and II, 2)** Introduction to concepts of adaptation, communication and dynamics of helping. Emphasis on self development through individual and group processes by exploring ways to meet common needs. (Rec. 2) Staff

**150 Human Sexuality (I and II, 3)** Interdisciplinary approach to the study of individual and societal determin-

ants in the development, integration and expression of human sexuality and a code of sexual behavior. Hirsch and Staff

**211 Nursing in Contemporary Society (I and II, 3)** Trends and issues in professional nursing and nursing education. Adaptation level theory and related concepts with emphasis on utilization of nursing process. (Lec. 3) Pre: registered nurse standing or permission of instructor. Houston

**220 Basic Concepts of Professional Nursing Practice (I and II, 4)** Basic course utilizing beginning concepts of nursing with clients who have simple health problems requiring application of the nursing process; includes learning experiences in manual and psychosocial skills. (Lec. 2, Lab. 8) Pre: 101 and foundation courses in physical and social sciences listed in curriculum. Evans and Staff

**231 Care of the Adult I (I and II, 6)** Emphasis on analysis of adult nursing problems through application of scientific principles and concepts in biomedical as well as psychosocial sciences within the conceptual framework of adaptation-level theory. (Lec. 6) Pre: foundation courses in physical and social sciences listed in curriculum, 220 or R.N. status. Kang and Staff

**232 Care of the Adult Practicum I (I and II, 4)** Emphasizes skills and knowledge in individualized nursing process applying the adaptation-level theory for critical assessment of nursing action. Must be taken concurrently with 231. Kang and Staff

**301 Parent and Child Health Nursing (I and II, 7)** Family-centered health concepts during the childbearing and childrearing phases of development. Role of the nurse in assisting families to adapt and function during health and illness. (Lec. 7) Pre: CDF 200 or PSY 232; PHC 226 and NUR 231, 232. Must be taken concurrently with 302. Hirsch and Staff

**302 Parent and Child Health Nursing Practicum (I and II, 4)** Application of family-centered health concepts to parent and child nursing care in selected community agencies. (Lab. 12) Use of automobile or funds to meet cost of public transportation preferable. Must be taken concurrently with 301. S/U credit. Hirsch and Staff

**311 Mental Health and Psychiatric Nursing (I and II, 3)** Development of the basic knowledge and understanding necessary to the use of self as a therapeutic agent as related to mental health and illness. Application to all areas of nursing. (Lec. 3) Pre: 231, 232. Must be taken concurrently with 312. Staff

**312 Mental Health and Psychiatric Nursing Practice (I and II, 3)** Supervised experience in the development of the ability to use oneself as a therapeutic agent as related to mental health and illness. Application to all areas of nursing. (Lab. 9) Pre: 231, 232. Must be taken concurrently with 311. S/U credit. Staff

**321 Community Health Nursing (I and II, 3)** Introduction to basic principles of public health and community health nursing. Emphasis on family/group centered approach to health care. (Lec. 3) Pre: 301, 302. Schwartz-Barcott and Staff

**322 Community Health Nursing Practicum (I and II, 4)** Clinical nursing practice experience in a variety of community-based settings. Emphasis on family. Experience in Community Health Program development. Use of automobile or funds to meet cost of public transportation

required. (Lab. 12) Must be taken concurrently with 321. Staff

**333 Complex Clinical Nursing (I and II, 5)** Application of adaptation-level theory to systematic study of nursing problems related to complex and comprehensive patient care in various health-care phases and settings. (Lec. 5) Pre: 301, 302 and 311, 312; senior standing. Must be taken concurrently with 334. Kang and Staff

**334 Complex Clinical Nursing Practicum (I and II, 5)** Application of nursing process based on adaptation-level theory to patients' complex nursing problems. Emphasis on continuity of nursing through crisis and health-maintenance. (Lab. 15) Pre: 301, 302 and 311, 312; senior standing. Must be taken concurrently with 333. Kang and Staff

**335 Organization and Leadership in Nursing (I and II, 2)** Seminar in systematized examination and study of theories and concepts of leadership, group process, and organizational behaviors in nursing. Emphasis on study of complexities of nursing within situational and organizational framework. Pre: 301, 302 and 311, 312; senior standing. Kang and Staff

**350 Conference on Professional Nursing (I and II, 2)** Major nursing and health issues. Emphasis on the professional nurse's responsibility to the profession and to the community in which she lives. (Lec. 2) Pre: senior standing. Tate and Feather

**360 Impact of Death on Behavior (I and II, 3)** Seminar explores the effect that social value and social structure have on interactions with dying patients and decisions regarding treatment of dying patients. (Lec. 3) Staff

**390 Directed Study (I and II, 3)** Honors thesis or equivalent independent project relating to the nursing major. Faculty guidance in problem delineation, development and drafting of a study plan in the area of a student's special interest. Project need not be completed in one semester, but no more than three credits allowed. Pre: admission to College of Nursing. Staff

**500 Expanded Assessment Skills (I or II, 3)**

**501, 503 Advanced Clinical Nursing (I or II, 3 each)**

**502, 504 Advanced Clinical Nursing Practicum (I or II, 3 each)**

**505 Research in Nursing (I, 3)**

**506 Independent Study in Nursing (I and II, 3)**

**507 Comparative Study of Functions in Nursing (I and II, 3)**

**508 Teaching Practicum (I and II, 3)**

**509 Practicum in Administration of Nursing Service (I and II, 3)**

**530 Change Processes and Nursing Practice (I, 3)**

**531 Nurse Practitioner—Adult Medical Care I (I or II, 3)**

**532 Nurse Practitioner—Adult Medical Care I Practicum (II, 3)**

**533 Nurse Practitioner—Adult Medical Care II (I or II, 3)**

**534 Nurse Practitioner—Adult Medical Care II Practicum (I or II, 6)**

## Ocean Engineering (OCE)

Chairman: Professor Sheets

**346 (or PED 346) Skin and Scuba Diving, Beginners (I, 1)** Emphasis on basic physical principles, hazards, selec-

tion of equipment and techniques. (Practicum 3) Pre: permission of instructor. McAniff

**347 (or PED 347) Skin and Scuba Diving, Advanced (II, 1)** Emphasis on the skill needed for advanced scuba activities as related to deep dives, salvage. (Practicum 3) Pre: 346. McAniff

**351, 352 Plant Design and Economics**

See Chemical Engineering 351, 352.

**401, 402 Introduction to**

**Ocean Engineering Systems I and II**

See Mechanical Engineering 401, 402.

**403, 404 Introduction to**

**Ocean Engineering Processes I and II**

See Chemical Engineering 403, 404.

**410 Basic Ocean Measurements**

See Mechanical Engineering 410.

**500 Basic Ocean Engineering (II, 3)**

**512, 513 Hydrodynamics of Floating and Submerged Bodies I and II (I and II, 3)**

**521 Materials Technology in Ocean Engineering (I, 3)**

**524 Marine Structural Design (I or II, 3)**

**531 (or MCE 531) Underwater Power Systems (II, 3)**

**532 (or MCE 532) Coastal Zone Power Plants (I, 3)**

**534 Corrosion and Corrosion Control (I, 3)**

**535 Advanced Course in Corrosion (II, 3)**

**540 (or MCE 540) Environmental Control in Ocean Engineering (II, 3)**

**560 (or ELE 560) Introduction to Data Collection Systems (I, 3)**

**561 Introduction to the Analysis of Oceanographic Data (I, 3)**

**565 Ocean Laboratory I (I or II, 3)**

**566 Ocean Laboratory II (I or II, 3)**

**571 (or ELE 571) Underwater Acoustics I (I, 3)**

**581 (or GEL 581) Coastal Engineering Geology (II, 3)**

**587 Submarine Soil Mechanics (I, 3)**

**591, 592 Special Problems (I and II, 1-6 each)**

## Oceanography (OCG)

Dean: Professor Knauss

**401 General Oceanography (I and II, 3)** General survey in the major disciplines including geological, physical, chemical, and biological aspects integrated into a conceptual approach to the sciences of the sea. (Lec. 3) Pre: at least one laboratory course in a physical or biological science and junior standing or above. Staff

**501 Physical Oceanography (I, 3)**

**509 Ecological Aspects of Marine Pollution (I, 3)**

**510 Descriptive Physical Oceanography (II, 3)**

**521 Chemical Oceanography (II, 3)**

**524 Chemistry of the Marine Atmosphere (II, 3)**

**540 Geological Oceanography (II, 3)**

**544 Seminar in Petrogenesis (I, 3)**

**545 Geomagnetism and Paleomagnetism (I, 3)**

**547 Seminar in Biomagnetism (I, 2)**

**561 Biological Oceanography (I, 3)**

**568 Fishery Biology (II, 3)**

**571 Benthic Environment (I, 3)**

**574 Biology of Marine Mammals (II, 2)**

## Pharmacognosy (PCG)

Chairman: Professor Worthen  
(Pharmacognosy and Environmental Health)

**445, 446 General Pharmacognosy (I and II, 3)** Natural products of biological origin as important pharmaceuticals. Sources, process of isolation and general fundamental properties. (Lec. 3) Pre: CHM 228, BIO 101, 102 or equivalent. Youngken, Worthen

**447 General Pharmacognosy Laboratory (I and II, 1)** Introduction to and application of laboratory methods utilized in the preparation, identification, isolation, and purification of pharmaceuticals from natural sources. (Lab. 3) Pre: CHM 226, BIO 101, 102 or equivalent. Staff

**459 Public Health (I and II, 3)** Principles of prevention and control of disease and application of this information to current health problems. (Lec. 3) Pre: MIC 201, PCG 446 or permission of instructor. Worthen

**497, 498 Special Problems (I and II, 1-3 each)** Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing acceptable report. (Lab. TBA) Pre: permission of department for undergraduate students only. Staff

**521, 522 Seminar (I and II, 1 each)**

**532 (or PHC 532) Pharmaceutical Sterile Products (I, 3)**

**533 Medicinal Plants (I and II, 2)**

**536 Antibiotics (II, 3)**

**548 Physical Methods of Identification (II, 3)**

**551, 552 Chemistry of Natural Products (I and II, 3 each)**

## Pharmacology and Toxicology (PCL)

Chairman: Professor DeFeo

**221 Dental Therapeutics (I, 2)** Medicinal agents, their actions and therapeutic uses with special emphasis on substances employed in dental practice. (Lec. 2) For students in dental hygiene. Carroll

**225 Pharmaceutical Calculations and Introduction to Pharmacology**  
See Pharmacy 225.

**226 Pharmacology and Therapeutics (II, 3)** Continuation of 225 with special emphasis on properties, actions, uses, dosage and toxicology of drugs used in the treatment of disease. (Lec. 3) Pre: 225. For students in the College of Nursing. Fuller and Swonger

**321 The Chemical Environment of Man (II, 3)** Introduction to basic pharmacological concepts, response of the human body to chemical stimuli including certain medicinally useful drugs and chemicals which are misused or abused. Legislation pertaining to drugs and chemicals. (Lec. 3) Pre: sophomore standing and permission of department. Designed primarily for non-health science majors. Staff

**338 (or PHC 338) Pharmacology and Biopharmaceutics (II, 4)** Physio-chemical relationships underlying drug action including biopharmaceutical approaches and clinical aspects of pharmacokinetics. (Lec. 4) Pre: third-year standing and approval of departments. DeFeo, Rhodes and Greene

**436 (or PSY 436) Psychotropic Drugs and Therapy (II, 3)** Interaction of drug and non-drug therapy and of physiological and psychological origins of psychopathology. Intended for advanced undergraduate and graduate students interested in clinical psychology. (Lec. 3) Pre: any one of the following: BIO 102, ZOO 111, 121, PSY 381 or permission of instructor. Swonger

**438 (or PSY 438) Psychotropic Drugs and Behavior (I or II, 3)** Basic principles of psychopharmacology as applied to important classes of psychotropic drugs including illicit as well as therapeutic agents. (Lec. 3) Pre: any one of the following: BIO 102, ZOO 111, 121, PSY 381 or permission of instructor. Not for pharmacy students. Lal and Swonger

**441, 442 General Pharmacology (I and II, 4 each)** Action of drugs on physiological function with reference to responses by tissue systems. Toxic effects, mechanism of action, dosage and pertinent clinical aspects. (Lec. 4) Pre: third-year standing. DeFanti and Staff

**443, 444 General Pharmacology Laboratory (I and II, 1 each)** Effects of drugs on physiological function with reference to responses by tissue systems. Toxic effects, mechanism of action and dosage. (Lab. 3) Pre: fourth-year standing or permission of department. Swonger

**497, 498 Special Problems (I and II, 1-3 each)** Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Lab. TBA) Pre: permission of department. Staff

**521, 522 Seminar (I and II, 1 each)**

**542 Evaluation of Drug Effects (II, 5)**

**544 Forensic Toxicology (II, 3)**

**546 Advanced Toxicology (II, 4)**

**550 Operant Analysis of Behavior (I, 3)**

**562 Psychopharmacology (I, 3)**

**564 Psychopharmacology Laboratory (I, 1-3)**

**572 Neural Bases of Drug Action (I, 3)**

## Pharmacy (PHC)

Chairman: Professor Rhodes

**225 (or PCL 225) Pharmaceutical Calculations and Introduction to Pharmacology (I, 2)** Introduction to drugs, mechanisms of action, and mathematical concepts of dosage and strength. (Lec. 2) For students in the College of Nursing. Lausier and DeFeo

**333 General Pharmacy (I, 4)** Introduction to mathematical concepts, principles and processes encountered in the formulation and preparation of clinical dose forms (Lec. 3, Lab. 4) Pre: third-year standing. Osborne

**338 Pharmacology and Biopharmaceutics**  
See Pharmacology and Toxicology 338.

**345 Pharmaceutical Technology (I, 3)** Application of physical-chemical principles and laws to pharmaceutical systems: equilibria, solubility phenomena, particle size, rheology stability testing. (Lec. 3) Pre: 333. Osborne, Paruta, Rhodes

**346 Dose Form Technology (II, 4)** Drug delivery systems, dose form design, physical-chemical properties of drugs, ionic equilibria, kinetics, etc. Laboratory involves dispensing and relevant information. (Lec. 3, Lab. 4) Pre: 345, fourth-year standing. Paruta

**351 Personal Cosmetics (II, 3)** Formulation and manufacture of various types of personal cosmetics and toilet preparations. Examples of types studied are prepared in laboratory. (Lec. 2, Lab. 3) Pre: 344. Osborne and Lausier

**360 Hospital Pharmacy (II, 3)** Introduction to practice of pharmacy in hospitals, including both professional and administrative activities. Field trips to representative hospital pharmacies. (Lec. 2, Lab. 3) Pre: fourth-year standing. Staff

**371 Introduction to Clinical Pharmacy (II, 2)** Terminology, concepts, methodologies and services in patient-oriented pharmacy practice. (Lec. 2) Pre: 333, BCP 311. Co-requisite: 338 and APA 401. Staff

**385 Pharmacy Practicum (I, 4)** Problems in preparing and dispensing pharmaceuticals with emphasis on prescription specialties and drug information. (Lec. 4) Pre: 344, 353. Co-requisite: 386. Lausier

**386 Pharmacy Practicum Laboratory (I, 1)** Application of problems presented in 385 with ambulatory patient orientation. (Lab. 4) Co-requisite: 385. Next offered, fall 1979. Lausier

**390 Pharmacy Practice Externship (I and II, 6)** Structured practical experience in selected community and institutional pharmacies. Participation in patient counseling, use of patient profiles, drug distribution, inventory control, and other aspects of contemporary pharmacy practice. (Lab. 20) Pre: fifth-year standing and permission of department. Staff

**399 Pharmacy Externship (I and II, 3-12)** Structured, patient-oriented practice experience in hospital and community settings throughout New England. (Lab. 9-36) Vars

**425 History of Pharmacy (II, 3)** Historical development of pharmacy in this country and abroad emphasizing the background of recent developments in the profession and related health sciences. (Lec. 3) Pre: fourth- or fifth-year standing. Osborne

**451, 452 Pharmacotherapeutics I, II (I, and II, 2 each)** Disease state oriented approach to therapeutics utilizing the anatomy, physiology and pathophysiology of the disease state as it applies to treatment. (Lec. 2) Pre: 371, 338, APA 401. Staff

**490 Clinical Pharmacy Clerkship (I and II, 6)** Faculty supervised practice of clinical pharmacy in the hospital environment. Emphasis on patient-oriented pharmacy service by direct communication with patients, physicians, nurses and other allied health professionals involved in patient care. (Lab. 20) Pre: fifth-year standing and permission of department. Clinical staff

**497, 498 Special Problems (I and II, 1-3 each)** Method of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Lab. 3-10) Pre: permission of department. Staff

**499 Clinical Practicum (II, 3-12)** Faculty supervised practical experience involving selected community and hospital pharmacies and health care delivery agencies which provide patient-oriented pharmaceutical services. (Lab. 6-24) Pre: 451 or permission of department. Not for graduate degree program credit. Staff

**501 Drug Information Pertaining to Institutional Pharmacy Practice (I, 3)**

**521, 522 Seminar (I and II, 1 each)**

**532 (or PCG 532) Pharmaceutical Sterile Products (I, 3)**  
**552 Advanced Clinical Pharmacy (II, 3)**

## Pharmacy Administration (PAD)

Chairman: Professor Campbell

**203 Social and Professional Orientation to Pharmacy (I and II, 2)** Introduction to social and professional consideration facing the practicing pharmacist, including matters directly related to patient care and interaction with allied health professions. (Lec. 2) Pre: first and second year standing only. Curtiss

**349 Pharmacy Administration Principles (II, 3)** Practical solutions to problems encountered in selection, location and management of pharmacies, their personnel, stock and equipment. (Lec. 3) Campbell

**351 Pharmaceutical Law and Ethics (I, 3)** Basic principles of law and ethics as applied to federal, state and local acts, regulation and practices encountered in professional practice. Specific attention to liabilities of pharmacists in decisions; actions involving sale of medicinals, poisons, narcotics. (Lec. 3) Campbell and Hachadorian

**405 Personnel Administration (I, 3)** Principles of psychology of management and the application of these principles to the resolution of personnel administration problems in pharmacy organization. (Lec. 3) Pre: permission of department. Curtiss

**406 Pharmacy Retailing (II, 3)** Effect of economic trends and marketing changes on the retail distribution of pharmaceuticals and allied products, particularly as they affect the professional practice of pharmacy. (Lec. 3) Pre: permission of department. In alternate years. Staff

**453 Drug Marketing Principles (II, 2)** Modern methods of merchandising, agencies involved in marketing drug products; their functions, particularly as they affect the community pharmacy phase of professional practice. (Lec. 2) Pre: fifth-year standing, ECN 123 or 125 or permission of department. Campbell

**480 Prepaid Drug Plans (I, 3)** Institutional relationships involved in the prescribing, dispensing and prepayment of drugs. Problems of interference with pharmaceutical or medical practice arising from different types of prepayment plans. Actual experience, laws and court decisions, abuse and controls. (Lec. 3) Pre: 349 and 453 or equivalent. Campbell

**497, 498 Special Problems (I and II, 1-3 each)** Methods of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Lab. 3-10) Pre: permission of department. Staff

**570 Case Studies in Pharmacy Law (II, 3)**

## Philosophy (PHL)

Chairman: Assistant Professor Wenisch

**101 Logic: The Principles of Reasoning (I or II, 3)** Introduction to logic, presentation of evidence in basic valid argument forms. Emphasis on effective communication by considering such topics as definitions and avoidance of fallacies. (Lec. 3) Staff

**103 Introduction to Philosophy (I or II, 3)** Philosophical problems: how man knows and values; the foundations of morals; the nature of truth; the meaning of human existence. (Lec. 3) Staff

**111 Comparative Religion (I or II, 3)** Introduction to the major religions of the world: comparative study of important ideas and beliefs in both Eastern and Western religions. (Lec. 3) Staff

**117 Social Philosophy (I or II, 3)** A systematic introduction to the philosophical problems about contemporary social relations: models of community, sources of alienation, property and ownership, the meaning of work and technology, human rights and freedom. (Lec. 3) Johnson or Staff

**125 Biblical Thought (I, 3)** Selected portions of the Old and New Testaments with emphasis on their positive contribution to the philosophy of the Jewish and Christian religions. (Lec. 3) Staff

**126 The Development of Christian Thought (II, 3)** History of religious and philosophical ideas, development of the teachings of Christianity. Emphasis to meet needs and interests of students. Historical nature of material suitable for liberal education without regard to student's religious affiliation. (Lec. 3) Staff

**131 Oriental Philosophy (I and II, 3)** Introductory study of the main philosophical and religious ideas in the Orient, with emphasis on Hinduism, Buddhism, Confucianism, and Taoism. (Lec. 3) Kim

**312 Ethics (I or II, 3)** Principles underlying man's moral behavior. The meaning of the good life, duty, right and wrong considered systematically and historically, and in relation to some personal and social problems. Understanding such virtues as temperance, courage, justice, tolerance, prudence; the vices and misconceptions associated with them. (Lec. 3) Staff

**318 The Philosophy of Communism (I or II, 3)** Essence of communism, the intellectual and ideological causes for its existence, and its implications with respect to the moral, religious and political heritage of the West. (Lec. 3) Staff

**319 Philosophy of History (I, 3)** Examination of central philosophical problems raised by the discipline of history: truth and fact in history, historical explanation and understanding, permanence and change in social time. (Lec. 3) Johnson or Staff

**321 History of Ancient Philosophy (I and II, 3)** Survey of major thinkers and schools of thought in Ancient Greece, including selected pre-Socratics, Plato, and Aristotle. (Lec. 3) Staff

**322 History of Medieval Philosophy (I, 3)** Survey of major thinkers and schools of thought in the Middle Ages, including such thinkers as Augustine, Anselm, Aquinas and Occam. (Lec. 3) Staff

**323 History of Modern Philosophy (I, 3)** Survey of major thinkers and schools in modern times, including Descartes, Locke, Berkeley, Hume, Leibnitz, Spinoza, Kant and Hegel. (Lec. 3) Staff

**324 History of Recent Philosophy (II, 3)** Survey of the more important philosophical developments during the last century: realism, pragmatism, existentialism, and certain other philosophical movements. (Lec. 3) Staff

**328 The Philosophy of Religion (I and II, 3)** Nature of religion: Hinduism, Judaism, Christianity, Buddhism,

Mohammedanism; the nature of God, relation of faith to reason, problem of evil and human freedom; relation of religion to social movements (Lec. 3) Staff

**331 East Asian Thought (I or II, 3)** A study of the important philosophical and religious systems of China, Korea and Japan, emphasis on Chinese traditions. (Lec. 3) Pre: 131 or permission of instructor. Kim

**346 Existential Problems in Human Life (I or II, 3)** Discussion of ultimate questions of human existence such as meaning in life, personal commitment, human relations, suffering, despair, hope, freedom, authenticity, self-deception, death, God and immortality. (Lec. 3) Schwarz

**401, 402 Special Problems (I and II, 3 each)** Course may vary from year to year, allowing one or more advanced students to pursue problems of special interest with guidance of instructor in conferences. One or more written papers. (Lec. 3) May be repeated for credit. Pre: 3 credits in philosophy or permission of instructor. Staff

**414 Advanced Studies in Ethics (I or II, 3)** Intensive studies of various issues, theories and aspects in the field of ethics. Texts of leading moralists will be carefully analyzed. Specific subject may change from year to year. (Lec. 3) Pre: 3 credits in philosophy or permission of instructor. In alternate years. Freeman or Staff

**440 Philosophy of Language (I or II, 3)** Language in its relation to the world, cognitive and non-cognitive functions of language and philosophical issues in the area of communication. Works of Wittgenstein, the Logical Positivists, Linguistic Analysts and other contemporary thinkers. (Lec. 3) Pre: 3 credits in philosophy or permission of instructor. Young

**441 Metaphysics (I or II, 3)** Systematic and historical study of the nature of metaphysics, including such topics as: causation, essence, mind, universal categories, pre-suppositions, and their relation to the arts and sciences. (Lec. 3) Pre: 3 credits in philosophy or permission of instructor. Schwarz or Staff

**442 Epistemology (I or II, 3)** Systematic and historical study of ways of knowing; kinds of knowledge; the physical and non-physical sciences. (Lec. 3) Pre: 3 credits in philosophy or permission of instructor. Peterson or Staff

**443 The Nature of an Academic Discipline (I or II, 3)** Essential features of academic disciplines, attempt to view the body of human knowledge as a whole, to assess the relative importance of its parts, purpose of knowledge, task of a university. (Lec. 3) Pre: 3 credits in philosophy or permission of instructor. Wenisch or Staff

**451 Symbolic Logic (I or II, 3)** Selected topics in modern symbolic logic including calculus of propositions, predicate calculus and modal logics. Philosophical and mathematical aspects of the subject. (Lec. 3) Pre: 3 credits in philosophy or permission of instructor. Kowalski

**452 Philosophy of Science (I or II, 3)** Analysis of the nature and structure of scientific thought. Consideration of such issues as: structure and types of scientific explanation, verification and falsification, unity of the sciences. (Lec. 3) Pre: 3 credits in philosophy or permission of instructor. Kowalski

**453 Philosophy of Psychology (II, 3)** Examination of philosophical problems raised by contemporary psychology: predictability in a science of persons, the nature of mental and physical, the relation of theoretical understanding of persons to psychological practice.

(Lec. 3) Pre: one course in philosophy or one course in psychology or permission of instructor. Johnson or Staff.

**455 Aesthetics (I or II, 3)** Systematic problems arising from reflection on the creation and perception of works of art. (Lec. 3) Pre: 3 credits in philosophy or permission of instructor. Hanke or Staff

**502, 503, 504, 505 Tutorial in Philosophy (I and II, 3 each)**

**513 General Axiology (I or II, 3)**

**530 Philosophy of Plato (I or II, 3)**

**531 Philosophy of Aristotle (I or II, 3)**

**542 Advanced Studies in Patristic and Scholastic Philosophy (I or II, 3)**

**551 Philosophical Logic (I or II, 3)**

**555 Philosophy of the Arts and Literature (I or II, 3)**

**562 Advanced Studies in Empiricism and Rationalism (I or II, 3)**

**570 Philosophy of Immanuel Kant (I or II, 3)**

**580 Nineteenth-Century Philosophy (I or II, 3)**

**582 Advanced Studies in Contemporary Philosophy (I or II, 3)**

## Physical Education (PED)

Chairman: Professor Reid

(Physical Education, Health and Recreation)

**105 Beginner Elective Activity I: Individual and Dual Sports (I and II, 1)** Beginning level of instruction for students who have little or no previous experience in the activities offered. Select appropriate letter for activity desired; e.g. 105A Beginning Archery. (Practicum 3) Staff

A—Archery	L—Slmnastics
B—Badminton	M—Tennis
C—Biking & Hiking	N—Track & Field
D—Bowling	O—Judo
E—Canoeing	P—Marksmanship
F—Fencing	S—Activities for Children
G—Golf	T—Handball
H—Gymnastics	W—Weight Training & Conditioning
I—Sailing	Y—Modern Gymnastics
J—Self-Defense	Z—Paddleball
K—Skiing	

**106 Activity II: Team Sports and Group Activities (I and II, 1)** Beginning level of instruction for students who have had little or no previous experience in the activities offered. Select appropriate letter for activity desired. (Practicum 3) Staff

A—Folk & Square Dance	J—Field Hockey
B—Modern Dance Technique	K—Lacrosse
C—Modern Dance Composition	L—Soccer
D—Classical Ballet	M—Softball
H—Basketball	N—Volleyball
I—Flag Football	P—Carpentry

The above activities may be offered in combination or as a single activity for the entire semester.

**109, 110 Competition in Intercollegiate Athletics (I and II, 1 each)** Freshman year. The student must be listed on the coach's roster to receive credit. (Practicum 4 minimum) S/U credit. Staff

**111, 112 Competition in Intercollegiate Athletics (I and II, 3 each)** Sophomore year. The student must be listed on the coach's roster to receive credit. (Practicum 4 minimum) S/U credit. Staff

**121 Soccer and Physical Conditioning (I, 1)** Theory and techniques of soccer and physical conditioning. (Lab. 3) Staff

**125 Tumbling and Stunts (I, 1)** Techniques of performing and teaching elementary through advanced tumbling, stunts and trampolining. (Lab. 3) Staff

**126 Basic Gymnastics (II, 1)** Fundamentals of apparatus, with emphasis on nomenclature, safety, skill and teaching progressions. (Lab. 3) Staff

**130 Beginning Swimming (I and II, 1)** Beginning level of instruction for students who have little or no previous experience. (Practicum 3) Staff

**132 Field Hockey/Volleyball (II, 1)** (Practicum 3) Staff

**133 Volleyball/Track and Field (I and II, 1)** (Practicum 3) Staff

**205 Intermediate Elective, Activity I (I and II, 1)** Intermediate level of instruction for those students who have acquired the basic skills and have performing experience in the activity. All activities listed under 105. (Practicum 3) Staff

**206 Intermediate Elective, Activity II (I and II, 1)** Intermediate level of instruction for those students who have acquired the basic skills and have performing experience in the activity. All activities listed under 106. (Practicum 3) Staff

**230 Intermediate Swimming (I and II, 1)** Intermediate level of instruction for those students who have acquired the basic skills and have performing experience in swimming. (Practicum 3) Staff

**241 Golf and Wrestling (I, 1)** Theory and technique of golf and wrestling. (Lab. 3) Staff

**242 Badminton and Tennis (II, 1)** Theory and techniques of badminton and tennis. (Lab. 3) Staff

**243 Prevention and Care of Athletic Injuries and First Aid (I, 3)** Conditioning, use of physiotherapy equipment, massaging, taping and bandaging technique. Latest American Red Cross procedures with the opportunity to receive standard certification. (Lec. 2, Lab. 2) Intended for physical education majors. Staff

**247 Athletic Officiating (I, 2)** Theory, practice and techniques of officiating football and basketball. Practical experience in intramural athletics. (Lec. 2) Staff

**248 Athletic Officiating (II, 2)** Theory, practice and techniques of officiating volleyball, soccer and baseball. (Lec. 2) Staff

**250 Flag Football/Dance Techniques (I and II, 1)** (Practicum 3) Staff

**251 Basketball/Golf (I and II, 1)** (Practicum 3) Staff

**270 Introduction to the History and Philosophy of Physical Education (II, 3)** Historical development of physical education as an integral part of education and as a profession, ancient times to the present. Emphasis on development of educational philosophies within physical education and basic to current interpretations of the theory and practice of physical education. (Lec. 3) Staff



- 275 Physical Fitness Appraisal and Guidance (I, 3)** Principles of exercise, components of cardio-respiratory fitness, weight and tension control. Extension testing, assessment of individual interests and needs. Development of exercise program to achieve individual goals with subsequent re-evaluation. (Lec. 2, Lab. 2) Staff
- 285 Principles of Teaching Physical Education (II, 2)** Principles of teaching elementary and secondary school physical education as an integral part of total education. Basic concepts for forming general principles to guide the effective planning of physical education programs. (Lec. 2) Staff
- 295 Physical Education in Elementary Schools (II, 3)** Techniques used in conducting a program of physical education for elementary school children. Types of activities found in the basic program and progressions in planning for various age groups will be stressed. (Lec. 2, Lab. 2) Staff
- 309, 310 Intercollegiate Athletics, Junior Year (I and II, 1 each)** The student must be listed on the coach's roster to receive credit. (Practicum 4 minimum) *S/U* credit. Staff
- 311, 312 Intercollegiate Athletics, Senior Year (I and II, 1 each)** The student must be listed on the coach's roster to receive credit. (Practicum 4 minimum) *S/U* credit. Staff
- 314 Methods of Teaching Physical Education (I and II, 3)** Comprehensive review of the methods and materials essential in teaching physical education with emphasis on the application of interdisciplinary approaches and learning theories. (Lec. 3) Staff
- 315 Assisting in Physical Education (I and II, 1)** Each student must include one unit of assisting in the department activity program (105, 106, 205, 206). Course may be repeated but in a different activity or level. (Lab. 3) Pre: 314 or permission of department. Staff
- 317 Field Experience (I and II, 1)** Students assist in one of the following: community agency, public or private schools program, summer camp or recreation program, special education program. May be repeated but with different agency. (Lab. 3) Pre: 314 or permission of department. Staff
- 319, 320 Movement for the Actor**  
See Theatre 319, 320.
- 324 Rhythmic Analysis and Accompaniment (II, 2)** Special emphasis on rhythmic and kinesthetic factors in movement. Use of various types of instruments for dance accompaniment with practical experience in the accompaniment of dance. (Lec. 1, Lab. 2) Staff
- 330 Life Saving (I or II, 1) (Practicum 3)** Staff
- 331 Theory and Teaching of Dance (II, 2)** Methods, materials and techniques used in teaching dance. Theory and practical experience in developing the movement vocabulary. Emphasis on teaching progression, lesson planning and dance demonstration. (Lec. 1, Lab. 2) Staff
- 335 Synchronized Swimming (I or II, 1) (Practicum 3)** Staff
- 339 Advanced Gymnastics (I, 1)** Continuation of 126; employing more advanced techniques with positive emphasis on breakdown of complex movements. (Lab. 3) Staff
- 340 Water Safety Instructor (I or II, 1) (Practicum 3)** Staff
- 341, 342 Techniques of Officiating (I and II, 3 each)** Presentation of current methods and techniques for officiating selected individual, dual, and team sports. Provides necessary training and practical experience for students to become nationally rated officials. (Lec. 2, Lab. 2) Staff
- 343 Advanced Athletic Training (I and II, 3)** Specific problems relative to medical aspects of athletic training. Includes ethics of dealing with injured athletes: doctor-trainer-coach relationships; emergency examination techniques; treatment modalities and techniques; athletic nutrition. (Lec. 2, Lab. 2) Pre: 243 or permission of department. Staff
- 344, 345 Field Experience in Athletic Training I and II (I and II, 3 each)** Laboratory participation under training room conditions involving specific techniques in the prevention, protection and emergency care of athletes participating in intercollegiate and intramural athletics. Supervised field practicum 150 hours. (Lec. 1, Lab. 10) Pre: for 344-243 or permission of department. Pre: for 345-343, 344 or permission of department. Staff
- 346 (or OCE 346) Skin and Scuba Diving, Beginners (I or II, 1) (Practicum 3)** Staff
- 347 (or OCE 347) Skin and Scuba Diving, Advanced (I or II, 1) (Practicum 3)** Staff
- 348 Diving (I or II, 1) (Practicum 3)** Staff
- 351 Understanding Motor-development of the Elementary School Child (I, 3)** Associated physical factors involved in teaching skills to elementary school children. Emphasis on types and sequence of activities along with teaching and learning facts appropriate to skill level. (Lec. 3) Staff
- 352 Movement Education in Elementary Physical Education (II, 3)** Specialized movement in both graded and adaptive activities from kindergarten to upper elementary age. Particular attention to analysis of physical development in specific skills and space orientation. (Lec. 3) Pre: ZOO 121 and 242, or permission of department. Staff
- 354 Curriculum Designs in Elementary Physical Education (II, 3)** Curriculum planning for the primary, intermediate and middle school with attention to the organization and implementation of elementary physical education programs. (Lec. 3) Pre: permission of department. Staff
- 360 Folk and Square Dance (II, 1)** Presentation of basic rhythms, folk and square dance. Techniques of teaching dance and experience in calling included. (Lab. 3) Staff
- 362 Coaching of Track and Field (II, 2)** Theory, techniques and practice in coaching of track and field. (Lec. 2, Lab. 2) Staff
- 363 Principles of Athletic Coaching (I, 3)** Principles of exercise physiology, leadership, and psychology applied to athletic coaching. Includes material on administration of athletics. (Lec. 3) Staff
- 364 Coaching of Baseball (I, 2)** Theory, techniques and practice in coaching baseball. (Lec. 2, Lab. 2) Staff
- 369 Tests and Measurements (I and II, 3)** The place of testing in the physical education curriculum. Includes analysis of data, marking systems and overview of existing tests and measures. (Lec. 3) Staff
- 370 Kinesiology (I or II, 3)** Human motion based on anatomical, physiological and mechanical principles.

Emphasis on application of these principles to fundamental movements and physical education activities. (Lec. 3) Pre: ZOO 121. Staff

**374 Audiovisual Aids (II, 2)** Values and uses of audiovisual materials in the teaching-learning situation. Practice in operating equipment and preparing various teaching aids is included. (Lec. 1, Lab. 2) Staff

**380 Organization and Administration of Physical Education (I and II, 3)** Techniques, methods and systems used in organizing and administering physical education programs in public and private institutions. (Lec. 3) Staff

**384 Coaching of Football (I, 2)** Theory, techniques and practice in coaching football. (Lec. 2, Lab. 2) Staff

**386 Coaching of Basketball (I, 2)** Theory, techniques and practice in coaching basketball. (Lec. 2, Lab. 2) Staff

**391 Directed Study (I and II, 1-3)** Independent study. Development of an approved project supervised by a member of the department faculty. Pre: junior standing, permission of department and instructor. Staff

**410 Corrective and Adapted Physical Education (I, 3)** Evaluation and planning of programs in physical education adapted to needs of atypical individuals. Application of anatomical and mechanical principles in detection and correction of faulty development and body mechanics. Emphasis on relationship to the medical field. (Lec. 3) Pre: senior standing or permission of department. Staff

**495 Directed Study (I and II, 3)** Honors thesis or equivalent project. Student determines problem and develops plan of study with faculty guidance. Project may be completed in one to two semesters, maximum three credits. Pre: admission to the department honors program. Staff

Note: Student teaching includes practicum in both elementary and secondary schools under the supervision of the department staff. See EDC 484 and 485.

**510 Current Problems in Physical Education, Health, and Recreation (I, 3)**

**520 Curriculum Construction in Physical Education (II, 3)**

**530 Research Methods and Design in Health and Physical Education (I, 3)**

**540 Principles of Recreation Leadership (II, 3)**

**543 Outdoor Recreation and Education (I or II, 3)**

**550 Administration of Physical Education (II, 3)**

**560 Seminar in Health, Physical Education and Recreation (I, 3)**

**570 Major Health Problems and Curriculum Planning in Health Education (II, 3)**

**575 Perceptual-motor Education (I, 3)**

**580 Physical Education for the Mentally Retarded (I, 3)**

**581 Psychological Aspects of Physical Activity (II, 3)**

**585 Physical Education for the Atypical Child (I, 3)**

**591 Special Problems (I or II, 3)**

## Physics (PHY)

Chairman: Professor Pickart

**102 Fundamental Physics (I, 3)** Fundamental principles of physics required and primarily for students of nursing. Non-mathematical qualitative course. (Lec. 2, Lab. 2)

Will not serve as a basis for advanced study in physics. Required by College of Nursing. Stone

**109 Introduction to Physics (I and II, 4)** Appreciation of the physical environment and an introduction to the principles and theories of contemporary physics. (Lec. 3, Lab. 2) Not open to students who have passed either 111, 112, 213, or 214. Dietz and Staff

**111, 112 General Physics (I and II, 4 each)** 111: Mechanics, heat and sound. 112: Optics, electricity, magnetism and modern physics. Non-calculus presentation of fundamental physics. Suitable for prospective teachers, pre-medical and pre-dental students. (Lec. 3, Lab. 2) Malik and Kaufman

**120 Physics and the Energy Crisis (II, 3)** Qualitative treatment of the physical principles and laws relating to energy. Limitations on energy conversion processes; application to current and projected energy sources. (Lec. 3) Intended for non-science majors; not open to those who have passed 111, 112, 213, or 214. Pickart

**213, 214 Elementary Physics (I and II, 3 each)** 213: Mechanics and thermodynamics. 214: Electricity, magnetism and wave phenomena. (Lec. 3) For students planning to major in one of the sciences. It is recommended that MTH 142 and 243 be taken concurrently. Concurrent registration in 285, 286 is required. Kirwan and Willis

**223 Introduction to Acoustics and Optics (I and II, 3)** Intended primarily for students in the College of Engineering. Fundamentals of acoustical and optical phenomena, systems and instruments. (Lec. 3) Pre: MCE 162 and 263 to be taken concurrently. Hart

**285, 286 Physics Laboratory (I and II, 1 each)** Selected groups of laboratory exercises applying to 213 and 214. (Lab. 3) Concurrent registration in 213, 214 is required. Staff

**322 Mechanics (I, 3)** Introduction to Newtonian statics and dynamics using vector analysis; particle motion, Lagrange's equations; rigid body motion. Application to various topics in physical mechanics. (Lec. 3) Pre: 214, or 112 if accompanied by MTH 141. Staff

**331 Electricity and Magnetism (II, 3)** Electrostatic fields and dielectric materials; magnetic fields, magnetic induction and magnetic materials; introduction to Maxwell's equations. (Lec. 3) Pre: 214, or 112 if accompanied by MTH 141. Staff

**334 Optics (II, 3)** Geometrical and physical optics; thick lens optics, interference, diffraction, polarization. (Lec. 3) Pre: 112 or 214. Stone

**340 Introduction to Modern Physics (I and II, 3)** Origin, development and current status of important concepts and theories. Conduction of electricity through gases, properties of electrons, thermionic and photoelectric effects, elementary quantum theory, atomic structure and atomic spectra, isotopes and nuclear physics. (Lec. 3) Pre: 112 or 214. Staff

**341 Modern Physics (I and II, 3)** Kinetic theory, special relativity, wave and particle properties of matter and radiation, atomic structure and spectra. (Lec. 3) Pre: 214 or 223. Staff

**381, 382 Advanced Laboratory Physics (I and II, 3 each)** Experiments in electrical measurements and electronics. 381: Classical experiments such as the Millikan Oil Drop and the measurement of  $e/m$ . Introduction to careful handling and reduction of data. Special attention to pre-

cision of measurements and accuracy of results obtained. **382: Fundamentals of semi-conductor devices.** Attention to basic electronic circuits, including amplifiers, integrated circuits and non-linear devices associated with digital electronics. (Lab. 6) Pre: 112 or 214. Nunes and Cuomo

**401, 402 Seminar in Physics (I and II, 1 each)** Preparation and presentation of papers on selected topics in physics. (Lec. 1) Required of all graduate students in physics and recommended for all senior physics majors. Staff

**406 Introduction to Atmospheric Physics (I, 3)** Application of basic classical physics to the study of atmospheric processes. (Lec. 3) Pre: 112 or 214. Penhallow

**420 Introduction to Thermodynamics and Statistical Mechanics (II, 3)** Emphasis on laws of thermodynamics and properties of thermodynamic systems, kinetic theory of gases, molecular velocity distributions, transport phenomena, Maxwell-Boltzmann statistics. (Lec. 3) Pre: 112 or 214, MTH 141 and 142. Northby

**425 Acoustics (I, 3)** Mathematical theory of vibrating systems; harmonic wave motion. Topics include: transmission and absorption of sound waves, microphones, psychoacoustics, underwater acoustics and ultrasonics. (Lec. 3) Pre: permission of department. Cuomo

**451 Atomic and Nuclear Physics (I, 3)** Special relativity, black body radiation, photo effect, electron waves, Compton scattering, X-rays, atomic and nuclear magnetism, angular momentum and introductory Schrodinger wave mechanics. (Lec. 3) Pre: differential and integral calculus and 340, or permission of department. Staff

**452 Nuclear Physics (II, 3)** Nuclear stability and binding energies, semi-empirical mass formula, radioactive decay, nuclear two-body problem including ground state of the deuteron and neutron-proton scattering, methods of acceleration and detection of nuclear particles, theory of the compound nucleus and low energy nuclear reactions with emphasis on the interaction of neutrons with nuclei, liquid drop model of nuclear fission, chain reactors, survey of high energy nuclear physics and meson theory of nuclear forces. (Lec. 3) Pre: 451 or permission of instructor. Staff

**455 Introduction to Solid State Physics (I, 3)** Structural properties of crystal lattices; thermal, electrical and magnetic properties of solids; free electron theory of metals, band theory of solids, semi-conductors, imperfections in crystals. (Lec. 3) Pre: permission of department. Staff

**483, 484 Laboratory and Research Problems in Physics (I and II, 3 each)** Instruments and methods of research in experimental physics. Experiments drawn from various fields such as spectroscopy, optics, astronomy, nuclear physics, acoustics, thermodynamics, ultrasonics, mechanics, etc. Develops initiative by independent performance. Special attention to data analysis and preparation of reports. (Lec. 1, Lab. 6) Cuomo and Nunes

**491, 492 Special Problems (I and II, 1-6 each)** Advanced work under the supervision of a member of the staff and arranged to suit the individual requirements of the student. (Lec. or Lab. according to nature of problem) Credit not to exceed a total of 12. Pre: permission of department. Staff

**510, 511 Mathematical Methods of Physics (I and II, 3 each)**

**520 Classical Dynamical Theory I (I, 3)**

**522 Topics in the Physics of the Earth (II, 3)**

**525 Statistical Physics (I, 3)**

**530 Electromagnetic Theory I (I, 3)**

**531 Electromagnetic Theory II (I, 3)**

**550 Physical Acoustics (I, 3)**

**560 Introduction to Neutron Physics (I, 3)**

**565 Introduction to Liquid State Physics (II, 3)**

**570 Quantum Mechanics I (II, 3)**

**571 Quantum Mechanics II (I, 3)**

**585 Acoustic Measurements (II, 1-2)**

**590, 591 Special Problems (I and II, 1-6 each)**

## Plant and Soil Science (PLS)

Chairman: Professor Larmie

**101 Home Grounds (I and II, 3)** Principles and practices in the culture and maintenance of flowers, lawns, shrubs, trees, fruits and vegetables, including plant propagation and labor-saving suggestions for the home property. (Lec. 3) Sheehan

**104 Plants, Man, and the Environment (II, 3)** Plants in their economic, esthetic and survival relationship to man and other animals. Basic information on the ecology, production, improvement, distribution and use of economic plants. (Lec. 3) Gough

**105 Plants, Man, and the Environment Practicum (II, 1)** Practical aspects of the culture ecology, improvement and use of plants in the environment of man. (Lab. 2) Pre: concurrent registration in 104 or permission of instructor. Gough

**212 Soils (I and II, 3)** Physical, biological and chemical properties of soils and their practical application to plant science. Introduction to soil genesis, classification and productivity. Soil-man interactions. (Lec. 3) Sheehan

**213 Soils Laboratory (I and II, 1)** Mechanical analysis, mineralogical identification, soil organic matter, bulk density, cation exchange, soil profile, soil water, weathering of minerals, soil acidity and lime requirement. Independent study. (Lab. 2) Pre: concurrent registration with 212 or permission of instructor. Sheehan

**233 Floral Art (I, 3)** Theory and practice in the art of flower and plant arrangement for the home, show and special occasions. History, elements and principles of design and color. (Lec. 1, Studio 4) Larmie

**234 Flower Garden Management and Floral Design (II, 3)** Culture and use of annuals and perennials in the home flower garden. Theory and practice of floral arrangement and garden layout and design with emphasis on shows and special uses. (Lec. 1, Studio 4) Larmie

**242 Appreciation of Landscape Design (I and II, 3)** Introduction to theory and principles of landscape design as applied to the home. Property selection and climate control. Modern methods of property planning including the individual components of the completed landscape plan. (Lec. 3) Hindle and Wilson

**306 Nursery Principles and Practice (I, 3)** Principles of woody plant production with emphasis on cultural practices. Growing, pruning, transplanting; including methods of digging, grading, storing, and marketing of plants. (Lec. 2, Lab. 2) McGuire

- 311 Fruit Science (I, 3)** Principles of fruit production with emphasis on home gardens. Topics include propagation, planting, soils, fertilization, cultural practices, pruning and storage of tree and small fruits and dwarf or semidwarf stocks. (Lec. 3) Gough
- 324 Vegetable Science (II, 3)** Origin, culture, cultivars, fertility management, harvest, preservation and quality of vegetables for home gardens and small roadside stand operations. (Lec. 2, Lab. 2) Gough
- 331 Floriculture and Greenhouse Management (I, 3)** The greenhouse environment and its relation to the culture of specific plants. Principles governing the production and culture of plants under controlled temperature, humidity, light and modified atmospheres. Greenhouse construction and environmental control. (Lec. 3) Shaw
- 341 Lawn Management (I, 3)** Fundamental aspects of turfgrass science including identification, propagation, fertilization, pest control and other soil-plant relationships. (Lec. 2, Lab. 2) Duff
- 343 Techniques in Landscape Design (I, 3)** Landscape concepts in graphic form. Emphasis on drawing landscape plans for residential property, arrangement of unit areas, ornamental plants suitable for specific landscape situations. (Lec. 1, Studio 4) Dunnington
- 352 Herbaceous Plants (II, 3)** Identification, growth characteristics, culture and use of annuals, biennials, and perennials for foliage and flowers in gardens and as house plants. (Lec. 2, Lab. 2) Shaw
- 353 Fundamentals of Ornamental Plant Classification (I, 3)** Identification and description under fall conditions; classification and adaptation of the important trees and shrubs including broadleaf evergreens and their value in ornamental plantings. (Lec. 1, Lab. 4) Pre: BIO 101 or BOT 111. Hindle
- 382 World Crops (II, 3)** Classification, origin and uses of crop plants. Influence of climate, soils, and cultural factors on the production of crops used by man. Ecological distribution of important world crops. (Lec. 3) Pre: 104 or BOT 111 or BIO 101. Wakefield
- 401, 402 Plant and Soil Science Seminar (I and II, 1 each)** Presentation and discussion of current topics of concern to producers and consumers of plants and plant products including soil-plant relationships. (Lec. 1) Pre: senior standing. Staff
- 405 Propagation of Plant Materials (II, 3)** Theoretical and practical study of propagation including grafting, budding, cuttage and seedage. (Lec. 2, Lab. 2) Pre: 104, BOT 111 or BIO 101. McGuire
- 411 Soil Chemistry**  
See Food Science and Technology, Nutrition and Diagnostics 411.
- 412 Soil Biochemistry**  
See Food Science and Technology, Nutrition and Diagnostics 412.
- 420 Crop Ecology (I, 3)** Environmental factors affecting growth of crop plants. Influence of management, climate and soil factors on energy relationships, interplant competition, crop adaptation, persistence and productivity. Student project required. (Lec. 3) Pre: 104, BIO 101 or BOT 111. Wakefield
- 432 Commercial Floriculture (II, 3)** Growing commercial greenhouse crops including production, timing and marketing. Greenhouse project. (Lec. 2, Lab. 2) Pre: 104 and 331 and junior standing. Shaw
- 442 Professional Turfgrass Management (II, 3)** Establishment and maintenance practices for specialty turfgrass areas such as golf courses, lawn tennis courts, bowling greens, athletic fields, public parks, industrial and institutional grounds, airports and roadsides. Design and construction specifications, and construction and maintenance budgets. (Lec. 3) Pre: 341 or equivalent. Duff
- 444 Environmental Aspects of Landscape Design (II, 3)** Relationships between principles of landscape design and elements of the environment that contribute to development of ecologically based plans. Residential areas used. Client conferences and specifications for woody ornamental plants. (Lec. 1, Studio 4) Pre: 343 and 353 or permission of instructor. Dunnington
- 446 Landscape Construction (II, 3)** The study of soil adjustment; grading, cut and fill, reshaping of earth surfaces. A comprehensive survey of construction materials; asphalt, concrete, wood and masonry products and their uses in landscape construction. (Lec. 2, Studio 2) Pre: 343 or permission of instructor. Dunnington
- 450 Soil Conservation and Land Use (I, 3)** Application of soil survey interpretation as a tool in soil and water conservation and land use planning. Implications of soil properties and problems for land use considered with emphasis on urbanizing situations. (Lec. 2, Lab. 2) Pre: 212 or permission of instructor. Wright
- 454 Identification of Basic Ornamental Plants (II, 3)** Identification and description under winter and spring conditions, classification and adaptation of the coniferous evergreens, vines and ground covers and their value in ornamental plantings. (Lec. 1, Lab. 4) Pre: BIO 101 or BOT 111. Hindle
- 461 Weed Science (II, 3)** Ecological and cultural aspects of weed problems, physiology of herbicide action, selected problem areas in weed control and plant identification. (Lec. 2, Lab. 2) Pre: 212, organic chemistry, plant physiology desirable. Hull
- 468 Soil Genesis and Classification (I, 4)** Genesis, morphology, classification, and geographic distribution of soils. Broad principles governing soil formation. Laboratory includes field trips to observe different types of soils. (Lec. 3, Lab. 2) Pre: 212. Wright
- 472 Plant Improvement (II, 3)** Breeding of economic crops with major emphasis on vegetables, ornamentals, flowers, turfgrasses. Objectives and techniques of selection, pure line, hybridization breeding; quantitative variability; seed production; application of genetic principles to breeding problems. (Lec. 2, Lab. 2) Pre: ASC 352 or BOT 352. In alternate years, next offered 1978-79. Staff
- 475 Plant Nutrition and Soil Fertility (II, 4)** The plant-soil system. Availability and mobility of mineral nutrients in soil and their uptake, distribution and function in plants. Plant energy relations and organic nutrition. Laboratory: hydroponic plant culture, ion interaction, radioisotopes, and deficiency symptoms. (Lec. 3, Lab. 2) Pre: 212, BOT 111 and organic chemistry. Hull
- 491, 492 Special Projects and Independent Study (I and II, 1-3 each)** Soils, plant nutrition, propagation, growth and development and garden design and site planning.

Laboratory, library, studio, greenhouse, storage and field facilities. (Lab. 3-9) Pre: permission of department. Staff

**500 Growth and Development of Economic Plants** (II, 3)

**501 to 504 Graduate Seminar in Plant and Soil Science** (I and II, 1 each)

**568 Recent Advances in Soil Science** (II, 3)

**573 Post-harvest Physiology of Economic Crops** (I, 3)

**576 Physiology of Plant Productivity** (I, 3)

**591, 592 Non-thesis Research in Plant and Soil Science** (I and II, 1-3 each)

(Lec. 2, Lab. 2) Pre: ZOO 111, BOT 332. In alternate years, next offered 1978-79. Englander

**511 The Nature of Plant Disease** (I, 3)

**561 Plant Virology** (I, 3)

**591, 592 Research Problems** (I and II, 1-3 each)

Note: For other related courses see BOT 332, 432, 536, 540, and ZOO 381, 482, 581, 586.

## Plant Pathology-Entomology (PLP)

Chairman: Professor Traxler

**200 Introduction to Plant Protection** (I, 3) Basic study of weeds, insects and disease agents, and the problems they cause. Recognition of important plant pests and application of integrated cultural, chemical and biological pest management procedures. (Lec. 3) Pre: BIO 101 or BOT 111. Englander

**371 Insects of Turfgrasses, Trees and Ornamental Shrubs** (I, 3) Identity, injury, life cycle and methods of control of the principal insects attacking these groups of plants. (Lec. 2, Lab. 2) In alternate years, next offered 1978-79. Kerr

**377 (or CVE 377) Biological Aspects of Water Quality** (I, 2) Basic concepts of water quality and use. Lectures, discussions, case histories of the causes of pollution. Methodology for qualitative and quantitative determination and toxicity bioassay. Water quality requirements, monitoring, abatement. (Lec. 2, Lab. TBA) Pre: permission of instructor. Staff from Civil and Environmental Engineering and Plant Pathology-Entomology.

**381 General Entomology**

See Zoology 381.

**391, 392 Special Projects** (I and II, 1-3 each) Special work to meet individual needs of students in various fields of plant pathology and entomology, nematology, virology, agricultural or industrial mycology, biological aspects of water quality, biodegradation and related subjects. (Lec. and/or Lab. according to nature of the project) Pre: permission of department. Staff

**422 (or MIC 422) Industrial Microbiology** (II, 3) Application of microbial systems to industrial operations. Culture handling, fermentation systems, equipment, products and the legal and economic aspects of the processes. Laboratory exercises demonstrate fundamental types of operations. (Lec. 2, Lab. 3) Pre: MIC 401 and BCP 311. Traxler

**442 Diseases of Turfgrasses, Trees and Ornamental Shrubs** (I, 3) Disease diagnosis, epidemiology, and control measures pertinent to these categories of plants. (Lec. 3) Pre: BOT 332 or equivalent or permission of instructor. Jackson

**443 Plant Disease Laboratory** (I, 1) Laboratory and field diagnosis of turf diseases and diseases of trees and ornamental shrubs. (Lab. 2) Must be taken concurrently with 442. Jackson

**482 Nematology** (II, 3) Morphology, taxonomy, bionomics and physiology of plant parasitic, soil, and aquatic nematodes. Emphasis on host-parasite relationships, laboratory techniques and principles of control.

## Political Science (PSC)

Chairman: Professor Leduc

**113 American Politics** (I and II, 3) Basic principles of the government of the United States: constitutionalism, separation of powers, federalism, civil liberties; politics; legislative executive and judicial organization; functions of government. (Lec. 3) Warren and Staff

**116 International Politics** (II, 3) Nature of the state system, foundations of national power, means of exercising power in the interaction of states. Current international problems. (Lec. 3) Warren and Staff

**201 Introduction to Comparative Politics** (I, 3) Trends in comparison of government systems, and of indices for political development. Illustrations and comparisons from the American, European and developing nations. (Lec. 3) Milburn

**221 State and Local Government** (I, 3) Survey of institutional framework of American state and local governments. Consideration of current events and controversies at state and local level. (Lec. 3) Pre: 113. Leduc

**288 The American Legal System** (II, 3) Political and social analysis of the American legal system, particularly at trial court and street levels, and roles of participants in that system, with observation of local courts. (Lec. 3) Pre: 113. Rothstein

**301 Comparative European Politics** (I and II, 3) Concepts and methodologies relative to the study of comparative politics. Structural-functional approach to survey of the formal and informal features of the political systems of Great Britain, France, Germany, U.S.S.R., one other country. (Lec. 3) Milburn

**321 Politics and Problems of Israel** (II, 3) Analysis of the evolution of political institutions and the dynamics of public policy in Israel. Emphasis on contemporary political problems. (Lec. 3) Pre: 113 or 116 or permission of instructor. Zucker

**341 Political Theory, Plato to Machiavelli** (I, 3) Major political philosophies from Plato to Machiavelli and their influence on such key concepts as justice, equality and political obligation. (Lec. 3) Killilea

**342 Political Theory, Modern and Contemporary** (II, 3) Continuation of 341, Machiavelli to Marx and Freud. (Lec. 3) Killilea

**343 Revolutionary Thought** (II, 3) Analysis of revolutionary thought from Jewish millenarianism to Latin American and Asian Communism. (Lec. 3) Pre: 113. Rothstein

**353 Scope and Methods of Political Science** (I, 3) Development of political science as a discipline with explanation and analysis of fundamental political concepts and theories. (Lec. 3) Pre: 113 and 116. Leduc

**365 Political Parties and Practical Politics (I, 3)** Analysis of the American party process with some attention to comparative party systems. History, organization, functions, methods, problems, and prospects for reform. (Lec. 3) Pre: 113. Zucker

**368 Public Opinion and Propaganda (I, 3)** Examination of public opinion and formative influences upon it; analysis of propaganda techniques. Role and implications of public opinion and propaganda in governmental processes. (Lec. 3) Pre: 113. Tyler

**369 Legislative Process and Public Policy (II, 3)** Analysis of American legislative bodies, particularly Congress, some attention to comparative legislatures. Structure, organization, functions of Congress analyzed in relation to its role in determining public policy. (Lec. 3) Pre: 113. Zucker

**375, 376 Field Experience in Practical Politics (I, II, 1-3 each)** Supervised experience in local, state and national units of government, political organizations, private, and public community agencies. Students must have placement description, faculty supervisor and outline of academic component of experience prior to registration. *S/U credit. 1-3 credits per semester; maximum of 6 credits. Pre: 12 credits in the social sciences including six credits in political science; permission of instructor. Staff*

**407 The Soviet Union: Politics and Society (II, 3)** Politics and society of the Soviet system including the role of the Communist party, economic planning, ethnic minorities, the intelligentsia, the "new Soviet man." (Lec. 3) Pre: 116 or Russian history course recommended. In alternate years, next offered 1979-80. Staff

**408 African Governments and Politics (I, 3)** Political developments in the new nations of sub-Saharan Africa. Main stress is functional: role of parties as integrative forces, democratic centralism, one party states, African political thought and common developmental problems. (Lec. 3) Pre: 113 and 116. Milburn

**420 Dissent, Non-Violence and Change (I, 3)** Political dissent focusing on philosophies and life experiences of those who, without recourse to violence, work for fundamental changes within their societies and internationally. (Lec. 3) Pre: 113 or 116. Stein

**422 Comparative American State Politics (II, 3)** Comparative study of American state politics and government, focusing on public policy formation and execution. Emphasis on contemporary issues. (Lec. 3) Pre: 221, EST 408 or their equivalent or permission of instructor. Wirth and Leduc

**431 International Relations (I, 3)** Analysis of the various theories of international relations and study of the major forces and events shaping the politics of the Great Powers. (Lec. 3) Pre: 116. Warren

**432 International Government (II, 3)** General development of international government, with particular attention to structure, methods, and operations of the League of Nations, the United Nations, and related agencies. Problems of security, conflict resolution, and social and economic issues. (Lec. 3) Pre: 116. Warren

**434 American Foreign Policy (II, 3)** Analysis of the institutions, techniques and instruments of policymaking and the execution of foreign policy. (Lec. 3) Pre: 116. Staff

**443 Twentieth-Century Political Theory (I, 3)** Important political theorists of this century, particularly as they

interpret the basis of political obligation and weigh the question of violent political change. (Lec. 3) Pre: permission of department. Killilea

**455, 456 Directed Study or Research (I and II, 3 each)** Special work arranged to meet the needs of individual students who desire advanced work in political science. (Lec. 3) Pre: permission of department. Staff

**460 Urban Politics (I and II, 3)** Contemporary urban politics and policy formation. Political behavior, decision-making, and administration examined in relationship to the crisis of the cities, the changing metropolis, and the growth of the megalopolis. (Lec. 3) Pre: 113. Wood and Zucker

**461 The American Presidency (I, 3)** Presidential leadership and decision-making, with emphasis on growth in power and prestige of the presidency, exercise of presidential influence in conduct of government, and presidential initiative in formulating and developing national policies and priorities. (Lec. 3) Pre: 113. Wood

**464 International Law (II, 3)** Fundamental aspects of international law: sources, treaties, international courts, recognition, territoriality, law of the sea, and conflict resolution. Case studies of international law in political decision-making. (Lec. 3) Pre: 116. Gamble

**466 Urban Problems (II, 3)** Contemporary and emerging problems of urban affairs. Discussion, reading and assignments on the interaction among urban change, development of social institutions, and formation of public policy. (Lec. 3) Pre: 113. Wood and Zucker

**470 Problems and Principles in the American Political Process (II, 3)** Theories and problems of contemporary politics with emphasis on power and policy formulation in the American political process. (Lec. 3) Pre: 113, 116. Zucker

**471 Constitutional Law (I, 3)** The Supreme Court as a political institution in American democracy. Analysis of leading constitutional decisions exploring: adaptation of governmental powers to changed conditions of society, development and function of judicial review; and dynamics of decision-making in the Supreme Court. (Lec. 3) Pre: 113. Wood

**472 Civil Liberties (II, 3)** The problem of human freedom examined in the context of the fundamental rights guaranteed to individuals by the American constitution. Emphasis on religious liberty, freedom of expression, racial equality, fair criminal procedures, and the protection of personality and privacy. (Lec. 3) Pre: 113. Wood

**473 Administrative Law (I, 3)** Legal aspects of interaction between government agencies, individuals, and public interest. Systematic analysis of leading cases, evaluating the courts as an instrument for protecting the individual's rights in administrative action. (Lec. 3) Pre: 113. Rothstein

**474 Criminal Justice System (II, 3)** The American system of criminal justice, general processing of cases, principal actors, study of theories of criminal law, and pre-trial detention and sentencing. (Lec. 3) Pre: 113. Rothstein

**481, 482 Political Science Seminar (I and II, 3 each)** Intensive studies in various important fields in political science. Class discussion of assigned readings and student reports. Emphasis on independent research. (Lec. 3) Pre: 6 credits in political science beyond 113, 116. Staff

- 483 Political Process: Policy Formulation and Execution** (I or II, 3) Inter-relationships of policy development and administration with particular attention devoted to participants in the process. Specific activities of the executive branch and government policies that affect the structure, composition, and function of the bureaucracy. (Lec. 3) Pre: permission of instructor. Staff
- 486 Intentional Communities** (II, 3) Concepts and forms of community emerging in response to changes in political and socio-economic conditions and consciousness. Emphasis on smaller units, e.g., intentional communities, cooperatives and communes, voluntary associations. (Lec. 3) Pre: 113, 116 and one 300-level political science course. Stein
- 491 Principles of Public Administration** (I, 3) Principles of public administration, structure and organization, financial management, administrative responsibility and the relation between the administration and other branches of government. (Lec. 3) Pre: 113. Staff
- 495 Comparative Urban Politics** (I, 3) Analysis of urban processes and policy formation affecting urbanization in the United States, Europe and selected developing nations. (Lec. 3) Pre: 113 or 116 or permission of department. Milburn
- 498 Public Administration and Policy Formulation** (II, 3) Identification and analysis of factors which affect formulation of public policy, including roles of the executive, the bureaucracy, the legislature, and special interest groups. Evolution of the policy process, particularly at the state and local levels of government. (Lec. 3) Pre: 491 or permission of department. Staff
- 501 Administrative Theory** (I and II, 3)
- 502 Techniques of Public Management** (I and II, 3)
- 503 Problems in Public Personnel Administration** (I or II, 3)
- 504 Politics of Developing Areas: Asia** (II, 3)
- 506 Seminar in Budgetary Politics** (I, 3)
- 507 The U.S.S.R. and China in World Affairs** (I, 3)
- 510 Developing Nation-State: Africa** (II, 3)
- 512 Seminar in Marine Science Policy and Public Law** (II, 3)
- 522 Comparative American Local Politics** (I, 3)
- 523 Seminar in Comparative Public Administration** (I, 3)
- 524 Seminar in Public Policy Problems** (I and II, 3)
- 544 Democracy and Its Critics** (I, 3)
- 553 Scope and Methods of Political Science** (I, 3)
- 554 Advanced Research in Political Science** (II, 3)
- 555, 556 Directed Study or Research** (I and II, 3 each)
- 566 American Political Thought** (II, 3)
- 568 Jurisprudence** (II, 3)
- 572 Problems in International Relations** (I, 3)
- 578 International Law and Politics of the Oceans** (II, 3)
- 590 Internship in Public Administration** (I and II, 3-6)
- 595 Problems of Modernization in Developing Nations** (II, 3)

## Portuguese (POR)

Section Head: Associate Professor McNab

**101 Beginning Portuguese I** (I and II, 3) Fundamentals of modern European Portuguese. Emphasis on standard pronunciation, development of familiarity with most common grammar structures, and acquisition of working vocabulary. (Lec. 3) Staff

**102 Beginning Portuguese II** (I and II, 3) Continuation of 101 (Lec. 3) Pre: 101, equivalent, or permission of instructor. Staff

**103 Intermediate Portuguese I** (I and II, 3) Intensive and extensive reading of moderately difficult Portuguese prose, review of grammar structures, idiomatic expressions, conversation practice based on readings. (Lec. 3) Pre: 102, equivalent, or permission of instructor. Staff

**104 Intermediate Portuguese II** (I and II, 3) Continuation of 103. Readings of more difficult texts. Class discussion and reports on supplementary readings. (Lec. 3) Pre: 103, equivalent, or permission of instructor. Staff

**205, 206 Advanced Portuguese** (I and II, 3 each) Practice in speaking and writing standard Portuguese. Understanding varieties of Portuguese. Materials of cultural, intellectual and professional interest. (Lec. 3) Pre: 104, equivalent, or permission of instructor. Staff

**311, 312 Topics in the Civilization of the Portuguese-Speaking World** (I and II, 3 each) Selected topics in the relationship between geographical, historical, social and political factors and cultural, artistic and intellectual development in the Portuguese-speaking areas of the world. (Lec. 3) Pre: 206, equivalent, or permission of the instructor. May be taken concurrently with 205 or 206 by permission of the instructor. May be repeated for credit as often as topic changes. In alternate years, next offered 1979-80. McNab

**335, 336 Topics in the Literature of the Portuguese-Speaking World** (I and II, 3 each) Selected topics in the literatures of continental Portugal and the adjacent islands, Brazil, Cape Verde, Angola, Mozambique. (Lec. 3) Pre: 206, equivalent or permission of instructor. May be taken concurrently with 205 or 206 by permission of the instructor. May be repeated for credit as often as the topic changes. In alternate years, next offered 1978-79. McNab

**497, 498 Directed Study** (I and II, 3 each) For the advanced student. Individual study and reports on problems of special interest. (Lec. 3) Pre: one 300-level course in Portuguese; acceptance of a project by a member of the staff and departmental approval. Not for graduate degree program credit. McNab

## Project 70 (PRJ)

**201 Project 70 Studies** (II, 3) An open-ended course to be designed each year by the Project 70 students and the instructor and approved by the director and steering committee of Project 70. Priority in registration is given to Project 70 students. No prerequisite. May be repeated once for credit. S/U credit. Staff

## Psychology (PSY)

Chairman: Professor Steinman

**103 Towards Self Understanding** (I and II, 3) Individual and social problems of normal persons. Personality development, social behavior and adjustive reactions with emphasis on increasing awareness of personal and interpersonal functioning. (Lec. 3) Grebstein, Prochaska and Staff

**113 General Psychology (I and II, 3)** Introductory survey course of the major facts and principles of human behavior. Prerequisite for students interested in professional work in psychology or academic fields in which an extended knowledge of psychology is basic. (Lec. 2, Rec. 1) Staff

**232 Developmental Psychology (I and II, 3)** Comprehensive understanding of human development and growth from birth to senescence. (Lec. 2, Rec. 1) Pre: 113, sophomore standing. Staff

**235 Theories of Personality (I and II, 3)** Critical survey of the major theories of personality. Emphasis will be placed mainly upon the "normal" personality. (Lec. 3) Pre: 113 sophomore standing. Berman, Stevenson, and Staff

**254 Behavior Problems and Personality Disorders (I and II, 3)** Evaluation of the more serious behavioral disorders as found in the major forms of character disorders, psychoneuroses, and psychoses. Theories of causation, development and effects of anxiety and defense mechanisms and interpretation of symptoms and methods of treatment. (Lec. 3) Pre: 113, sophomore standing. Berger and Staff

**300 Quantitative Methods in Psychology I (I and II, 3)** Basic concepts and techniques of quantification in psychology. Emphasis on application of certain statistical tools in the analysis of psychological measurements of behavior. (Lec. 3) Pre: 113, at least one course in mathematics at the college level, and sophomore standing. Cain, Merenda, Velicer and Staff

**301 Introduction to Experimental Psychology (I and II, 3)** Lectures, demonstrations and laboratory experiments introduce the student to fundamental principles of experimental techniques applied in psychological research. (Lec. 2, Lab. 2) Pre: 300. Smith and Staff

**305 Field Experience in Psychology (I and II, 3)** Direct contact with settings and populations served by psychologists. Emphasis on understanding models and theories in relation to practical problems. Topical sections may include: (a) pre-clinical, (b) community, (c) laboratory, and (d) organizational applications. (Lec. 1, Lab. 4) May be repeated once. Pre: 113 and permission of instructor. Stevenson, Berger and Staff

**310 History and Systems of Psychology (I or II, 3)** Rise and development of psychological research, psychological systems and specialized areas within psychology. (Lec. 3) Pre: 301, PHL 103 recommended. Silverstein

**334 Introduction to Clinical Psychology (I, 3)** Emphasis on scope of the field, functions of the clinical psychologist, methods used, and problems encountered, both scientific and professional. (Lec. 2, Lab. 2) Pre: 254, junior standing and permission of department. Staff

**361 Learning (II, 3)** Learning process in humans and subhumans, including principles, methods, and data. Operant learning and behavior modification. Pre: 301 or permission of instructor. N. Smith

**371 Laboratory in Learning (II, 1)** Laboratory experiments in learning (primarily animal) designed to parallel course materials in 361. (Lab. 2) Pre: 301, 361 (usually taken concurrently) or permission of instructor. N. Smith and Staff

**381 Physiological Psychology (I, 3)** Physiological mechanisms operative in human behavior. Sensory,

neural, endocrine and response systems as related to sensation, perception, attention, emotions, motivations and learning. (Lec. 3) Pre: junior standing. Valentino

**382 Research Methods in Physiological Psychology (II, 3)** A thorough introduction to the principles and techniques of experimentation in physiological psychology, including brain stimulation and lesions, electrophysiology, and pharmacology. (Lec. 3) Pre: permission of instructor and 381 (may be taken concurrently). Valentino

**385 Psychology of Perception (I or II, 3)** Sensory function, development of perception, perception of space, color, sound, and complex events. (Lec. 3) Pre: 113 and junior standing. Collyer

**391 Theories of Learning (I or II, 3)** Psychological theories developed for explanation of experimental data in the area of learning, including evaluation of learning theories, their basic concepts and analysis of various behaviors in terms of the theoretical frameworks. (Lec. 3) Pre: 301 and junior standing. Silverstein

**397 Honors Seminar (I, 3)** Optional seminar for honors candidates focusing on helping the student to develop an honors project. Discussion of various research possibilities with emphasis on alternative modes of inquiry. (Lec. 3) Pre: senior majors, permission of department, 3.3 overall G.P.A., 3.25 psychology G.P.A. Registration for two semesters of Honors Colloquium. Staff

**398 Honors Project (II, 3)** Independent project culminating in an honors thesis. Faculty guidance in delineating a problem within the major area surveyed in the honors seminar the preceding semester. (Lec. or Lab. 3-6) Pre: permission of instructor. 3.3 overall G.P.A., 3.25 psychology G.P.A. Registration for two semesters of Honors Colloquium. Staff

**410 Quantitative Methods in Psychology II (I, 3)** Quantitative methods for the study of psychological problems with emphasis on the underlying rationale. Relationship between research goals and both parametric and non-parametric statistical techniques, including the one-way analysis of variance. (Lec. 3) Pre: 300 or an equivalent introductory course in statistics. Cain and Staff

**432 Advanced Developmental Psychology (II, 3)** Major issues in developmental psychology. Emphasis on research of Piaget, Erikson, Bruner, Kagan and Moss. Includes effects of infant care, sex typing, parental discipline and developmental aspects of intellectual and perceptual growth. (Lec. 3) Pre: 232. Biller

**434 Introduction to Psychological Testing (I and II, 3)** Major techniques used in measurement of intelligence, aptitudes, abilities, achievement, interest and personality. Laboratory on nature and content of objective and projective tests. Reliability and validity of the various tests carefully considered. (Lec. 2, Lab. 2) Pre: education majors: 113 and EDC 371 or PSY 300; psychology majors: permission of instructor, junior standing. Staff

**435 The Psychology of Social Behavior (I and II, 3)** Conceptual and empirical analyses of individual behavior in social contexts; attention to social motivation, attitude development and change, liking, conformity, aggression, altruism. (Lec. 3) A. Lott and Staff

**436 Psychotropic Drugs and Therapy**  
See Pharmacology and Toxicology 436.

**438 Psychotropic Drugs and Behavior**  
See Pharmacology and Toxicology 438.



**445 Group Processes and Individual Behavior (II, 3)** Systematic analysis of theories and research on the individual in the small face-to-face group; focus on interpersonal processes, group structure and dynamics. (Lec. 3) Pre: 113 and junior standing or permission of instructor. A. Lott and Staff

**450 Cognitive and Behavioral Analysis of Communication (II, 3)** Treatment of psychological processes and problems related to human communication. Emphasis is on various types of psychological analysis used in understanding communicational processes from the individual standpoint. Pre: 113 and permission of instructor. In alternate years, next offered 1979-80 (Lec. 3) Silverstein

**461 The Alcohol Troubled Person: Psychological and Social Issues (I or II, 3)** Causes and effects of alcoholism. Needs of those working with alcoholics, treatment and/or prevention of alcoholism. (Lec. 3) Pre: 113, junior standing and permission of instructor. Willoughby and Staff

**464 Humanistic Psychology (II, 3)** Discussion of humanistic approaches to the understanding and direction of behavior. Emphasis on the contemporary writers such as Rogers, Maslow, May, Moustakas. Discussions of phenomenology and existentialism. (Lec. 3) Pre: 235 and junior standing. In alternate years, next offered. 1979-80. Berman

**479 Contemporary Problems for Modern Psychology (I and II, 3-12)** Central issues and recent developments in the field. Topics limited each semester to one of the following: (a) personality, (b) social, (c) learning, (d) methods and design, (e) developmental, (f) motivation, (g) perception, (h) clinical, (i) general, and (j) humanistic psychology. (Lec. 3) A maximum of 4 semesters may be taken. Pre: 301, permission of department. Staff

**480 The Female Experience (II, 3)** Topics ranging from the biological distinctiveness of women to social supports for sexism as they relate to attitudes, motives, and behavior of women. (Lec. 3) Pre: 113 and at least one 200-level PSY course. B. Lott and Staff

**482 Psychobiology (II, 3)** An examination of "mind" stressing contemporary physiological theories and experimental approaches. Topics include consciousness, sleep, dreaming, mind-altering drugs, drive, emotion, thought, attention, mind control and transcendental meditation. (Lec. 3) Pre: 381 or permission of instructor. In alternate years, next offered 1978-79. Staff

**489, 499 Problems in Psychology (I and II, 3 each)** Advanced work in psychology. Courses will be conducted as seminars or as supervised individual projects. Students must obtain written approval from proposed faculty supervisor prior to registration. (Lec. or Lab. TBA) Pre: senior or graduate standing. Staff

**510 Intermediate Quantitative Methods (I, 3)**

**520 Psychometric Methods (I or II, 3)**

**532 Experimental Design (I or II, 3)**

**534 Clinical Interpretation of Standardized Psychological Tests (II, 3)**

**542 The Exceptional Child (I or II, 3)**

**550 (or PCL 550) Operant Analysis of Behavior (I or II, 3)**

**554 Alternative Therapies (I or II, 3)**

## Recreation (RCR)

Chairman: Professor Reid  
(Physical Education, Health and Recreation)

**290 Recreation Programs and Leadership (I, 2)** Principles and practice of leadership in social recreation situations. Overview of school and community programs; planning and conducting activities for children, youth and adults; developing personal resources for creativity. (Lec. 1, Lab. 2) Staff

**306 Outdoor Recreational Activities: Man in His Environment (II, 3)** Lecture topics: back-packing, bicycling, camping, canoeing, horseback riding, mountain climbing, sailing, scuba diving; emphasizing skills, equipment, instruction centers, appreciation of natural areas. Laboratory requirement includes a 28-hour outdoor living project. (Lec. 2, Lab. 2) Staff

**382 Community Recreation (I, 2)** Principles and objectives of recreational program planning with a consideration of facilities, equipment and personnel. Particular attention to development of recreation leadership. (Lec. 2) Staff

**383 Introduction to Outdoor Recreation (I, 3)** Outdoor recreation as a distinct and separate concept, land and water resources, the various activities, and the necessary facilities. Considerable attention to the concern and role of governmental agencies and private enterprise. (Lec. 3) Staff

**485 Planning and Supervision of Recreation Facilities (I, 3)** Examination of the factors involved in the construction and/or renovation of facilities for most efficient multipurpose use and care and maintenance. Course includes field trips. (Lec. 3) Pre: junior standing and permission of the department. Staff

## Resource Development (RDV)

Coordinator: Associate Professor Kupa

**100 Natural Resource Conservation (I, 3)** Introduction to man's use and management of his natural resources; land, food, forest, wildlife, water, minerals and air, with a survey of contemporary resource-use problems in environmental pollution. (Lec. 3) Kupa and Staff

**101 Natural Resource Conservation Practicum (I, 1)** Field course to acquaint students with the broad resource problem areas in Rhode Island. Required for freshmen in Natural Resources. (Lab. 2) Pre: current registration in 100 and/or permission of instructor. Kupa

## Resource Development Education (RDE)

Program Director: Associate Professor McCreight

**444 Teaching of Agribusiness and Natural Resources**  
See Education 444.

**486 Internship in Agribusiness and Natural Resources (I and II, 3)** Supervised participation in programs related to agribusiness and natural resources. Minimum of 100 hours' work with selected individuals to develop further competency in teaching agribusiness and natural resources. McCreight

## Resource Economics (REN)

Chairman: Associate Professor Hueth

**105 Introduction to Resource Economics (II, 3)** Application of microeconomic principles to selected resource problem areas. The market mechanism and its alternatives are examined as methods of resolving contemporary resource use problems. (Lec. 3) Weaver

**135 Fisheries Economics (I, 5)** Analysis of supply and demand for fish and fishery products. Cost and returns in harvesting and processing. Crew remuneration systems. Fisheries policy and management. (Lec. 5) Pre: permission of instructor. Designed for two-year fisheries program. Holmsen

**310 Man and Resource Use (I, 3)** Physical, institutional and economic factors affecting man's use of natural resources. Economics of conservation and scarcity applied to energy, commercial fishing, and pollution problems. Economic dimensions of public policy alternatives. (Lec. 3) Pre: ECN 126 or permission of instructor. Sutinen

**341 Economics of Food Marketing (I, 3)** The development of marketing systems for agricultural products; institutional considerations, market costs and margins; pricing and appraisal of alternative systems. (Lec. 3) Pre: 105 and permission of instructor. Wallace

**430 International Resource Development (II, 3)** Development of resources in rural communities with special attention to coastal zone and marine resource development in the developing nations, particularly in relation to national planning and to world trade. (Lec. 3) Pre: 310 or permission of instructor. Weaver

**440 Development and Evaluation of Natural Resource Projects (I, 3)** Basic concepts in benefit-cost analysis. Measurement, comparison of benefits and costs over time, and criteria for project design and selection. Problems and case studies in evaluation of natural resources. (Lec. 3) Pre: 105 or permission of instructor. Grigalunas

**455 Economics of Land, Forestry and Recreation Resources (II, 3)** Economic analysis of forestry and wildlife management, recreation planning, land use and coastal zone management, covering problems in the economic evaluation and allocation of non-priced natural resources. (Lec. 3) Pre: 310 or permission of instructor. McConnell

**460 Economics of Ocean Management (II, 3)** The role of marine resources use in the economy. Oceans policy arising from multiple use conflicts. Current marine resource issues such as fisheries, offshore oil, marine mining, shipping examined. (Lec. 3) Pre: 310 or permission of instructor. Lampe

**491, 492 Special Projects (I and II, 1-3 each)** Workshop for advanced students wherein individuals or small groups are assigned projects requiring the analysis of natural resource and allocation problems with particular emphasis on marine resources. Pre: permission of department. Staff

**514 Economics of Marine Resources (I, 3)**

**527 Macroeconomic Theory (I, 3)**

**528 Microeconomic Theory (I, 3)**

**532 (or CPL 521) Land Resource Economics (II, 3)**

**534 Economics of Resource Development I (II, 3)**

**543 Economic Structure of the Fishing Industry (I, 3)**

**550 The Economics of Exhaustible Marine Resources (II, 3)**

**576 (or ECN 576, EST 576) Econometrics I (I, 3)**

**577 (or ECN 577, EST 577) Econometrics II (II, 3)**

**595 Problems of Modernization in Developing Nations (II, 3)**

## Resource Mechanics (REM)

Chairman: Professor Larmie (Plant and Soil Science)

**322 Power Units (II, 3)** Principles of operation, maintenance and adjustment of power units including gasoline and diesel engines and electric motors. Emphasis on tractors and other power units important in farm, nursery, greenhouse and grounds maintenance operations. (Lec. 2, Lab. 2) McKiel

**362 Power Equipment (II, 3)** Functional components of machines (exclusive of the power unit) used for turfgrass maintenance and production of specialized crops. Principles and techniques of selection, operation, adjustment and maintenance of machinery. (Lec. 2, Lab. 2) In alternate years next offered 1979-80. McKiel

**451 Soil Conservation Technology (I, 3)** Principles and practices involved in mechanical protection, improvement and development of soil and water resources. Design of conservation features and structures. (Lec. 2, Lab. 3) Pre: MTH 109 or equivalent. McKiel

**484 Structures (II, 3)** Principles of design and construction of buildings and structures related to culture of plants, managing soils and resource development. Planning, materials, construction components, environmental control and waste disposal. (Lec. 3) Pre: MTH 109 or equivalent or permission of instructor. In alternate years, next offered 1978-79. McKiel

**491, 492 Special Projects and Independent Study (I and II, 1-3 each)** Laboratory, library and field facilities are available for special projects concerned with resource mechanics. (Lab. 3-9) Not for graduate degree program credit. Pre: permission of department. McKiel or Wilson

## Respiratory Therapy (RTH)

**499 Special Problems (I and II, 1-3)** Method of carrying out a specific research project. Literature search, planning, laboratory work, writing an acceptable report. (Lab. 3-9) Pre: permission of department. Not for graduate credit. Staff

## Russian (RUS)

Section Head: Assistant Professor Aronian

**101, 102 Elementary Russian (I and II, 3 each)** Introduction to fundamentals of grammar; exercises in speaking, reading and writing. Emphasis on pronunciation, intonation and aural comprehension of contemporary spoken Russian. Language laboratory required. (Lec. 3) Staff

**103, 104 Intermediate Russian (I and II, 3 each)** Completion of fundamentals of grammar; exercises in speaking and writing, reading of contemporary texts; emphasis on distinction between spoken and written

language. Language laboratory required. (Lec. 3) Pre: 102 or equivalent. Aronian

**205, 206 Advanced Russian (I and II, 3 each)** Oral reports, written compositions and classroom discussion based on readings in Russian history and culture, literature, and current Soviet affairs. Listening projects in laboratory. (Lec. 3) Pre: 104 or equivalent. Aronian

**325, 326 Introduction to Literary Studies in Russian (I and II, 3 each)** Techniques of literary criticism applied to Russian literary works in various genres. Listening projects in laboratory emphasizing poetry and drama. (Lec. 3) Pre: prior or concurrent registration in 205, 206. In alternate years, next offered 1978-79. Aronian

**391, 392 Masterpieces of Russian Literature (I and II, 3 each)** Prose, poetry, and drama from late eighteenth through twentieth century in translation. Emphasis on literary movements through textual analysis. Authors range from Pushkin to Pasternak, including Dostoevsky and Tolstoy. (Lec. 3) C. Driver and Aronian

**460, 461 The Russian Novel (I and II, 3 each)** Major developments in themes and techniques, significant shifts of mode. Influences on the emergence of the novel in Russia. Laboratory required. (Lec. 3) Pre: prior or concurrent registration in 205, 206. In alternate years, next offered 1979-80. Aronian

**497, 498 Directed Study (I and II, 3 each)** For the advanced student. Individual research and reports on problems of special interest. Pre: acceptance of a project by a member of the staff and departmental approval. Staff

## Scratch (SCR)

Director: Assistant Professor Swan

**OOOV Intermediate Composition (I and II, 1-3)** Instruction and practice in the organization and presentation of ideas and in the use of language. Competence in the basic skills of mechanics, grammar, and paragraphing required. Writing sample required. (Practicum 1-3) Staff

**OOOW Basic Composition (I and II, 1-3)** Writing instruction and practice directed toward the development of ability and assurance in the organization of ideas and the use of language. 5, 10, or 15 weeks. Enrollment in first week only. (Practicum 1-3) Staff

**OOOX College Writing (I and II, 1-3)** Instruction and practice in the various types of written work customarily required in college courses. Intermediate level. Enrollment in first week only. (Practicum 1-3) Staff

**OOOY Advanced Composition (I and II, 3)** Principles of writing non-fiction prose and practice in their application. For students who have mastered basic elements of composition. Credits determined by the amount of work completed. (Practicum 1-3) Staff

**OOOZ Research Paper Writing (I and II, 3)** Instruction and practice in the formal presentation of research in primary and secondary source materials. Enrollment in first week only. (Practicum 3) Staff

## Social Welfare (SWF)

Chairman: Associate Professor Gelles (Sociology and Anthropology)

**311 Introduction to Social Work (I or II, 3)** Growth and development of social work concepts, philosophies and procedures under voluntary and public auspices. (Lec. 3) Pre: SOC 202 or 204, sophomore standing. Maynard

**313 Social Welfare Services (I or II, 3)** Organized efforts to meet the welfare needs of individuals and groups through federal, state and local institutions and agencies, with particular reference to Rhode Island. (Lec. 3) Pre: SWF 311 and one of the following: ECN 123, HIS 142, PSC 113, junior standing. Maynard

**317 Social Work Methods (I or II, 3)** Principles and methods of casework, with emphasis on understanding and aiding individuals and families faced with personal-social difficulties. Nature and varieties of group work. (Lec. 3) Pre: SOC 204 and SWF 313, PSY 235 or 254, or CDF 390, permission of department. Maynard

## Sociology (SOC)

Chairman: Associate Professor Gelles (Sociology and Anthropology)

**202 General Sociology (I and II, 3)** Introductory description and analysis of the structure and dynamics of human society. Social norms, groups, intergroup relations, social change, stratification, and institutions. (Lec. 3) Staff

**208 Issues and Problems in Contemporary American Society (I or II, 3)** Theoretical analysis of contemporary issues and societal trends and their impact on social organization. Social developments occurring after World War II analyzed and assessed according to their import and implications for social change. Emphasis on a sociological understanding of current issues. (Lec. 3) Staff

**301 Introduction to Methods of Sociological Research (I or II, 3)** Scientific method in sociological research. Research design, data collection techniques, sampling, measurement, table construction and interpretation. Emphasis on critical reasoning and evaluation of sociological research. (Lec. 3) Pre: one 200-level sociology course. Bassis, Gelles and Shea

**304 Social Psychology (I and II, 3)** Examination of social basis of personality development and behavior, the symbolic environment, the self and group motivation, attitudes and beliefs, social roles. (Lec. 3) Staff

**306 Development of Human Societies (I or II, 3)** Sociological perspective in which whole societies are the unit of analysis. Succession of hunting and gathering, horticultural, agrarian, industrial societies. Social change is central to approach, focus on the place of technology in the changing socio-cultural pattern. (Lec. 3) Pre: one 200-level course. Staff

**310 Rural Sociology (I or II, 3)** Population and culture in rural United States; emphasis on analyzing the life of the people in a rural environment as an integral part of contemporary organized society. (Lec. 3) Pre: 202 or 208. Spaulding

**312 The Family (I or II, 3)** The family as a social institution, its uniformity and variability in historical time and social space. Emphasis on contemporary American family. Variation in institutional patterns by rural-urban residence, region, race, social class. Issues and conflicts in the contemporary family scene. (Lec. 3) Pre: 202 or 208. Gelles

- 314 Juvenile Delinquency (I or II, 3)** Causes of delinquency; juvenile courts and probation; correctional institutions; programs of prevention. (Lec. 3) Pre: 202 or 208. England
- 316 The Sociology of Welfare Institutions (I or II, 3)** Development of British and American welfare. Influence of ideology on welfare and poverty. Contemporary American welfare. Social Security, poverty, welfare revolt of the 1960's. Evaluation of present and proposed welfare structure. (Lec. 3) Pre: 202 or 208 or permission of instructor. Reilly
- 324 Medical Sociology (I or II, 3)** Problems of health, illness, and medicine in relation to the social order; organization of medical institutions and professions; distribution of illness in societies; social psychological factors in illness. (Lec. 3) Pre: 6 credits in sociology or anthropology including 202, 208, or APG 203. Rosengren
- 330 Criminology (I or II, 3)** Nature and extent of crime; past and present theories of crime causation; criminal behavior in American society and its relation to personal and cultural conditions. (Lec. 3) Pre 202 or 208. England and Carroll
- 336 Social Stratification (I or II, 3)** Dimensions and dynamics of inequality in society; concepts of class and status; processes of social mobility. (Lec. 3) Pre: 202 or 208. Gersuny and Reilly
- 338 Population Problems (I or II, 3)** Problems in the growth, decline, and composition of populations. Effects of fertility, mortality, migration. Special attention to American society. (Lec. 3) Pre: 202 or 208, or APG 203. Shea
- 340 Minority and Majority Relations (I or II, 3)** Relations between the various ethnic, religious, racial and political minorities and majorities, with special reference to the United States. (Lec. 3) Pre: 202 or 208. Carroll and Reilly
- 342 The Sociology of Sex Roles (I or II, 3)** Sex roles within social institutions, personal relationships and sex role playing. Social policy toward liberating society. (Lec. 3) Pre: 202 or 208. Reilly
- 370, 371 Seminars (I and II, 3 each)** Areas of special research interests of graduate and undergraduate students not covered in other courses. May be taken as honors courses. (Lec. 3) Pre: permission of department. Staff
- 408 Industrial Sociology (I or II, 3)** Work and the organizations of industry, work roles, work groups, and authority structures; labor-management relations; some aspects of industrialization. (Lec. 3) Pre: 6 credits in sociology or anthropology, including 202, 208, or APG 203. Gersuny
- 410 Complex Organizations in Modern Society (I or II, 3)** Role of large formal organizations in contemporary society: schools, hospitals, welfare institutions, administrative agencies, and others dealing with clients. Structure of organizations, their relations to one another and to their community settings. (Lec. 3) Pre: 6 credits in sociology or anthropology, including 202 or 208, or APG 203. Rosengren
- 412 Occupations, Professions, and Social Structure (I or II, 3)** Historical changes in work patterns, variability in the nature of work among occupations and between occupations and professions, career and mobility patterns, reciprocal relations between an individual's occupational status and his participation in other societal institutions. (Lec. 3) Pre: one 200-level and one 300-level sociology course. Gelles
- 414 Demography (I or II, 3)** Vital statistics and their consequences for social structure and social change. Analysis of demographic techniques as applied to the measurement of fertility, mortality, morbidity and migration. Development of methods for estimating population projections. (Lec. 3) Pre: 338 or permission of department. Shea
- 416 Deviant Behavior (II, 3)** Examination and analysis of major theories of deviant behavior. Application of these theories to particular types of deviant behavior. (Lec. 3) Pre: one 200-level and one 300-level course or permission of instructor. Gelles and Carroll
- 418 Collective Behavior (I or II, 3)** Analysis of non-customary social phenomena. Crowds, riots, mobs, crazes, fads, fashions, and social movements considered as product and cause of social change. (Lec. 3) Pre: 202 and 304. Gardner
- 422 The Sociology of the Arts (I or II, 3)** Consideration of the relationship between the arts and socially established meanings. Social structure, and societal myths, with special attention to consonant and dissonant functions of the arts for social cohesion. (Lec. 3) Pre: 6 credits in sociology above the 200 level or permission of instructor. Travisano
- 430 Social Pathology and Social Change (I or II, 3)** Pathological characteristics as aspects of social change; social structure analyzed as relevant to development of slums, migration, crime, delinquency, divorce, poverty, alcoholism, suicide, drug addiction, and mental deficiency and disorder. (Lec. 3) Pre: 202, or 208; 204. Spaulding and Gelles
- 434 Urban Sociology (I or II, 3)** Patterns of urban development, taking into account sociological characteristics of urban life. Problems of urban redevelopment and planning. (Lec. 3) Pre: 202 or 208. Gardner
- 436 Sociology of Politics (I or II, 3)** Social and cultural contexts of contemporary politics. Functions and problems of mass, class and power group participation in politics. Conditions and outlook for democracy in large societies. (Lec. 3) Pre: 202 or 208. Sennott
- 438 Aging in Society (II, 3)** Problems of growing old in a changing society. Organizational and socio-historical factors are examined in terms of their consequences for the present status of the aged. (Lec. 3) Pre: 6 credits in sociology or anthropology, including 202 or APG 203. Spence and Staff
- 440 The Sociology of Mental Disorder (I or II, 3)** Phenomenon of mental disorder considered in light of recent research findings and developments in sociological theory. Mental disorder discussed as an outgrowth of societal processes. Pre: 202 or 204 and one 300-level course. Travisano
- 442 The Sociology of Education (I or II, 3)** Social organization of education as an institution, analysis of the antecedents and consequences of education, application of sociological psychological theory to educational systems and processes. (Lec. 3) Pre: one 200- and one 300-level course in sociology. Bassis
- 444 The Sociology of Religion (I or II, 3)** Sociological theory and research in the analysis of interrelationships between religious culture, secular culture, the social structure of religious groups, and general social structure. (Lec. 3) Pre: one 200- and one 300-level course in sociology. Sennott

**446 Sociology of Knowledge (I or II, 3)** Theories and research on the social bases of ideas. Emphasis on the works of Durkheim, Mannheim, and Marx and their influences on "common sense" interpretations of social life. (Lec. 3) Pre: one 200- and one 300-level course in sociology. Sennot

**492 History of Sociological Thought (I or II, 3)** Development of sociology as reflected in writings of American and European scholars: Plato, Aristotle, Rousseau, Vico, Spencer, Durkheim, Marx, Weber, Veblen, R. Merton, Parson, and others. (Lec. 3) Pre: 12 credits in sociology. Gradner

**502 Contemporary Sociological Theory (I or II, 3)**

**505 Methods of Sociological Research (I, 3)**

**506 Methods of Sociological Research (II, 3)**

**508 Individual and Social Organization (I or II, 3)**

**510 Seminar in Deviance (I or II, 3)**

**512 Concepts of Social Structure (I or II, 3)**

**514 Issues and Problems of Bureaucracy (I or II, 3)**

**516 Seminar in Law and Society (II, 3)**

**520 Seminar in Sociological Topics (I or II, 3)**

**571, 572 Directed Study or Research (I and II, 3 each)**

**595 Problems of Modernization in Developing Nations (II, 3)**

## Spanish (SPA)

Section Head: Associate Professor Navascués

**100 Essentials of Spanish (I or II, 3)** One-semester introduction to the Spanish language. Includes an essential minimum of structure, drill in pronunciation and beginning reading practice. Not recommended for those who plan advanced work in Spanish. (Lec. 3) Staff

**101, 102 Spanish Level One (I and II, 3 each)** 101: Introduction to Spanish for beginners. 102: Continued development of elementary Spanish communication skills (Lec. 3) Morin and Staff

**103, 104 Spanish Level Two (I and II, 3 each)** Reading and discussion of representative authors, grammar review, and continued practice in language skills, to broaden understanding of Hispanic culture. (Lec. 3) Pre: 102 or equivalent. Manteiga and Staff

**121 Everyday Spanish (I or II, 3)** Oral practice emphasizing a practical application of Spanish for travel or basic communication. Readings from current Spanish and Latin American newspapers and magazines. Reports dealing with contemporary problems and everyday situations. (Lec. 3) Pre: 100 or equivalent. Staff

**205, 206 Spanish Level Three (I and II, 3 each)** Development and refinement of all language skills, primarily through the use of Hispanic cultural and literary models. (Lec. 3) Pre: 104 or equivalent. Hutton and Staff

**301 Hispanic Culture Through the Seventeenth Century (II, 3)** Significant contributions in literature and arts, from the unique period of coexistence of Christians, Jews, and Muslims during the Reconquest through the Golden Age of the 16th and 17th centuries. (Lec. 3) Pre: 206 or equivalent. In alternate years next offered 1978-79. Hutton

**302 Romanticism and Realism (I, 3)** The transformation of Spanish literature and culture in the 19th century as seen through works of Morafin, Larra, Zorrilla, Bécquer,

Galdós and others. (Lec. 3) Pre: 206 or equivalent. Next offered 1979-80. Staff

**303 Contemporary Spain: Its Literature and Culture since 1927 (I, 3)** Modern Spain seen through its literature, arts, and social developments before and after the Spanish Civil War. (Lec. 3). Pre: 206 or equivalent. In alternate years, next offered 1978-79. Manteiga

**304 Modern Spanish-American Literature and Culture (II, 3)** Significant figures and developments in literature, the arts and society. (Lec. 3) Pre: 206 or equivalent. In alternate years, next offered 1979-80. Morin

**371 Spanish-American Short Story (I, 3)** Study and discussion of the Spanish-American short narrative, with emphasis on the contemporary period. (Lec. 3) Pre: 206 or equivalent. In alternate years. Navascués

**391, 392 Spanish Literature in Translation (I and II, 3 each)** Reading and analysis in English of Spain's most significant contributions to world literature: poetry, novel, drama, essay. Works read in English translation. Works through the seventeenth century in the first semester; those of the nineteenth and twentieth in the second. (Lec. 3) May not be used for credit toward a concentration in Spanish. Staff

**393 Contemporary Spanish-American Literature in Translation (I or II, 3)** Reading in English and analysis of selected works of twentieth-century authors from various Spanish-American countries. (Lec. 3) Morin

**401 Oral and Dramatic Presentation of Hispanic Literature (I, 3)** Practice in effective oral communication in Spanish and appreciation of Hispanic literature through analysis and class presentation of drama, poetry, and prose. (Lec. 3) Pre: a 300-level course or permission of instructor. Navascués

**409 History of the Spanish Language (II, 3)** Linguistic development of Castilian from the earliest documents to the present. Ibero-Romance dialects. New World Spanish. Hispano-Judaic dialects. (Lec. 3) Pre: one 300-level course or permission of instructor. Rogers

**430 Castilian Literature of the Sixteenth and Seventeenth Centuries (II, 3)** Literary significance of the Renaissance and Baroque periods and an analysis and critical examination of the works of the principal writers of this Golden Age of Castilian literature. (Lec. 3) Pre: one 300-level course or permission of instructor. In alternate years. Hutton

**451 The Spanish Novel of the Nineteenth Century (I, 3)** Development of Realism and Naturalism in the novel of the second half of the nineteenth century Spain. (Lec. 3) Pre: one 300-level course or permission of instructor. In alternate years. Staff

**461 The Generation of 1898 (I, 3)** Precursors of the Generation of 1898 and the major literary works of this group of writers including the contributions of Benavente, Unamuno, Antonio Machado and Azorín. (Lec. 3) Pre: one 300-level course or permission of instructor. In alternate years. Manteiga

**470 Topics in Spanish-American Literature and Culture (I and II, 3)** Special topics or authors not emphasized in other courses. (Lec. 3) Pre: a 300-level course or permission of instructor. Navascués

**481 Don Quijote (I, 3)** Life and times of Miguel de Cervantes Saavedra and the reading and critical interpretation of his work, *El ingenioso hidalgo Don Quijote de la*

*Mancha*. (Lec. 3) Required for students with a concentration in Spanish. Pre: one 300-level course or permission of instructor. In alternate years, next offered 1978-79. Hutton

**483 The Origins of the Novel in Spain (I, 3)** Development of forms of prose fiction from period of the Reconquest to Cervantes; sentimental, picaresque and pastoral novels, novels of chivalry, translations and imitations of the Greek romances of adventure. (Lec. 3) Pre: one 300-level course or permission of instructor. In alternate years. Staff

**485 The Modern Spanish Novel (II, 3)** Representative works by Spain's major novelists beginning with the Generation of 1898 and including the most recent writers. (Lec. 3) Pre: one 300-level course or permission of instructor. In alternate years. Staff

**488 The Drama of the Golden Age (I, 3)** Spanish theater from the early Renaissance through the Baroque with special attention to the works of Lope de Vega and Calderón and their schools. (Lec. 3) Pre: one 300-level course or permission of instructor. In alternate years. Staff

**497, 498 Directed Study (I and II, 3 each)** For the advanced student. Individual research and reports on problems of special interest. Pre: one 300-level course, acceptance of a project by a member of the staff and department approval. Staff

**501 Pedagogical, Artistic and Cultural Perspectives (I, 3)**

**502 Language Structure and Expression (II, 3)**

**571 Modern Spanish-American Authors (I, 3)**

**572 Evolution of Spanish-American Culture and Thought (II, 3)**

**581 Spanish Writers (I, 3)**

**582 Cervantes: Theater and Novels (II, 3)**

**584 Interpretations of Modern Spain (I, 3)**

**590 The Hispanic Presence in the United States (II, 3)**

## Speech Communication (SPE)

Chairman: Associate Professor Bailey

**101 Fundamentals of Oral Communication (I and II, 3)** Development and improvement of fundamentals and attitudes essential to effective and ethical communication. Preparation, organization, and presentation of the fundamentals in various speaking environments. Students demonstrating proficiency may petition for advanced placement. (Lec. 3) Staff

**102 Public Speaking (II, 3)** Adaptation of traditional rhetorical doctrines to contemporary speaking situations: informative, persuasive, and special occasion. Practice in the preparation and delivery of impromptu, extemporaneous, and manuscript speeches. (Lec. 3) Pre: 101 Staff

**201 Interpersonal Communication (I and II, 3)** Examination of the human interaction process in informal interpersonal communication situations. Focus on game theory, defensive and supportive climates, non-verbal communication, and the interview and informal dialogue. (Lec. 3) Staff

**210 Elements of Persuasion (I and II, 3)** Analysis of logical, emotional and ethical appeals in persuasive

speaking. Study and practice of factors motivating audience belief and acceptance of speaker's ideas. (Lec. 3) Staff

**215 Argumentation and Debate (I, 3)** Argumentative speech, with special emphasis on debate. Analysis of the proposition, construction of a case, use of evidence and reasoning, rebuttal and the technique of brief-drawing. Analysis of important economic and political questions. (Lec. 3) Roth

**216 Intercollegiate Debating (I and II, 1)** Intercollegiate tournament debating. Open to students who are actively engaged in the intercollegiate debate and forensics program. May be repeated for a maximum of 4 credits. Pre: permission of the director of forensics. Roth

**220 Group Discussion (I and II, 3)** Studies in small group communication. Emphasis on cohesiveness, role-playing, leadership, group pressures, and patterns of interaction in a variety of problem-solving small group situations. (Lec. 3) Staff

**231 Oral Interpretation of Literature (I and II, 3)** Recognition and appreciation of content and communication of thought and emotion through oral reading. Practice in the analysis and interpretation of poetry, prose and drama. (Lec. 3) Caldwell and Schmider

**260 Speech Development and Correction (I and II, 3)** Normal development of human speech, causes of speech and hearing disorders and techniques of speech and hearing rehabilitation. For those in teaching, nursing, guidance, psychology and education of the physically handicapped and mentally retarded. (Lec. 3) FizSimons

**261 Survey of Hearing and Deafness (I and II, 3)** Introduction to the science of audiology. Pathologies of the hearing mechanism, basic methods of audiometry, interpretation of the audiogram, hearing aids, and rationale and methods in hearing conservation programs. Observations and practice in the Rhode Island Hospital Hearing and Speech Center. (Lec. 3) Staff

**300 Theoretical Perspectives of Human Speech (I, 3)** Survey comparing and integrating non-systems communication theories; focus on application of these theories to human behavior and on process of speaking. (Lec. 3) Brownell, Katula, Purdy

**301 Systems of Communication (II, 3)** Investigation of communication networks in non-symbolic and symbolic systems, focusing on general systems theory, cybernetics, the human physiological system, the computer, and animal and human code systems. (Lec. 3) Brownell

**304 Speech Communication Survey (I and II, 3)** Survey of the major areas within the field of speech communication. Emphasis on developing student's ability to identify, define, formulate, investigate and describe problems and phenomena within the discipline. (Lec. 3) Staff

**310 Contemporary Oral Communication (I and II, 3)** Analysis of contemporary rhetorical theories as they relate to speaking in business, civil rights, education, government, labor, law and religion. Focus each semester on a critical contemporary issue. May be repeated once with permission of instructor. (Lec. 3) Staff

**315 Environmental Dimensions of Communication (I, 3)** Investigation of the physical properties of the environment and how individuals' perception and design of these properties affect their communication in personal, social and public situations. Analysis and experimental

tion with the ways the environment can be used to facilitate communication. (Lec. 3) Anderson and Brownell

**317 Advanced Argumentation and Debate (II, 3)** Analysis of advanced argumentation and debate theory and practice. Examination of debate tournament structure and the responsibilities of debate coaching, in terms of organizing and implementing debate programs. (Lec. 3) Pre: 215 and permission of instructor. Roth

**319 Principles and Practice of Interviewing (I and II, 3)** Principles and procedures common to all interviews. Survey of types and models. Questions, listening, motivation, inhibitors in interviews. Concentration on employment and informational interviews. Emphasis on out-of-classroom assignments. (Lec. 3) Pre: sophomore standing or permission of instructor. Erhart

**320 Oral Communication for Management (II, 3)** Examination of business and organizational communication. Emphasis on channels of communication, communication barriers, leadership and the development of communication skills for management personnel. (Lec. 3) Erhart, Katula, Purdy

**331 Contemporary Approaches to Prose Fiction (I and II, 3)** Oral interpretation of prose fiction with emphasis on the short story and the novel. Contemporary approaches to the oral study of literature such as dramatic and rhetorical analyses and an introduction to chamber theatre. (Lec. 3) Pre: 231 or permission of instructor. Caldwell and Staff

**332 Oral Interpretation of Poetry (I and II, 3)** Practice in the oral interpretation of poetry through oral performance and written analysis. (Lec. 3) Pre: 231 or permission of instructor. Caldwell and Staff

**333 Oral Interpretation of Black Literature (II, 3)** Study and oral presentation of literature by black American authors. Class performances, discussion, reports and analysis of the literature. (Lec. 3) Pre: 231 or permission of instructor. Caldwell and Staff

**337 (437) Intercultural Communication (II, 3)** Study of cultural similarities and differences as they affect communication within and across cultural boundaries. (Lec. 3) In alternate years, next offered 1979-80. Doody

**372 Auditory and Speech Mechanisms (II, 3)** Structure and function of the organs of hearing and speech as they relate to normal and pathological communication; theories of cortical involvements, central and peripheral nervous systems relevant to rehabilitation procedures. (Lec. 3) Pre: junior standing and permission of department. Staff

**373 Phonetics (I, 3)** International Phonetic Alphabet; analysis of phonetic and phonemic elements in major American English dialects; practice in transcription of standard and defective speech. (Lec. 3) Pre: junior standing. Beaupre and Staff

**374 Communication Processes (II, 3)** Psychocommunication processes basic to speech; theories of language learning; psychology of hearing and deafness; interrelationships between speech and personality. (Lec. 3) Pre: junior standing. Beaupre

**375 Language Development (I, 3)** Development phenomena in speech and language; causal factors of delayed speech and language; survey of evaluative and habilitative programs for children with deviant language development. (Lec. 3) Pre: junior standing. FitzSimons

**376 Hearing and Speech Science (I, 3)** Physical properties and speech signal, analysis of the physical bases of speech production and speech perception. (Lec. 3) Pre: 372 and 6 credits in natural sciences. Staff

**391, 392 Honors Work (I and II, 1-3 each)** Thesis work or an equivalent independent project under faculty supervision for honors students participating in the University Honors Program. Pre: admission to departmental honors program. Staff

**400 Rhetoric (I, 3)** Inquiry into standards for the evaluation and improvement of instrumental discourse. Detailed considerations of invention, disposition and style in oral and written communication. (Lec. 3) Bailey

**410 Semantics (II, 3)** Role of language and other symbol systems in thought and communication behavior. Informative, valuative, incitive, and systematic uses of signs; the linguistic bases of productive and pathological communicative behavior. (Lec. 3) Bailey

**415 The Ethics of Persuasion (II, 3)** Relation of persuasion to ethics is examined. Purposes, means, results and contexts are considered in making rhetorical judgements of inter-personal, political and institutional communications. (Lec. 3) In alternate years, next offered 1978-79. Bailey

**417 Speech in the Elementary School (I and II, 3)** Analysis of the role of the classroom teacher in identification, referral, and remediation of speech handicapped. Examination of teacher responsibilities in supplementing special education procedures for the orally handicapped. (Lec. 3) Pre: permission of instructor. Grzebien

**420 Seminar in American Public Address and Criticism (II, 3)** Study of selected American speakers, speeches, and/or movements. Rhetorical analysis used to measure the impact of speakers, speeches, and movements studies. (Lec. 3) Pre: permission of instructor. Anderson, Doody

**430 Political Communication (I, 3)** Analysis of political communication in campaign and non-election situations. Examination of ghost-writing; content analysis, strategies, image-making of political speaking; TV and radio presentations; influences on and effects of political communication. (Lec. 3) Pre: permission of instructor. Devlin

**431 Readers Theatre (II, 3)** Study and practice in selecting, adapting, and arranging a variety of written materials for group performances. A compilation script formulated by each student. (Lec. 3) Pre: 231 or permission of instructor. In alternate years, next offered 1978-79. Staff

**433 Chamber Theatre (I, 3)** Oral interpretation of prose fiction through group performance. Practice in the adapting and directing of narrative fiction for chamber theatre, a technique for dramatizing point of view. (Lec. 3) Pre: 231 or permission of instructor. Caldwell

**471, 472 Internship in Speech Communication (I and II, 3 each)** Provides the student with direct supervised participation in a variety of speech communication situations and occupations. (Lec. 1, Lab. 4) Pre: 18 credits in speech and permission of department. Staff

**475 Gestural Communication (I, 2)** Visual systems such as Amesian, with emphasis on the cheirology and syntax of signing, vocabulary, and levels of language among deaf communicators. Finger spelling and sign language

for educational, rehabilitative, and artistic goals studied. (Lec. 1 Lab.2) Pre: junior standing or graduate standing. Not for graduate program credit in Speech Pathology or Audiology. Beaupre

**491, 492 Special Problems** (I and II, 1-3 each) Selected areas of study pertinent to oral communication. Instruction may be offered in class seminar, or tutorial environments according to specific needs and purposes. Staff

- 504 Speech and Hearing Research** (I, 3)
- 551 Measurement of Hearing** (I,2)
- 552 Advanced Measurement of Hearing** (II, 2)
- 553 Pedoaudiology** (I, 2)
- 554 Auditory Training and Speechreading** (II, 2)
- 555 Electronically Assisted Hearing** (I, 2)
- 556 Automatic Audiometry** (II, 2)
- 561 Disorders of Articulation** (I, 2)
- 562 Disorders of Voice** (I, 2)
- 563 Disorders of Rate and Rhythm** (II, 2)
- 564 Disorders of Symbolization** (II, 2)
- 565 Diagnostic Procedures: Voice and Articulation** (I, 2)
- 566 Diagnostic Procedures: Rhythm and Symbolization** (II, 2)
- 567 Clinical Practicum in Speech Pathology** (I and II, 1-3)
- 568 Clinical Practicum in Audiology** (I and II, 1-3)
- 571 Audiometric Screening and Surveying Techniques** (I, 3)
- 572 Medical Audiology** (II, 3)
- 573 Contemporary Problems in Audiology** (I, 3)
- 574 Environmental Audiology** (II, 3)
- 575 Speech and Language for Deaf or Hard of Hearing Child** (I, 3)
- 576 Speech and Language for Deaf or Hard of Hearing Adult** (II, 3)
- 581 Cerebral Palsy** (I, 3)
- 582 Stuttering and Cluttering** (II, 3)
- 583 Cleft Palate and Other Orafacial Deformities** (I, 3)
- 584 Delayed Speech and Language** (II, 3)
- 585 Aphasia and Allied Language Disorders** (I, 3)
- 586 Alaryngeal Speech** (II, 3)

## Statistics

### Experimental Statistics

- 220 Statistics in Modern Society
- 408 or 409 Statistical Methods in Research I
- 412 Statistical Methods in Research II
- 413 Data Analysis
- 491, 492 Problems in Experimental Statistics
- 500 Nonparametric Statistical Methods
- 511 Linear Statistical Models
- 520 Fundamentals of Sampling and Applications
- 532 Experimental Design
- 541 Multivariate Statistical Methods
- 550 Ecological Statistics
- 591, 592 Problems in Experimental Statistics

### Industrial Engineering

- 411 Engineering Statistics I
- 412 Engineering Statistics II
- 513 Statistical Quality Control
- 533 Advanced Statistical Methods for Research and Industry

### Management Science

- 201, 202 Managerial Statistics
- 370 Topics in Managerial Statistics
- 375 Bayesian Statistics in Business

### Mathematics

- 451 Introduction to Probability and Statistics
- 452 Mathematical Statistics
- 456 Probability.
- 550 Advanced Probability
- 551 Advanced Mathematical Statistics I
- 552 Advanced Mathematical Statistics II

### Psychology

- 300 Quantitative Methods in Psychology I
- 410 Quantitative Methods in Psychology II
- 510 Intermediate Quantitative Methods in Psychology

### Resource Economics

- 576 Econometrics I
- 577 Econometrics II

## Textiles and Clothing (TXC)

Chairman: Professor V.V. Carpenter

**103 Consumer Behavior with Textiles and Clothing** (I and II, 3) Purchase, use and care of textile products as related to aspects of sociology, psychology, economics, and physiology. Evaluation of products in relation to performance expectations of consumers. (Lec. 3) Helms

**205 Introductory Clothing** (I and II, 3) Aesthetic, economic and managerial aspects of clothing selection and construction. Quality standards applied to construction and ready-to-wear. Principles of clothing construction developed through programmed learning and individualized projects. (Lec. 1, Lab. 4) Staff

**206 Interior Design I** (I and II, 3) Discussions and problems to develop discrimination and creative ability in selection of adequate and well-designed home furnishings. (Lec. 3) Higa

**224 Clothing and Human Behavior** (I and II, 3) Physical, social and psychological aspects of dress related to: the individual, cultural and social groups, consumer behavior, clothing needs of special groups, and patterns of change and stability in dress. (Lec. 3) Weeden

**238 Textile Design** (I and II, 3) Nature, origin, and development of handicraft methods of applying design to textiles, stressing modern applications and utilization of craft techniques. Laboratory experimentation with original creations in various media. (Lec. 2, Lab. 2) James

**303 Textile Science** (I and II, 3) Current textiles and textile products. Scientific aspects of fibers, yarns, fabrication and finishes for apparel and home furnishings. Study of existing regulatory controls and policies as they affect the consumer. (Lec. 2, Lab. 2) Pre: 103 and CHM 124 or permission of instructor. Staff

**305 Intermediate Clothing** (I and II, 3) Flat pattern designing with emphasis upon relationship of flat pattern principles to fitting average and problem figures. Application of principles in modifying and executing designs for individual needs. (Lec. 1, Lab. 4) Pre: 205. Staff

**306 Interior Design II** (I and II, 3) Observation and experience in professional interior design with emphasis on meeting living needs of individuals and groups. Field



trips, laboratory applications and guest lecturers. (Lec. 1, Lab. 4) Pre: 206. Higa

**322 Fashion Merchandising (II, 3)** Effect of fashion trends and influences on consumer buying patterns and retailing of fashion merchandising. Responsibilities of retail personnel in purchasing and merchandising of fashion products. (Lec. 2, Lab. 2) Staff

**327 Apparel Design (I and II, 3)** Principles of design as applied to contemporary clothing with emphasis on figure problems, limited movement, or specialized activities. Laboratory work concentrated on the creative process and development of a personal illustrative style. (Lec. 2, Lab. 2) Pre: 205 or permission of instructor. James

**340 Historic Costume (II, 3)** Sociological, economic, religious, and political facets affecting the history of costume and resulting fashion changes; national and folk costumes. Use of department's historic costume collection (Lec. 3) James and Avery

**348 Fabric Motif Development (I, 1)** Experimentation in motif development for surface application to textile products, with emphasis on end-use application of fabric design and specific techniques of reproduction. (Lec. 1) Pre: 238. James

**358 Experimental Weaving (II, 2)** Introduction to various types of hand weaving emphasizing experimental techniques of fabric formation and structural design, utilizing various substances in handwoven structures. (Lec. 1, Lab. 2) Pre: 238 or permission of instructor. James

**361, 362 Special Problems in Textiles and Clothing (I and II, 1-4 each)** Open to qualified juniors and seniors who wish to do advanced work including field work. Total credits not to exceed 6. Pre: application must be approved by instructor and department chairperson prior to registration. Staff

**390 Senior Seminar (I, 1)** Current professional trends, consideration of experiences in employment and opportunities for graduate study in textiles and clothing. S/U credit. Carpenter

**403 Textile Performance (II, 3)** Analysis of textiles using test methods and standards adopted by government, industry, and buyers to insure consumer satisfaction. Interpretation of test data in relation to consumer expectations and performance claims. (Lec. 2, Lab. 2) Pre: 103 and 303 or permission of instructor. Helms

**405 Advanced Clothing (II, 3)** Application of design to dress expressed through draping techniques. Designs draped in fabrics on half- and full-size dress forms. (Lec. 1, Lab. 4) Pre: 305 or permission of instructor. Weeden

**406 House Planning (I, 3)** Fundamental principles of house planning concerning orientation, space relationships, function, flexibility, aesthetic and economic factors. (Lec. 2, Lab. 2) In alternate years. Higa

**422 Field Experience in Fashion Merchandising (I and II, 5)** Field experience in business establishment. Students work (150 hr./sem. min.) under qualified personnel and are placed and supervised by University staff. Seminar (1 hr./week) concerning the merchandising of textile and related products is required. Pre: 322, permission of instructor and adviser. Not for graduate degree program credit. Staff

**433 Textiles and Clothing Industry (II, 3)** Development, production and distribution of textiles and clothing. Economic aspects of the textile and clothing industry. (Lec. 3) Pre: 103 and ECN 123 or permission of instructor. Helms

**440 Historic Textiles (I, 3)** Chronological study of textiles, emphasizing socio-economic, religious, political influences. Contribution of designers, inventors, trade groups and industrialists. (Lec. 3) Pre: 103 or permission of department. Weeden

**502 Seminar in Textiles and Clothing (I and II, 3)**

**503 Advanced Textiles (I, 3)**

**513 Detergency (II, 3)**

**524 Social Psychological Aspects of Textiles and Clothing (II, 3)**

**533 Textile and Clothing Economics (I or II, 3)**

**540 Special Problems in Textiles and Clothing (I and II, 3)**

**550 Seminar and Practicum (I and II, 3)**

**560 Special Problems in Textiles and Clothing (I and II, 3)**

**570 Seminar in Textiles and Clothing Research (I and II, 3)**

**580 Research Methods in Textiles and Clothing (I, 3)**

## Theatre (THE)

Chairman: Professor Flannery

**100 Introduction to Theatre (I and II, 3)** Designed to provide students with a theoretical and practical understanding of the theatrical process as well as to develop critical standards and increase the enjoyment of theatre as an art. (Lec. 2, Rec. 1) Staff

The following courses in Theatre Practice offer production and performance training in various areas of dramatic arts. They may be elected concurrently with related theatre courses, or independently. See course descriptions for maximum number of credits which may be elected in each.

**111, 112 Introductory Theatre Ensemble (I, II, 4 each)**  
111: Designed to initiate students to theatre as a collaborative art through systematic exposure to the principles and techniques of acting, directing, stage design, stagecraft, and playwriting. Participation in productions required. (Lec. 3, Lab. 6) Pre: permission of instructor.  
112: Continuation of 111 culminating in a directed project. (Lec. 3, Lab. 6) Pre: 111 and permission of instructor. Staff

**151 Makeup (I, 1)** Principles and techniques of stage makeup. Practical experience in the studio and crew work for studio and major productions. (Studio 2) Pre: 112 or permission of instructor. Emery

**161 Introduction to Stagecraft (I and II, 3)** Stage carpentry, rigging, properties, scene painting and light mechanics with practical experience working on productions. (Lec. 2, Lab. 2) Steinberg and Galgoczy

**205, 206 Developmental Drama (I, II, 3)** Principles and techniques of drama as a means of personal and social development. Drama in education and its relationship with group dynamics, role-playing, group therapy, improvisation and psychodrama. (Lec. 2, Lab. 2) Pre: one theatre course and permission of instructor. Staff

- 211, 212 Basic Acting (I, II, 4 each)** 211: Introduction to the theory and basic techniques of acting. Includes improvisation, character analysis, voice and movement. (Lab. 9) Pre: 111, 112 and permission of instructor. 212: Continuation of 211. (Lab. 9) Pre: 211 and permission of instructor. Staff
- 215 Basic Mime (I and II, 2)** Exercises to free the body and develop the skills to express feeling and character through the vocabulary of mime. (Studio 4) Pre: one theatre course and permission of instructor. Grando
- 216 Intermediate Mime (I, II, 2)** Continuation of 215. (Lab. 4) Pre: 215 and permission of instructor. Grando
- 250 Costume Laboratory (I and II, 3)** Practical experience in the principles of costuming including drafting theatrical patterns, construction and finishing techniques, and experience working on theatrical production. (Studio 6) Emery
- 261, 262 Design Laboratory (I, II, 3 each)** 261: Theatre production design with emphasis on development of capabilities for expression in conceptual and graphic terms. Projects in stage scenery, costumes, and lighting. (Lec. 2, Lab. 2) Pre: 112 or permission of instructor. 262: Continuation of 261. (Lec. 2, Lab. 2) Pre: 261. Staff
- 281 History of Theatre through the Neo-Classical Movement (I, 3)** General history of the theatre from its origins through the neo-classical movement. Focuses on the actor, staging and the audience as they have influenced the development of the theatre and dramatic literature. (Lec. 3) Pre: permission of instructor. McCarthy
- 282 History of Eighteenth and Nineteenth Century Theatre (II, 3)** Continuation of 281. (Lec. 3) Pre: 281 or permission of instructor. McCarthy
- 300 Production Laboratory (I and II, 1-3)** Orientation and instruction in theatre production through tutored participation in crews for major departmental productions. (Practicum: 2-6 hours per week) Pre: 111, 112, 161, 250 and permission of department. May be repeated up to nine credits. Staff
- 301 Theatre Production (I, II, 2)** A practical course in theatre offered to students undertaking substantial performance of technical responsibilities in departmental productions. (Practicum: minimum of 6 hours per week) May be repeated twice. Pre: junior or senior standing and permission of instructor. Staff
- 305 Theatre Techniques in Education (I and II, 2-4)** Introductory workshop to aid participants discover creative methods to communicate subject content through the use of theatre games, improvisation and physical exercises. (Studio 4) Pre: 212 or permission of instructor. Staff
- 311, 312 Intermediate Acting (I, II, 2 each)** 311: Continuation of Basic Acting with emphasis on approaches to characterization through improvisation and through the analysis and performance of assigned scenes. (Lab. 5) Pre: 211, 212 and permission of instructor. 312: Continuation of 311. (Lab. 5) Pre: 311 and permission of instructor. Staff
- 317, 318 Voice and Diction for the Actor (I, II, 2)** Voice analysis, placement of the voice, basic phonetics, dialects and techniques of dramatic interpretation. (Lab. 4) Pre: 211, 212 and permission of the instructor. Staff
- 319, 320 (or PED 319, 320) Movement for the Actor (I, II, 2)** Bodily analysis and development of technique for physical expression. Special emphasis on group improvisation and characterization through movement. (Lab. 4) Pre: 211, 212 and permission of the instructor. Staff
- 321 Orientation to Play Direction (I, 3)** Director's role in the process of theatre production. Emphasis on development of production concepts and rehearsal techniques. (Lec. 2, Lab. 2) Pre: 111, 112 and permission of instructor. Ranelli
- 322 Play Direction (II, 3)** Practical course in play direction. Class functions as a production unit and mounts a season of one-act plays. (Practicum: minimum of 6 hours per week) Pre: 321 and permission of instructor. Staff
- 331 Playwriting (I, 3)** Analysis and evaluation of written material supplemented by play readings and workshop tryouts of students' plays. (Lec. 3) Pre: 212 or permission of instructor. Smoker
- 341 Theatre Management (I and II, 3)** Principles, terminology, and practical techniques of theatre administration. Emphasis on stage management. Assignments will be made to departmental productions. (Lec. 2, Lab. 2) Pre: 111, 112, and permission of instructor. Staff
- 351 Principles and Theories of Theatrical Costuming I (I, 3)** Analytical study of fashions, modes and manners in Western civilization as required for modern theatrical production. Greek through the Renaissance. (Lec. 3) Pre: 250 or permission of instructor. Emery
- 352 Principles and Theories of Theatrical Costuming II (II, 3)** Continuation of 351, the Renaissance to the present. (Lec. 3) Pre: 351 or permission of instructor. Emery
- 355 Stage Costume Design (I, 3)** Costume design theories and techniques for modern and period plays in a wide variety of styles. (Lec. 2, Lab. 2) Pre: 250, 262 or permission of instructor. Emery
- 361 Advanced Stagecrafts (II, 3)** Details of mechanical staging systems, the shop as a production unit, modern technological materials and processes. (Lec. 2, Lab. 2) Pre: 161 or permission of instructor. Steinberg
- 365 Scenic Design I (I and II, 3)** Theories and techniques of scenic design, emphasizing conceptualization and development of stage setting through project designs for various stage forms, production styles, and periods. (Lec. 2, Lab. 2) Pre 261, 262 or permission of instructor. Steinberg
- 371 Stage Lighting I (II, 3)** Theories and techniques of lighting for the stage via a series of design projects emphasizing script analysis and conceptualization, instrumentation and equipment characteristics, and use of color in stage lighting. Pre: 261, 262 or permission of instructor. Steinberg
- 383 History of the Modern Theatre (I, 3)** Modern theatre and drama from approximately 1880 to the present. New European stagecraft and its influence on the development of American theatre. (Lec. 3) Pre: 281, 282 and permission of the instructor. Staff
- 400 Individual Problems in Theatre Studies (I and II, 1-3)** Advanced individual theatre work on an approved project under supervision of a staff member. Pre: permission of staff. (Max. 6 credits) Not for graduate degree program credit. Staff
- 401 Special Group Studies (I and II, 1-3)** Advanced group theatre work in production projects under ap-

proval and supervision of a staff member. Pre: permission of staff. (Max. 6 credits) Not for graduate degree program credit. Staff

**405 Children's Theatre Laboratory (I and II, 2)** Laboratory in which different methods of children's theatre are demonstrated, including use of puppets as a teaching device. Students expected to work with children. (Studio 4) Pre: 305 or permission of instructor. Not for graduate credit. Smoker

**411, 412 Scene Study (I, II, 2)** Emphasis on the analysis and interpretation of biweekly assigned scenes representative of the major theatrical genres and styles. (Lab. 6) Not for graduate program credit. Pre: 311, 312 and permission of instructor. Staff

**413 Special Workshop in Acting (I and II, 2)** Techniques related to a specific aspect or style of performance: e.g. masks, puppetry, verse-speaking, and improvisation. The study is normally related to a departmental production or special project. (Lab. 6) Not for graduate program credit. May be repeated up to four credits. Pre: 211, 212 or 261, 262 and permission of instructor. Staff

**415 Trinity Square Internship (I or II, 12)** Designed for junior and first semester senior theatre majors who desire a career in professional theatre. This program provides instruction and practical experience in various aspects of Trinity Square's operation. (Lec. 3, Practicum 9) Not for graduate program credit. Minimum of 270 hours of practicum. Pre: junior or senior standing and permission of department. Staff

**420 Advanced Directing Practice (I and II, 1-3)** Special projects for the advanced directing student. Student directors will assume complete production responsibilities for all aspects of their projects, including a critical analysis upon completion. (Studio 2-6) Pre: 321, 322 or equivalent, junior standing, and permission of department. Staff

**440 Advanced Theatre Management (I and II, 2)** Individual projects of theatre management in a major departmental production or project. (Lab. 2-6) Pre: 341 and permission of department. Not for graduate program credit. Staff

**450 Advanced Costuming (I and II, 1-3)** Individual projects in costume design for studio or major productions. Styles and theory related to projects; costume sketches and construction. (Studio 2-6) Pre: 250 and permission of instructor. Emery

**451 Stage Costume Technology (I, 3)** Construction methods and techniques appropriate to stage costuming with emphasis on major theatrical periods and productions. (Lec. 1, Lab. 2) Pre: 351 or 352 or permission of instructor. Not for graduate program credit. May be taken to a maximum of 6 credits. Emery

**460 Advanced Scene Design (I and II, 1-3)** Individual projects in designing scenery for studio and major productions. (Studio 2-6) Pre: 161, 365, and permission of instructor. Steinberg

**461 Advanced Theatre Technology (I and II, 1-3)** Advanced projects in technical theatre suggested by qualified students or developed by students with members of department staff. Not for graduate credit. (Studio 2-6) Pre: 161 or permission of instructor. Steinberg

**463 Special Workshop in Design and Technical Theatre (I and II, 3)** Techniques related to a specific aspect or style of production: e.g. masks, puppetry, wig-making, sound effects, projections, properties. Normally related to a departmental production or special project. (Lab. 6) Not for graduate program credit. May be repeated up to six credits. Pre: 261, 262 and permission of instructor. Staff

**470 Advanced Stage Lighting (I and II, 1-3)** Individual projects in lighting design and control for studio and major productions. (Studio 2-6) Pre: 371, and permission of department. Not for graduate program credit. Staff

**481 American Theatre History (I, 3)** Origins and development of American theatre from the wilderness to Broadway of 1940's including the evolution of the musical play. Analysis of special contributions made by the grassroots movement, the university theatres, the Federal Theatre Project. (Lec. 3) Pre: 212 or permission of instructor. Not for graduate program credit. McCarthy

**483 Aesthetics and Criticism of the Theatre (I, 3)** Designed to familiarize students with outstanding works of dramatic theory and to give them the opportunity to develop and articulate their critical thinking about the theatre. (Lec. 3) Not for graduate program credit. Pre: 281, 282, 383, ENG 454 or permission of instructor. Flannery

**484 Special Research Project (I and II, 3)** An in-depth study of a single critical or historical aspect of theatre. The subject is normally related to a departmental production. (Lec. 2, Lab. 2) Not for graduate program credit. Pre: permission of instructor. May be repeated once. Staff

## Urban Affairs (URB)

**210 Introduction to Urban Affairs (I, II, 3)** Introductory course for students planning to concentrate in the Urban Affairs Program. Investigation of the interdisciplinary approach in analyzing urban issues, potentials and problems. (Lec. 3) Staff

**391, 392 Directed Study (I, II, 1-3 each)** Independent work in urban affairs for individual students or groups. Pre: 210. Staff

**397 Field Work in Urban Affairs (I, II, 1-6)** Field work as arranged. The student works as a part or full-time worker in an urban affairs agency, under the supervision of a faculty adviser. (Field Work 3-18) Pre: 210. Staff

**498, 499 (398, 399) Urban Affairs Senior Seminar (I and II, 3 each)** The study of a particular urban issue from an interdisciplinary perspective. Required of all urban affairs concentrators. Pre: 210 or permission of instructor; junior or senior standing. Not for graduate credit. Staff

## Zoology (ZOO)

Chairman: Professor Wilde

**111 General Zoology (I and II, 4)** Physiology, development, genetics, ecology and study of types of animals, with emphasis on evolution. Introduction to further studies in zoology for both potential professional and non-professional students. (Lec. 3, Lab. 2) Not open to students who have passed BIO 102. Surver

**121 Human Anatomy (I and II, 4)** Elementary anatomy of the organ systems, studied with the aid of charts, models and dissection of the cat. (Lec. 2, Lab. 4) Limited to students in physical education, dental hygiene, nursing, pharmacy, and respiratory therapy. Bibb

**242 Introductory Human Physiology (I and II, 3)** Functions of the organ systems of the human body and their coordination in the whole human organism. Attention is given to the needs of students preparing for health-related professions. (Lec. 3) Pre: 111 or 121 or BIO 102. Staff

**244 Introductory Human Physiology Laboratory (I and II, 1)** Mechanisms of physiological processes are illustrated by experiments on vertebrate animals. (Lab. 3) Pre: prior or concurrent enrollment in 242. Not open to students who have passed 442. Staff

**262 (or BOT 262) Introductory Ecology (I and II 3)** Structure and function of ecosystems limiting factors, population dynamics, population interactions and community relationships. Selected habitats and general ecological effects of man. (Lec. 3) Pre BIO 101, 102 or BOT 111 and ZOO 111 or equivalent. Shoop, Halvorson and Hairston

**316 Principles of Development (II, 4)** A treatment of embryology emphasizing experimentally-derived principles which underlie development. (Lec. 2, Lab. 4) Pre: one semester of biology. BOT 352 and ZOO 345 are recommended. Bibb

**321 Chordate Anatomy (I, 4)** Functional anatomy of chordates, including a consideration of the genesis of principal organ systems. Laboratory consists of detailed integrated study of selected chordate forms. (Lec. 2, Lab. 4) Pre: one year of biology. Goertemiller

**323 Cells and Tissues (II, 2)** Microanatomy of normal cells and tissues, and structural and functional relationships among tissue components within an organism. Emphasis on vertebrates. (Lec. 2) Pre: 111 or BIO 102, and one semester of chemistry. In alternate years. Goertemiller

**325 Histological Techniques (II, 2)** Modern techniques for preparing histological, cytological, and embryological specimens for microscopical study. Histochemistry for use in light microscopy, and introduction to radioautography and electron microscopy are included. (Lab. 4) Pre: 111 or BIO 102, and chemistry and prior or concurrent registration in 323. In alternate years. Goertemiller

**331 Parasitology (I, 3)** Structure, life cycles, ecology, and economic relationships of the parasitic protozoa, helminths and arthropods. Origin and biological significance of parasitism and host-parasite relationships. Encompasses experimental laboratory work on life cycles of selected species, collection and identification of local parasitic forms including those from the marine fauna. (Lec. 2, Lab. 3) Pre: two semesters of biology. Hyland

**343 Physiology of Exercise (I, 3)** Applied human physiology, with applications to work, health, physical education and athletic sports. Particular attention to adjustments of the circulatory and respiratory systems during physical activity. (Lec. 2, Lab. 3) Pre: 242 or 345. Staff

**345 Basic Animal Physiology (I, 3)** Fundamental physiological processes of animals with emphasis on homeostatic mechanisms. Nature of osmosis, membranes, water and electrolyte balance, irritability and the

functioning of selected organ systems. (Lec. 2, Lab. 3) Pre: one semester in natural science, 321 and one semester in chemistry are recommended. Kass-Simon

**354 Invertebrate Zoology (II, 4)** Representative types of invertebrate animals, laboratory dissections, observations and experiments. Occasional field trips. Lectures emphasizing progressive specialization of structure and function. (Lec. 2, Lab. 4) Pre: one semester in zoology. Bullock

### 373 History of Biology

See History 373.

**381 (or PLP 381) General Entomology (I, 3)** Anatomy, physiology, life cycles, classification of orders and the more important families and species of insects. Field studies in biology, ecology, collecting and survey methods. (Lec. 2, Lab. 3) Pre: one semester of biology or any biologically oriented agriculture course. Mathewson

**391, 392 Assigned Work (I and II, 1-3 each)** Advanced undergraduate work in anatomy, endocrinology, physiology, histology, embryology, entomology, taxonomy, ecology, marine biology and related subjects. Individual or group work by prior written arrangement with a staff member and with permission of department chairman. Staff

**395 Seminar in Zoology (I and II, 1)** Introduction to sources of zoological literature. Presentation of reports of scientific papers by students, with discussion by the class. (Lec. 1) Pre: junior standing and three courses in zoology. Required of seniors majoring in zoology. Wilde

### 408 Introduction to Protozoology

See Microbiology 408.

**421 Principles of Taxonomy (I, 3)** Principles and methods of identification, including study of rules of zoological nomenclature. Practice on selected animal groups. Visits to representative museums in New England. (Lec. 2, Lab. 3) Pre: three semesters of zoology including 314 or equivalent. In alternate years, next offered 1977-78. Bullock

### 427 Modeling and Analysis of Dynamic Systems

See Mechanical Engineering 427.

**441 General (Cellular) Physiology (I, 3)** Fundamental processes occurring in living matter, especially functions at the cellular level with emphasis on biochemical and biophysical bases of functions common to all forms of life. (Lec. 2, Lab. 3) Pre: two semesters of biology, one of which may be MIC 211, two semesters of physics and one semester of organic chemistry. Hammen

**442 Mammalian Physiology (II, 3)** Intensive study of the physiological mechanisms that regulate the animal body and its organ systems. Emphasis on knowledge obtained from experimental mammalian and human physiology. Laboratory experiments on vertebrate animals. (Lec. 2, Lab. 3) Pre: 345. Hill

**455 (or BOT 455) Marine Ecology (I, 3)** Investigation of the structure and dynamics of various marine ecosystems. Includes mineral cycling, energy flow, community and population organization and behavioral ecology in selected marine environments. (Lec. 3) Pre: 262 or BOT 262, or permission of instructors. In alternate years, next offered 1978-79. Cobb and Harlin

**457 (or BOT 457) Marine Ecology Laboratory (I, 1)** Field and laboratory work on community relationships of dominant organisms in Rhode Island marine envi-

ronments. (Lab. 3) Pre: concurrent enrollment in 455 or BOT 455, and permission of instructors. Limited to 15 students. In alternate years, next offered 1978-79. Cobb and Harlin

**463 Animal Ecology (II, 3)** Roles of animals in the structure and function of ecosystems. Adaptations of animals to their environments and effects of limiting factors. Analysis of animal populations and communities. Statistical techniques. Readings in primary source materials, laboratory, and field studies. (Lec. 2, Lab. 3) Pre: 262 and MTH 141 or equivalent. Shoop

**465 Limnology (I, 3)** Physical and chemical properties of natural waters, such as thermal stratification and dissolved gases, in relation to biotic communities in the aquatic environment. Survey of fauna and flora of standing and running water. Introduction to concept of productivity. (Lec. 3) Pre: 262 and one semester of chemistry. Hairston

**466 Vertebrate Biology (II, 3)** Life histories, adaptations, ecology, classifications and distribution of vertebrate animals. Laboratory and extensive field work on local vertebrates. (Lec. 2, Lab. 3) Pre: 262 and 321 recommended. Chipman

**467 Animal Behavior (II, 3)** Ethology and comparative psychology of both invertebrate and vertebrate animals as individuals and groups. Integration, causation, development, evolution, and adaptive values of behavior patterns, social behavior. (Lec. 2, Lab. 3) Pre: one semester of zoology and one semester of psychology or permission of instructor. Cobb

**475 Causes of Evolution (I, 3)** A mathematical formulation of evolution: epoch of enzymes; genetic equilibrium under selection, mutation, migration and random drift; the n-locus problem; coupling of genetic and ecological systems. (Lec. 3) Pre: one semester of genetics. Costantino

**476 Human Genetics (II, 3)** Degree and mode of inheritance of physical and mental variations of man which have been shown to have at least some genetic basis. A term paper is required. (Lec. 3) Pre: BOT 352 (ASC 352) or equivalent. Surver

**482 Systematic Entomology (II, 3)** Detailed study of insect classification with emphasis on identification of various groups and subgroups. Collecting techniques, curatorial processes and problems of an entomological collection. (Lec. 1, Lab. 4) Pre: 354 or 381. In alternate years, next offered 1978-79. Hyland

**505 Biological Photography (I, 2)**

**508 Seminar in Zoological Literature (II, 1)**

**512 Fine Structure of the Animal Cell (II, 4)**

**518 Mechanisms of Development (II, 2)**

**531 Advanced Parasitology Seminar (I, 2)**

**541, 542 Comparative Physiology (I and II, 3 each)**

**543 Biology of Reproduction in Animals (I, 3)**

**545 Endocrinology (I, 3)**

**548 Neurophysiology (II, 4)**

**554 Seminar in Morphogenetic Theory (II, 2)**

**562 Seminar in Behavioral Ecology (I, 1)**

**563 Ichthyology (I, 3)**

**564 Oceanic Ichthyology (II, 3)**

**565 Mammalogy (I, 3)**

**566 Herpetology (II, 3)**

**568 Ornithology (II, 2)**

**573 Developmental Genetics (I, 3)**

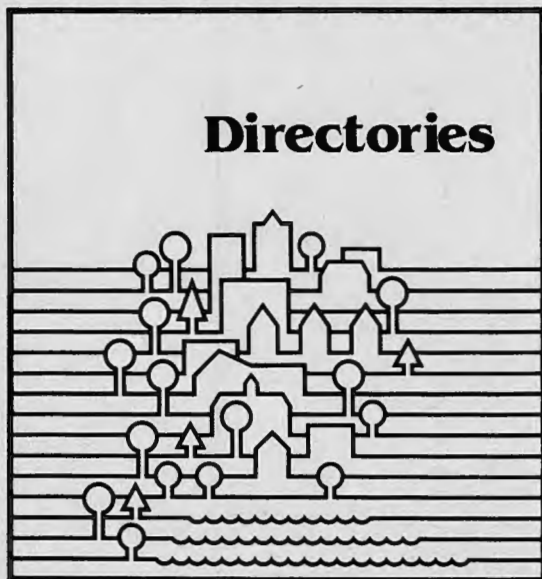
**576 Ecological Genetics (II, 4)**

**579 (or BOT 579) Advanced Genetics Seminar (I and II, 1)**

**581 General Acarology (I, 3)**

**586 Medical and Veterinary Entomology (II, 3)**

**595, 596 Graduate Seminar in Zoology (I and II, 1 each)**



## Directories

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 Crombe, David H., M.S., Assistant Dean of the College of Pharmacy and Associate Professor of Pharmacy Administration  
 DeFrance, Jesse Allison, Ph.D., Professor of Agronomy  
 Demers, Beatrice S., A.B., Professor of French  
 DeWolf, Robert A., D.Sc., Professor of Zoology  
 Eastwood, James Wilson, M.S., Dean of Admissions  
 Fish, Charles John, Ph.D., Director of the Narragansett Marine Laboratory and Professor of Oceanography  
 Fry, Marion L., M.A., Professor of Textiles and Clothing  
 Geffner, David Glassner, J.D., Professor of Business Law  
 Gentile, Jerry Joseph, B.C.E., Associate Professor of Civil Engineering  
 Goodwin, Ernest Bartlett, M.A., Assistant Dean of Engineering and Associate Professor of Electrical Engineering  
 Grady, Ethyl R., M.S., Associate Research Professor of Home Economics  
 Griffiths, Albert E., Ph.D., Associate Professor of Plant and Soil Science  
 Grove, James F., M.S., Professor of Electrical Engineering  
 Haggerty, Gerald B., M.A., Professor of Mathematics  
 Hall, Charles A., B.S., D.P.A.(H), Vice President for Development and Public Relations  
 Hannah, John T., M.S., Associate Professor Equivalent in Cooperative Extension Service  
 Harrison, Robert W., Ph.D., Professor of Zoology  
 Hart, Elizabeth L., Ed.M., Assistant Dean of the College of Nursing and Associate Professor of the College of Nursing  
 Higbee, Violet B., M.A., Extension Professor of Home Economics  
 Higgins, Thomas C., M.S., Associate Professor of Animal Science  
 Hoffmann, Charles G., Ph.D., Professor of English  
 Howard, Frank, Ph.D., Professor of Plant Pathology-Entomology  
 Humeston, Edward J., Jr., Ph.D., Dean of the Graduate Library School and Professor of Library Science  
 Jacoff, Michael D., Ph.D., Associate Professor of Pharmacy Administration  
 Jeffrey, Arthur D., Ph.D., Professor of Economic Development and Regional Planning  
 Kaiser, Carl William, Jr., Ph.D., Professor of Organizational Management and Industrial Relations

Kerr, Theodore W., Jr., Ph.D., Research Professor of Plant Pathology-Entomology

Kinney, Lorenzo Foster, Jr., M.S., Associate Extension Professor of Agriculture

Kossoff, Ruth Horne, Ph.D., Professor of Spanish

Kraus, Douglas Lawrence, Ph.D., Professor of Chemistry

Lapin, Sylvia, M.A., Associate Professor of Child Development and Family Relations

Lees, Doris Estabrook, M.C.S., Associate Professor of Accounting

Lees, George Winchester, Ph.D., Professor of Accounting

Lepper, Robert Jr., Ph.D., Professor of Botany and Dean of the College of Arts and Sciences

Madsen, Niels, Ph.D., Professor of Chemical Engineering

Mairs, Kenneth H., Met. E., Professor of Metallurgy

Mathewson, John A., M.Sc., Associate Professor of Zoology

Miller, Clarence Edmund, M.S., Professor of Geology

Mohrnhelm, Anton Franz, Dr.-Ing, Professor of Metallurgy

Morris, Evelyn B., M.A., Associate Dean of Students

Odland, Theodore Eugene, Ph.D., Professor of Agronomy

Parker, John, M.S., Associate Professor of Mechanical Engineering and Applied Mechanics

Peck, Austin, J.D., Associate Professor of Business Law

Pelton, Frank M., Ph.D., Professor of Education

Pitterman, Marvin, Ph.D., Professor of Finance and Insurance

Quirk, Arthur L., Ph.D., Professor of Physics

Rife, S. Marvin, Ph.D., Professor of Education

Robinson, E. Arthur, Ph.D., Professor of English

Russell, Thomas G., B.S., Associate Professor of Physical Education for Men

Salomon, Milton, Ph.D., Professor of Food and Resource Chemistry

Sayles, Martha O., M.Ed., Dean of the College of Nursing

Schock, Edson, B.S., Associate Professor of Mechanical Engineering

Sharpe, Garold, M.A., Associate Professor of English

Sherrer, Grace Bussing, Ph.D., Professor of English

Shutak, Vladimir G., Ph.D., Professor of Plant and Soil Science

Simmons, Walter Lee, Ph.D., Professor of English

Slader, Carl Vincent, M.Ed., Professor of Health and Physical Education for Men

Smart, Mollie S., Ph.D., Adjunct Professor of Child Development and Family Relations

Smart, Russell C., Ph.D., Professor of Child Development and Family Relations

Stockard, Raymond H., B.S., Director of Career Planning and Placement

Stuart, Homer O., M.S., Director of Agricultural and Home Economics Extension

Stuckey, Irene Hawkins, Ph.D., Professor of Plant Physiology

Thomas, Daniel Harrison, Ph.D., Professor of History

Tilton, Arline P., M.S., Professor of Home Economics

Tucker, Ruth, Ph.D., Professor of Food and Nutritional Science

Velletri, Andrew, M.S., Associate Professor of Mechanical Engineering

White, Louisa, A.M., Professor of Nursing and Director of the School of Nursing

Will, Robert Ellsworth, M.A., Professor of Speech and Theatre

Woods, Frank L., Ph.D., Dean of the Summer Session and Professor of German and Linguistics

Zinn, Donald J., Ph.D., Professor of Zoology

## Faculty

First date after title indicates appointment to present position; the second date, when the first fails to do so, indicates first appointment in the University.

Abbate, Judith, R.N., Instructor (Clinical) in Nursing, 1978, 1976. B.S., 1974, University of Rhode Island; M.S., 1976, Boston University.

Abedon, David H., Assistant Cooperative Extension Professor, 1978, 1973. B.A., 1971, M.A., 1972, University of Rhode Island.

Abell, Paul Irving, Professor of Chemistry, 1964, 1951. B.S., 1948, University of New Hampshire; Ph.D., 1951, University of Wisconsin.

Abusamra, Ward, Professor of Music, 1975, 1952. B.S., 1950, M.A., 1951, Columbia University.

Abushanab, Elie, Associate Professor of Medicinal Chemistry, 1973, 1970. B.S., 1960, American University of Beirut; M.S., 1962, Ph.D., 1965, University of Wisconsin.

Ageloff, Roy, Associate Professor of Management Science, 1977, 1972. B.S., 1965, University of New York at Buffalo; M.B.A., 1967, University of Connecticut; Ph.D., 1975, University of Massachusetts.

Albert, Luke S., Professor of Botany, 1970, 1960. B.S., 1950, Lebanon Valley College; M.S., 1952, Ph.D., 1958, Rutgers — The State University.

Alexander, Lewis M., Professor of Geography, 1960. A.B., 1942, Middlebury College; M.A., 1948, Ph.D., 1949, Clark University.

Allen, Anthony J., Associate Professor of Education, 1978, 1969. B.S., 1960, Loyola University; M.Ed., 1967, Ph.D., 1970, Boston College.

Allen, William R., Associate Professor of Management, 1977, 1973. B.S., 1960, U.S. Coast Guard Academy; M.B.A., 1971, Ph.D., 1975, University of Florida.

Allender, Bruce, Assistant Professor of Botany, 1975. B.S., 1966, M.S., 1970, University of Western Australia; Ph.D., 1976, University of Hawaii.

Allred, Hilda, Assistant Professor of Business Education and Office Administration, 1974. B.A., 1966, M.Ed., 1969, Southeastern Louisiana University; Ed.D., 1974, Louisiana State University.

Alton, Aaron John, Professor of Marketing, 1961. A.B., 1942, Miami University, Ohio; M.B.A., 1947, Harvard Business School; Ph.D., 1956, Ohio State University.

Anderson, Judith L., Associate Professor of Speech Communication, 1975, 1970. B.A., 1962, M.A., 1963, University of Kansas; Ph.D., 1970, Indiana University.

Anderson, Leonard, Associate Cooperative Extension Professor and Adjunct Assistant Professor of Child Development and Family Relations, 1978, 1964. M.A., 1975, Harvard University.

Arakelian, Paul G., Assistant Professor of English, 1976. B.A., 1969, California State University, Los Angeles; Ph.D., 1975, Indiana University.

Armstrong, Charles P., Associate Professor of Management Science, 1976, 1971. B.S., 1961, M.B.A., 1965, University of Illinois; Ph.D., 1973, University of Arizona.

- Aronian, Sona, Assistant Professor of Russian, 1970. A.B., 1960, Boston University; Ph.D., 1971, Yale University.
- Avery, Carol E., Assistant Professor of Textiles and Clothing, 1974, 1970. B.S., 1951, M.S., 1967, University of Rhode Island; Ph.D., 1977, University of Connecticut.
- Bachelder, Alfred Clarence, Associate Professor of Mechanical Drawing and Shopwork and Director of Engineering Instrument Shop, 1962, 1947. B.S., 1943, Rhode Island School of Design; M.S., 1955, University of Rhode Island.
- Baer, Nadine, Assistant Professor, Library, 1971, 1947. B.S., 1947, Simmons College.
- Bailey, Richard E., Associate Professor of Speech Communication, 1972, 1967. B.A., 1951, Otterbein College; M.A., 1954, United Theological Seminary; M.A., 1964, Ph.D., 1968, Ohio State University.
- Bancroft, J. Whitney, Assistant Cooperative Extension Professor, 1975, 1973. B.S., 1962, University of New Hampshire; M.S., 1971, Michigan State University.
- Barden, Martha Emily, R.N., Assistant Professor of Nursing, 1963, 1961. Diploma, 1944, Rhode Island Hospital School of Nursing; B.S., 1956, Boston University; M.S., 1961, Yale University.
- Barker, Walter L., Associate Professor of English, 1973, 1966. B.A., 1960, M.A., 1962, University of Rhode Island; Ph.D., 1966, University of Connecticut.
- Barnett, Harold, Assistant Professor of Economics, 1973, 1970. B.A., 1965, Miami University, Ohio; Ph.D., 1973, Massachusetts Institute of Technology.
- Barnett, Judith B., Assistant Professor, Library, 1975, 1971. A.B., 1959, Barnard College; M.L.S., 1962, Drexel University.
- Barnett, Stanley M., Associate Professor of Chemical Engineering, and Food Science and Technology, 1975, 1969. B.A., 1957, Columbia College; B.S., 1958, Columbia University; M.S., 1959, Lehigh University; Ph.D., 1963, University of Pennsylvania.
- Barron, Robert Alfred, Assistant Professor of Mathematics, 1956. A.B., 1951, Princeton University; M.A., 1955, Fordham University.
- Bass, Leonard J., Associate Professor of Computer Science, 1975, 1970. B.A., 1964, M.A. 1966, University of California, Riverside; Ph.D., 1970, Purdue University.
- Bassis, Michael S., Associate Professor of Sociology, 1977, 1971. A.B., 1967, Brown University; M.A., 1968, Ph.D., 1974, University of Chicago.
- Batroukha, M. Dean, Associate Professor of Journalism, 1966, 1959. B.A., 1950, M.A., 1954, Cairo University; Ph.D., 1961, Syracuse University.
- Beaupre, Walter J., Professor of Speech Communication, 1968. A.B., 1947, Bates College; M.A., 1951, Lehigh University; Ph.D., 1962, Columbia University.
- Beauregard, Raymond A., Associate Professor of Mathematics, 1973, 1968. A.B., 1964, Providence College; M.S., 1966, Ph.D., 1968, University of New Hampshire.
- Beckman, Carl Harry, Professor of Plant Pathology-Entomology and Botany, 1969, 1963. B.S., 1947, University of Rhode Island; Ph.D., 1953, University of Wisconsin.
- Beckman, Sue Fisher, Assistant Professor of English, 1972, 1966. B.S., 1964, Kutztown State College; M.A., 1966, Miami University, Ohio.
- Bell, Robert G., Associate Professor of Biochemistry, 1974, 1971. A.B., 1959, Bradley University; Ph.D., 1964, St. Louis University, School of Medicine.
- Bender, Michael L., Associate Professor of Oceanography, 1977, 1972. B.S., 1965, Carnegie Institute of Technology; Ph.D., 1970, Columbia University.
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- Phelps, Donald K., *Adjunct Professor of Oceanography*, 1969. B.A., 1951, M.S., 1958, Ph.D., 1964, University of Rhode Island.
- Pogacar, Srecko J., *Adjunct Assistant Professor of Pharmacology*, 1969. M.D., 1953, University of Ljubljana.
- Prager, Jan C., *Adjunct Associate Professor of Microbiology*, 1967. B.Sc., 1954, M.Sc., 1956, University of Cincinnati; Ph.D., 1961, New York University.
- Rainville, A. Robert, *Assistant Vice President for Student Life and Adjunct Assistant Professor of Education*, 1977, 1976. B.S., 1964, M.A., 1969, University of Rhode Island.
- Reed, Homer B.C., Jr., *Adjunct Professor of Psychology*, 1972. A.B., 1950, M.S., 1951, Fort Hays Kansas State College; Ph.D., 1955, Purdue University.
- Reed, James C., *Adjunct Professor of Psychology*, 1972. A.B., 1947, Fort Hays Kansas State College; M.A., 1949, State University of Iowa; Ph.D., 1957, University of Chicago.
- Ross, Matthew, *Adjunct Professor of Clinical Psychology*, 1968. B.S., 1938, Tufts University; M.D., 1942, Tufts University Medical School.
- Ryack, Bernard L., *Adjunct Professor of Psychology*, 1969. B.S., 1951, University of Connecticut; A.M., 1953, University of Pennsylvania; Ph.D., 1958, University of Massachusetts.
- Sahagian, Charles S., *Adjunct Assistant Professor of Chemical Engineering*, 1970. B.S., 1950, Boston College.
- Schaefer, Karl E., *Adjunct Professor of Zoology*, 1965. M.D., 1936, University of Kiel.

- Schmidt, Alfred O., *Adjunct Professor of Industrial Engineering*, 1975.
- Schneider, Eric, *Adjunct Professor of Oceanography*, 1974. B.A., 1962, University of Delaware; M.S., 1965, Ph.D., 1969, Columbia University.
- Schwartz, Joseph B., *Adjunct Associate Professor of Pharmacy*, 1976. B.S., 1963, Medical College of Virginia School of Pharmacy; M.S., 1965, Ph.D., 1967, University of Michigan.
- Sherman, Charles H., *Adjunct Associate Professor of Ocean Engineering*, 1974. B.A., 1950, Massachusetts Institute of Technology; M.S., 1957, Ph.D., 1962, University of Connecticut.
- Sherman, Kenneth, *Adjunct Professor of Oceanography*, 1977. B.S., 1954, Suffolk University; M.S., 1959, University of Rhode Island.
- Shonting, David H., *Adjunct Professor of Oceanography*, 1975. B.S., 1955, M.S., 1958, University of New Hampshire; Sc.D., 1966, Massachusetts Institute of Technology.
- Silverman, Gerald, *Adjunct Professor of Food and Nutritional Science*, 1969. B.S., 1950, M.S., 1952, Ph.D., 1954, Cornell University.
- Simmons, Emory G., *Adjunct Professor of Botany*, 1972. A.B., 1941, Wabash College; A.M., 1946, DePauw University; Ph.D., 1950, University of Michigan.
- Smith, James R., *Adjunct Associate Professor of Pharmacology and Toxicology*, 1976. B.S., 1963, University of Missouri; M.Ph., 1968, Ph.D., 1970, Yale University.
- Soltz, Gerald Carl, *Adjunct Assistant Professor of Chemical and Ocean Engineering*, 1972, 1968. B.S., 1955, U.S. Merchant Marine Academy; M.Sc., 1963, Ph.D., 1966, Manchester University.
- Spano, Leo A., *Adjunct Assistant Professor of Chemical Engineering*, 1967. B.S., 1943, M.S., 1948, University of Rhode Island.
- Stoller, Ronald G., *Adjunct Assistant Professor of Pharmacy*, 1978. B.S., 1967, Hobart College; M.D., 1971, Harvard Medical School.
- Sturges, Wilton III, *Adjunct Professor of Oceanography* 1973, 1966. B.S., 1957, Alabama Polytechnic Institute; M.A., 1963, Ph.D., 1966, The Johns Hopkins University.
- Tamkin, Arthur S., *Adjunct Associate Professor of Psychology*, 1972. A.B., 1950, Harvard University; Ph.D., 1954, Duke University.
- Tarzwel, Clarence M., *Adjunct Professor of Plant Pathology-Entomology*, 1965. A.B., 1930, M.S., 1932, Ph.D., 1936, University of Michigan.
- Tenore, Kenneth R., *Adjunct Professor of Oceanography*, 1976. A.B., 1965, St. Anselm College; M.S., 1967, Ph.D., 1970, North Carolina State University.
- Thomas, Carol J., *Adjunct Professor of Community Planning and Area Development*, 1971. B.S., 1948, Syracuse University; M.S., 1948, University of Connecticut.
- Thomas, Martha Jane Bergin, *Adjunct Professor of Chemistry*, 1974. A.B., 1945, Radcliffe College; A.M., 1950, Ph.D., 1952, Boston University.
- Tilly, Lawrence, J., *Adjunct Professor of Zoology*, 1974. B.S., 1952, Elmhurst College; M.S., 1953, University of Illinois; Ph.D., 1965, State University of Iowa.
- VanLoon, Edward J., *Adjunct Clinical Professor of Pharmacology and Toxicology*, 1970. A.B., 1936, University of Illinois; M.A., 1937, Ph.D., 1939, Rensselaer Polytechnic Institute.
- Verrier, Richard L., *Adjunct Assistant Professor of Pharmacology and Toxicology*, 1976. B.A., 1965, University of New Hampshire; Ph.D., 1969, University of Virginia.
- Vidins, Eva I., M.D., *Adjunct Associate Professor of Pharmacology and Toxicology*, 1977. M.D., 1966, University of Toronto.
- Walsh, Alexander H., *Adjunct Professor of Animal Pathology*, 1976. D.V.M., 1957, Cornell University; Ph.D., 1972, University of Wisconsin.
- Weisberg, Robert, *Adjunct Professor of Oceanography*, 1976. B.S., 1969, Cornell University; M.S., 1972, Ph.D., 1975, University of Rhode Island.
- Weisinger, Ronald S., *Assistant Director of Student Relations and Research and Adjunct Assistant Professor of Education*, 1977, 1976. B.A., 1974, University of Hartford; M.A., 1976, Michigan State University.
- Williams, David O., *Adjunct Assistant Professor of Biomedical Engineering*, 1977. B.S., 1965, Trinity College; M.D., 1969, Hahnemann Medical College.
- Wood, David, *Adjunct Assistant Professor of Mathematics*, 1976. B.S., 1961, University of Utah; M.S., 1968, Lehigh University; Ph.D., 1972, University of Rhode Island.
- Yacovone, Joseph A., *Adjunct Professor of Dental Hygiene*, 1961. B.A., 1936, Brown University; D.M.D., 1962, Tufts University School of Dental Medicine; M.P.H., 1965, Harvard School of Public Health.
- Yacowitz, Harold, *Adjunct Professor of Zoology*, 1973. B.S., 1947, M.N.S., 1948, Ph.D., 1950, Cornell University.
- Zarogian, Gerald E., *Adjunct Associate Professor of Food and Resource Chemistry*, 1969. B.S., 1958, University of Rhode Island; M.S., 1960, Ph.D., 1963, Purdue University.
- Zirkind, Ralph, *Adjunct Professor of Electrical Engineering*, 1973. B.S., 1940, City College of New York; M.S., 1946, Illinois Institute of Technology.

## Clinical Appointments

- Auger, Robert R., *Clinical Instructor in Pharmacy*, 1973. B.S., 1959, University of Connecticut.
- Bliss, Frank F., *Clinical Instructor in Dental Hygiene*, 1960. D.M.D., 1938, Harvard School of Dental Medicine.
- Bush, John R., *Clinical Instructor in Dental Hygiene*, 1976. B.A., 1967, University of Nebraska; D.D.S., 1971, University of Nebraska College of Dentistry.
- Calabresi, Paul, *Clinical Professor of Pharmacology*, 1977. B.S., 1951, Yale College; M.D., 1955, Yale University School of Medicine.
- Cannon, Joseph E., *Clinical Professor of Public Health*, 1963. Ph.D., 1932, Brown University; M.D., 1936, Tufts Medical School; M.P.H., 1954, Harvard School of Public Health.
- Carlin, Herbert S., *Clinical Professor of Pharmacy*, 1974. B.S., 1954, Rhode Island College of Pharmacy; M.S., 1959, Philadelphia College of Pharmacy and Science.
- Carlotti, Albert E., Jr., *Clinical Instructor in Dental Hygiene*, 1977. B.S., 1960, University of Rhode Island; D.D.S., 1964, University of Maryland Dental School; Certificate in Oral and Maxillofacial Surgery, 1968, University of Maryland Dental and Medical Schools.

- Cotnoir, Georgette M., *Clinical Instructor of Pharmacy*, 1977. B.S., 1972, University of Rhode Island; M.B.A., 1978, Bryant College.
- Dirlinger, Leopold T., *Clinical Instructor in Respiratory Therapy*, 1978. B.A., 1968, Our Lady of Providence Seminary.
- England, Lloyd C., *Clinical Instructor in Dental Hygiene*, 1966. D.M.D., 1941, Harvard School of Dental Medicine.
- Feldman, Jan, *Clinical Instructor in Dental Hygiene*, 1973. D.D.S., 1964, University of Pennsylvania School of Dentistry; Certificate in Endodontics, 1970, Boston University School of Graduate Dentistry.
- Finck, Sara V., *Clinical Coordinator, Speech and Hearing Clinic*, 1975. B.A., 1963; M.A., 1972, University of Rhode Island.
- Fisher, Kathleen N., *Clinical Instructor in Pharmacy*, 1977. B.S., 1971, University of Rhode Island.
- Gibson, Thomas C., *Clinical Instructor in Pharmacy*, 1973. B.S., 1966, University of Rhode Island.
- Girasole, Robert V., *Clinical Instructor in Dental Hygiene*, 1978. A.B., 1968, University of Connecticut; D.D.S., 1972, West Virginia University School of Dentistry.
- Giulliano, Thomas P., *Clinical Instructor in Dental Hygiene*, 1977. B.S., 1967, University of New Hampshire; D.M.D., 1971, Tufts University School of Dental Medicine.
- Guthrie, James R., *Clinical Professor of Health Sciences*, 1977. M.D., 1948, New York University College of Medicine.
- Haspela, Neil A., *Clinical Instructor in Pharmacy*, 1974. B.S., 1969, Union University Albany College of Pharmacy; M.S., 1974, Northeastern University.
- Holm, Alison L., *Clinical Instructor in Pharmacy*, 1977. B.S., 1977, University of Rhode Island.
- Kaufman, Robert L., *Clinical Instructor in Pharmacy*, 1970. B.S., 1960, M.S., 1969, University of Rhode Island.
- Kershaw, A. James, *Clinical Instructor in Dental Hygiene*, 1962. D.D.S., 1932, University of Maryland Dental School.
- King, Thomas F., *Clinical Instructor in Pharmacy*, 1977. B.S., 1953, Massachusetts College of Pharmacy.
- Knapp, Mark S., *Clinical Instructor in Dental Hygiene*, 1977. D.D.S., 1972, University of Michigan School of Dentistry.
- Lancaster, William J., *Clinical Instructor in Pharmacy*, 1973. B.S., 1960, Massachusetts College of Pharmacy.
- Leone, Marion T., *Clinical Instructor in Respiratory Therapy*, 1978. R.N., 1959, Cambridge City Hospital.
- Masley, Beth N., *Clinical Instructor of Pharmacy*, 1977. B.S., 1974, University of Rhode Island.
- Murphy, James N., *Clinical Instructor in Pharmacy*, 1974. B.S., 1958, M.S., 1970, University of Rhode Island.
- Nelson, Eugene M., *Clinical Instructor in Dental Hygiene*, 1962. B.S., 1943, University of Rhode Island; D.D.S., 1946, University of Maryland Dental School; Certificate in Orthodontics, 1950, Tufts University School of Dental Medicine.
- Persechino, Dante, *Clinical Instructor in Dental Hygiene*, 1961. B.S., 1951, University of Rhode Island; D.D.S., 1958, Temple University School of Dentistry.
- Redmon, William C., *Clinical Professor of Psychology*, 1969. B.S., 1937, University of Kentucky; M.D., 1942, University of Cincinnati Medical School.
- Regan, J. Barry, *Clinical Assistant Professor, Department of Speech Communication*, 1972. B.A., 1953, M.A., 1954, Emerson College; D.Ed., 1967, Boston University.
- Ross, Stuart, *Clinical Instructor in Dental Hygiene*, 1975. B.A., 1966, Queens College; D.M.D., 1970, Tufts University School of Dental Medicine; Certificate in Periodontics, 1974, Boston University School of Graduate Dentistry.
- Sack, Steven A., *Clinical Instructor in Dental Hygiene*, 1977. B.S., 1971, University of Rhode Island; D.M.D., 1975, Tufts University School of Dental Medicine.
- Schwab, Jay S., *Clinical Instructor in Dental Hygiene*, 1970. D.M.D., 1967, Tufts University School of Dental Medicine, M.Sc.D., 1969, Boston University School of Graduate Dentistry.
- Tompkins, John F., *Clinical Instructor in Dental Hygiene*, 1968. B.S., 1960, College of the Holy Cross; D.D.S., 1965, Georgetown University School of Dentistry.
- Vitello, Robert A., *Clinical Professor of Health Sciences*, 1974. B.S., 1958, Boston University; M.H.A., 1959, University of Minnesota.
- Wellins, Ira, *Clinical Instructor in Pharmacy*, 1973. B.S., 1941, Connecticut College of Pharmacy; B.A., 1947, University of Connecticut.
- Yashar, J. John, *Clinical Lecturer in Pharmacology*, 1963. M.D., 1950, American University and Teheran University.

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- Capt. William Peterson, *Naval Regional Dental Center, Newport*

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- Susan Leclair, M.S., *Program Director*
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**Rhode Island Medical Center**

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 Linda L. Sutherland, B.S., Education Coordinator  
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 Gladys L. Cok, Ph.D., Education Coordinator  
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**Nursing****Allen's Health Center, Inc.**

Patricia Rouen, R.N., Director of Nursing

**Bristol County Community Health Center**

Doris Sinclair, R.N.

**Childbirth Education Association of Southern Rhode Island**

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 Pat Ciccione, R.N., Childbirth Educator  
 Jackie Harmon, R.N., Childbirth Educator

**East Providence Community Health Center**

Gertrude Martin, R.N.

**East Shore District Nursing Association**

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 Janice Muhleberg, B.S., R.N., Nursing Supervisor

**Fruit Hill Day Care Center**

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**Hope Valley Branch of Washington County Health Center**

Brenda Pukas, B.S., R.N., Administrator

**Kent County Visiting Nurse Association**

Grace Herrington, M.S.W., Social Worker

**Metropolitan Nursing and Health Services of Rhode Island**

Jane Mackenzie, R.N., M.S., Director

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 Marsha Lyle, R.N., Staff Development, Recovery Unit  
 Jeanette Matrone, R.N., M.S., Director of Nursing Service  
 Linda Palmatier, R.N., M.S., Psychiatric Nurse Clinician  
 Susan Stuart, R.N., Enterostomy Therapist

**MHRH - Institute of Mental Health**

Joseph Bevilacqua, Ph.D., Director  
 Elizabeth McKenna, R.N., Director of Nursing

**Newport Mental Health Center**

Tony Gaudiello, M.D., Director  
 Catherine Whipple, R.N., M.S., Director of Nursing

**Planned Parenthood of Rhode Island**

Frances Nash, R.N., M.S.

**Providence Head Start Program**

Ruth McSoley, R.N., Health Coordinator

**Rhode Island Hospital**

Ann Bibearlt, R.N., Ostomy Nurse  
 Helen Enright, R.N., B.S., Assistant Director, Emergency Services  
 Laura Hilderly, R.N., B.S., Clinical Specialist, Radiation-Oncology  
 Barbara Romano, R.N., Dialysis Clinical Specialist  
 Mrs. White, R.N., Burn Unit Nurse Leader

**Roger Williams General Hospital**

Ann Crowley, R.P.T., Physical Therapist  
 Barbara Pacia, R.N., Emergency Room Supervisor  
 Frank Riley, R.R.T., Respiratory Therapist  
 Cheryl White, R.N., Clinical Instructor

**Scallop Shell Nursing Home**

Mildred Mahoney, R.N., Director of Nursing

**South County Hospital**

Mary Delahanty, R.N., Head Nurse  
 Marilyn Hamilton, R.N.  
 Barbara Miles, R.N.  
 Edna Otto, R.N., M.S., Director of Nursing

**Veterans Administration Hospital**

P.F. Conze, M.D.  
 Doris Feinberg, R.N., M.S., Psychiatric Nursing Supervisor  
 Mary Jerome, R.N., B.S., Associate Chief, Nursing Service for Education  
 Robert Nudal, M.D.  
 Walter Wilkins, R.P.T., Physical Therapist

**Washington County Health Center**

Alice Facente, R.N., B.S., Head Nurse  
 Mary B. Hall, R.N., B.S., Charge Nurse  
 Linda Webster, R.N., Pediatric Clinic

**Westerly Hospital**

Helen Allyn, Respiratory Therapist  
 Ruth Nelson, R.N., Review Coordinator  
 Nora Spens, M.D., Pathologist  
 Annette Teirney, R.N., Chairperson, Nursing Audit Committee  
 Anna Toscano, Home Care Coordinator  
 Marjory Weeden, R.N., B.S., Nursing Supervisor

**Westerly Nursing Home**

Catherine Quinn, R.N., Director of Nursing

**Women and Infants Hospitals of Rhode Island**

Theresa Kelly, R.N., M.S., Vice President for Patient Care Services

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Stacia Sczepan, R.N.

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- Charles Lynch, Owner, Lynch Pharmacy
- John Maciel, Pharmacist
- Charles Mahoney, Director of Education & Training, Department of Pharmacy, Rhode Island Hospital
- Earl Mason, Pharmacist
- Joseph Navach, Owner, Standard Pharmacy
- Anthony Solomon, Owner, Anthony's Pharmacy and Treasurer of the State of Rhode Island
- Ira Wellins, Owner, Bayshore Pharmacy
- Richard Yacino, Owner, E.P. Anthony Inc.

#### College of Resource Development Advisory Committee

- Alfred Hawkes, Providence
- Ann Holst, East Greenwich
- Georgina MacDonald, Providence
- Blanche Murray, Jamestown
- Harry Prebluda, Trenton, New Jersey
- John Rego, Bristol
- William Stamp, Cranston
- Charles Starr, Chepachet
- Winfield Tucker, Slocum
- Robert VanHof, Portsmouth
- David Wilkes, Warwick

\*Members of Business Associates Program. Other members: Arthur Anderson & Company; Brite Industries, Inc., Division of Liggett and Myers, Inc.; H & H Screw Products Manufacturing Company; Rhode Island Association of Insurance Agents, Inc.

#### College of Engineering Advisory Council

- Renato D'Antonio, President and Chairman, International Data Sciences, Inc.
- Duncan H. Doolittle, Vice President and General Manager, Machine Tool Division, Brown and Sharpe Manufacturing Co.
- Waldemar J. Elsdoerfer, President, International Machine and Tool Corp.
- Harry W. Grimmell, Consulting Chemist
- John T. Hayward, Management and Engineering Consultant

*Graduate Library School Advisory Committee*

Joseph Cusker, *Executive Director, Joint Operations Committee*

Irene Demers, *Rhode Island School Media Association*

John Hannon, *Librarian, Bryant College*

Richard Howard, *Director, Audio-Visual Department*

Patricia Jensen, *Library School Faculty Liaison*

John Linford, *Director, NELINET*

Mary McKenzie, *Director, New England Library Board*

William Metz, *Department of History*

George Parks, *Dean, University Library, URI*

Thomas Pezzullo, *Asst. V.P. Academic Affairs, URI*

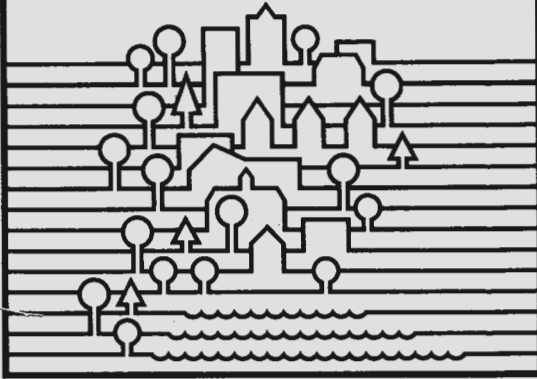
Louise Sherby, *Rhode Island College Library*

Sara Weed, *GLS Alumni/Student Association*

Barbara Wilson, *Chief of Library Services, Rhode Island Department of Library Services*



## Appendix



### Loan Funds and Scholarships

These are privately contributed loan and scholarship funds. For federal programs and general student aid information see page 24.

#### LOAN FUNDS

Norman M. Fain Fund, Providence Wholesale Drug Company Fund, The Rhode Island Foundation Fund, The University of Rhode Island Foundation Fund and the URI Alumni Association Fund are privately contributed loan funds of \$5,000 or over, used as "matching funds" for federal loan programs.

Alumni Association Fund, Leroy F. Burroughs Fund, Providence Engineering Society Fund, and the John H. Washburn Memorial Fund are privately contributed loan funds of \$5,000 or more administered by the Student Financial Aid Office.

Patrons Association Loan Fund: short-term loans for emergency reasons, administered by Dean of Students.

Dean Mason Campbell Memorial Loan Fund: short-term loans for emergency reasons, administered by Dean, College of Resource Development.

#### SCHOLARSHIPS

Scholarships preceded by an asterisk (\*) have recipients selected by the college concerned and/or the organization providing the funds.

##### Any College of the University

*Alumni Association:* Income from endowment. (See also Carl R. Woodward, Francis H. Horn, Thomas V. Falciglia and Presidential Scholarships.)

*Alumni Century Club Memorial:* Offered in honor of Rhode Island alumni who sacrificed their lives in two world wars. Recipients selected on the basis of financial

need, campus citizenship, scholastic ability and leadership as evidenced by participation in sports and other extracurricular activities.

*American Screw Company Foundation:* Income from \$10,000 endowment awarded to students, having financial need, with preference to children of former employees of American Screw Company.

*Ann & Hope (Martin Chase Memorial):* \$1,000 awarded annually, with preference to students with financial need, Ann & Hope employees, children of Ann & Hope employees, residents of Cumberland or Warwick, R.I., or students majoring in retail distribution related fields.

*Artacky and Elese Berberian:* Income from \$5,000 endowment awarded annually to a student having financial need.

*Leroy F. Burroughs:* Income from \$5,000 endowment awarded annually to a student having financial need.

*Castellucci and Galli, Inc.:* Income from \$5,000 endowment, awarded annually to a student having financial need.

*Citizens Bank:* \$500 awarded annually to students having financial need, who are Rhode Island residents, with preference to children of employees of Citizens Bank.

*\*Lt. Parker D. Cramer '59 Memorial:* Income from \$7,000 endowment provides two annual awards (a sabre and \$200) to outstanding students in Reserve Officers Training Corps (ROTC) having leadership qualities and high ethical standards.

*John Clarke Trust:* Annual awards to students from Aquidneck Island who have financial need.

*A.T. Cross Company:* Income from \$15,000 endowment awarded to deserving students having financial need.

*Senator William M. Davies, Jr. Memorial:* Offered to residents of Rhode Island in honor of an outstanding and respected member of the General Assembly, who was leader of the state senate when he died on January 1, 1963, \$500 available annually for two \$250 awards to be made for the freshman and sophomore years.

*Frances B. DeFrance Memorial:* \$200 annual award for a student with financial need. Contributed by Chapter B-P.E.O., Kingston, R.I., in the memory of its beloved member and one of its founders, Frances B. DeFrance.

*Daniel R. Dye Memorial:* Income from \$6,300 endowment awarded annually to a graduate of East Providence, R.I., high school who has financial need, selected by the URI Student Financial Aid Office.

*Federal Products Foundation:* Several awards available annually, to students having financial need, with preference given to sons and daughters of Federal Products Corporation employees.

*Ferland Corporation; Endowed Scholarship:* Income from \$5000 available to students with financial need. First preference to be given to children of employees of the Ferland Corporation.

*Harris Corporation:* \$1,000 available annually, with preference first to children of Harris Corporation employees, second to residents of Westerly-Pawcatuck area, third to students in College of Engineering.

*Edison Corporation:* \$1,000 awarded annually to students having financial need.

**James H. Higgins Memorial:** Income from \$10,000 endowment, awarded to men or women students having financial need. Gift is from the estate of Mrs. James H. (Ellen F.) Higgins.

**James H. Higgins, Jr.:** Income from \$13,500 endowment, awarded to students having financial need.

**High School Model Legislature:** Amount of general fee awarded to an incoming freshman who has given outstanding performance in the Model Legislature. Application must be made for this award.

**Percy Hodgson:** Income from \$10,000 endowment awarded annually to students having financial need, with preference to students from foreign countries.

**Francis H. Horn:** Income from \$10,000 gift of URI Alumni Association and \$17,345 in gifts from Friends of Francis H. Horn, with special consideration to applicants from foreign countries who can qualify with respect to academic standing and financial need.

**Industrial National Bank of Rhode Island:** Several awards available annually to students having financial need, with preference to children of Industrial National Bank employees who have financial need.

**International Grant:** A limited number of partial or full out-of-state tuition awards based on financial need.

**A. Livingston Kelley Memorial:** Income from \$5,000 endowment, established by the will of A. Livingston Kelley, awarded to a student having financial need, who is a resident of Rhode Island.

**Kenyon Piece Dyeworks, Inc.:** Income from \$10,000 endowment, with preference to children of employees having financial need.

**Paul J. Kervick Family:** Income from \$10,000 endowment plus \$250 awarded annually to children of employees of Providence Steel and Iron Company who have financial need.

**Harry Knowles Memorial:** Income from \$8,000 endowment established by the will of Harry Knowles awarded annually to students having financial need.

**Legislative Internship:** Income from \$7,000 endowment given to a member of the junior class to finance a summer at the Rhode Island Legislature, serving either a state senator or a state representative.

**Leviton Foundation:** Awards available annually to children of employees of American Insulated Wire, Atlas Wire & Cable, Cable Electric Products, Leviton Manufacturing, Rhode Island Insulated Wire, and other affiliated companies. Preference given to applicants who are undergraduates with financial need and best scholastic standing.

**Austin T. Levy Memorial:** Income from \$5,000 endowment awarded annually to students having financial need, with preference to graduates of Burrillville High School.

**George C. Moore Company/Fulflex, Inc.:** \$1,500 awarded annually to students having financial need with preference to children of George C. Moore Company employees in Westerly and of Carr-Fulflex, Inc. in Bristol.

**Richard B. Morrison Memorial:** Income from \$16,500 endowment awarded annually to Rhode Island residents who have financial need.

**National Merit Scholarship:** Sponsored by the University of Rhode Island Foundation, a four-year scholarship with annual awards of at least one-half of the student's financial need, but not more than \$1,500 per year.

**\*Northeast Institute of Food Technologists. Undergraduate:** \$300 annual award established by the Northeast section of the Institute of Food Technologists for undergraduate students in the New England area who have a significant interest in furthering the development of food science. Selection based on interest in food science, academic excellence, personal character and extracurricular activities.

**Rau Fastener Company:** Income from \$5,000 endowment awarded annually to students, with preference to children of Rau Fastener employees.

**Raytheon Company:** Grants awarded annually to students having financial need.

**Louis M. Ream Memorial:** Income from \$20,000 endowment awarded annually to students having financial need.

**Reserve Officers Training Corps (ROTC):** One, two and three-year scholarships awarded annually by the Department of the Army to qualified students enrolled in the ROTC program. Includes tuition, fees, textbooks, incidentals and \$100 per month (tax free). Applications may be made at the Department of Military Science, 100 Keaney Gymnasium.

**Reserve Officers Training Corps (ROTC four-year scholarships):** Available to selected young men motivated toward a career in the Army. Includes tuition, books, laboratory fees, and \$100 per month (tax free). Forward applications to Headquarters, First U.S. Army, Attn. AHAAG-CA, Fort Meade, Md. 20755, by early December of applicant's senior year in high school.

**Rhode Island Hospital Trust National Bank:** \$2,500 available annually to Rhode Island residents, with preference given to sons and daughters of Rhode Island Hospital Trust National Bank employees.

**Pasquale and Rosaria Rizzi:** Income from \$20,000 endowment awarded annually to two or more junior and/or senior members of Beta Psi Alpha chapter of Theta Delta Chi fraternity on basis of scholarship, achievement and financial need.

**Mary L. Robinson Memorial:** Income from fund established by the will of Anna D. Robinson in memory of her mother, awarded to students with financial need.

**Samuel and Gertrude J. Rosen:** Income from endowment fund, awarded to students having financial need.

**N. Edward Rosenhirsch Memorial:** Income from \$22,000 endowment awarded to students having financial need.

**Science Fair:** \$325 each to two incoming freshmen in recognition of outstanding exhibits in the annual R.I. Science Fair for high school students. Application must be made for this award.

**Abby M.B. Slade Memorial:** Grants to students who are graduates of Providence high schools and have financial need.

**Edwin S. Soforenko Foundation Scholarship:** Income from \$10,000 endowment to be awarded annually to deserving students on the basis of need with first preference to employees of Insurance Underwriters, Inc., and their families.

**Stan Stutz Memorial:** Income from \$7500. Athletic scholarship to students with financial need with preference to residents of Westchester County, N.Y.

\***Student-to-Student:** Income from \$6,000 endowment fund awarded annually through Student Senate.

\***Alice M. Talbot:** Income from \$17,000 endowment, established by a \$10,000 gift from The Salvation Army in appreciation of Miss Talbot's past philanthropy to The Salvation Army, and added to by the Ted Clarke family and the URI Century Club. Awarded annually to a University student selected in accordance with guidelines of the URI Century Club for scholarship recipients and with approval of the Director of Athletics of the University.

\***Frederic D. Tootell Memorial:** Income from endowment awarded annually to a student selected by the Track Club.

**Triangle Club of Kingston:** Minimum of \$200 awarded annually to a student from Rhode Island having financial need.

**United Steelworkers of America:** Annual awards available to URI students having financial need, who are sons or daughters of members of Providence Subdistrict #1 of United Steelworkers of America.

**University Grant:** The Board of Regents has made available a sum of money to be used for scholarships. While it is expected that in any year the great majority of these scholarships will be awarded to residents of Rhode Island, in certain exceptional cases out-of-state students may qualify.

**University of Rhode Island Foundation - Frederick L. Jackson Scholarships:** Income from endowment appropriated annually for scholarships and awarded by the Student Financial Aid Office.

\***URI Alumni Association "Presidential":** \$1,000 awarded for senior year to son or daughter of URI alumnus(a) having highest cumulative grade point average for three years at URI. In the event of a tie, award to be divided. Application to be made through the Alumni Association Office.

**URI Parents Fund:** Income from \$24,000 endowment awarded annually to students having financial need.

**URI Patrons Association:** Income from \$14,700 endowment awarded annually to students having financial need.

**URI Patrons Association, John F. Quinn Memorial:** Income from \$5,000 endowment established by the Association as a testimonial to Dr. Quinn, retired Vice President for Student Affairs, to be awarded annually to a student having financial need.

**Vanguard Case Co.:** \$335 annual award to a student having financial need.

**Veterans' Administration (Junior G.I. Bill):** Provides monthly payments while attending college to students whose parents have died or are permanently and totally disabled from disease or injury incurred in armed forces during Spanish-American War, World War I, World War II, or Korean conflict. Contact regional Veterans' Administration Office for details.

**Washington Trust Company:** \$500 awarded annually to an undergraduate student from Rhode Island having financial need.

**West Bay Manor Retirement Home:** Annual grant to qualified students who major in health care and who have financial need.

**Westerly Lions Club:** \$500 awarded annually to graduates of Westerly High School having financial need with preference to upperclassmen.

**George F. Weston Memorial:** Income of \$1,200 from a fund established by the Providence Technical High School Athletic Field Association awarded annually to graduates of Rhode Island high and college preparatory schools having financial need, with preference to former students and descendants of former students and teachers of Technical High School of Providence.

**David R. Wilkes:** Income from \$5,000 endowment awarded annually to a student having financial need, with preference to a resident of Rhode Island.

**Woman's Seamen's Friend Society of Connecticut:** Awards to undergraduate and graduate students from Connecticut who are in marine oriented programs and have financial need.

**Carl R. Woodward:** Income from \$10,000 Alumni Association gift available annually to students having financial need.

**Lt. Charles Yaghoobian, Jr. '65 Memorial:** Income from \$5,000 endowment available to a student having financial need, with first preference to residents of Blackstone Valley, R.I., majoring in physical education, and second preference to residents of Blackstone Valley, regardless of major.

## Arts and Sciences

**Bessie D. Belmont Memorial:** Gift of \$5,000 by Dr. and Mrs. Ralph S. Belmont in memory of his mother. Income awarded annually to an undergraduate majoring in natural sciences on basis of scholarship and/or diligent application and financial need.

\***Carbide Mold Service, Inc. (in honor of Ernest A. Calverley):** \$335 annual award to an athlete having financial need.

\***Chemistry Contest:** Winner of annual Chemistry Competitive Examination awarded \$325 for the freshman year.

\***Thomas V. Falciglia Honorary:** \$200 awarded annually to a music major concentrating in piano, organ, orchestral instrument or voice on basis of musical achievement or contribution to the music program or to a musically talented freshman, with preference to students having financial need.

**Lillian and Benjamin Fine Memorial:** Income from \$5,000 endowment awarded annually to an undergraduate in journalism who has financial need.

\***Kent County Dental Auxiliary:** \$200 awarded annually to sophomore resident of Kent County. Based on scholarship, clinical ability, and need.

**June Rockwell Levy Memorial:** Income from \$15,000 endowment awarded annually to music students having financial need.

**Henry H. Mackal:** Income from \$25,000 endowment awarded to students having financial need and majoring in engineering, mathematics, natural sciences, or physical education.

*John T. McCarthy '36 Memorial*: \$250 available annually for a junior or senior majoring in zoology, with preference to a student planning to attend a veterinary school.

\**Max Rosen Memorial*: Income from \$5,800 endowment awarded annually to a student having financial need, preferably a junior, majoring in history with emphasis on American history.

\**Leonard Eckerman Smith Memorial*: Income from \$5,000 endowment awarded to students at the University of Rhode Island having a major interest in public speaking.

\**Ruth Erskine Tripp Memorial*: \$200 awarded annually to an undergraduate majoring in music and selected on the basis of an audition and financial need.

### Business Administration

*American Production and Inventory Control Society, Providence Chapter*: \$200 awarded annually to a student in a management major who has financial need.

*George A. Ballentine Memorial*: \$200 awarded annually to a student in financial need.

*Dr. Winfield S. Briggs Memorial*: Income from \$19,000 endowment available to students of accounting having financial need.

\**Bristol Laboratories (Business Associates Program)*: \$1,000 available annually for students having financial need.

\**Brite Industries, Inc.*: \$250 awarded to a student having financial need, with preference to children of employees of Brite Industries, Inc.

*Saul and Alfred Goldstein Fund*: Income from \$5,000 endowment available to a student having financial need.

\**PPG Industries Foundation (Business Associates Program)*: \$1,000 available annually for students having financial need.

\**Rhode Island Association of Insurance Agents*: \$2,000 awarded annually to deserving students in risk management and insurance who are Rhode Island residents.

\**Rhode Island Society of Certified Public Accountants*: An annual scholarship award of \$200 to a sophomore or junior majoring in accounting who plans to enter the field of public accounting and who has a good scholastic record.

\**H & H Screw Products Mfg. Co.*: \$1,000 available annually for students having financial need.

\**Uniroyal Foundation (Business Associates Program)*: \$1,000 available annually for students having financial need.

\**The Arthur Young Foundation*: \$1,000 annual award to be distributed to not less than two, nor more than three, senior students with demonstrated need and scholastic excellence.

### Engineering

*Construction Industries of Rhode Island*: \$500 awarded annually to a student from Rhode Island majoring in civil engineering who has financial need.

*Electrical League of Rhode Island*: \$500 grant annually to a Rhode Island resident who is majoring in electrical engineering and who has financial need.

*Harris Corporation*: See awards under "Any College."

*Institute of Electrical and Electronics Engineers, Providence Section*: \$300 annual award to a deserving undergraduate majoring in electrical engineering and in need of financial aid.

*Charles A. Maguire Associates*: Income from \$5,000 endowment awarded to students in the field of engineering, having financial need.

*Kenneth E. McConaughay Memorial*: \$200 awarded annually on the basis of financial need to a senior in civil engineering who desires to work or has worked in public highway department, has 3.0 or better cumulative grade average in courses related to bituminous materials and/or design, transportation, soils, or surveying and is a resident of Rhode Island, Connecticut, Massachusetts or New Hampshire.

*Arthur J. Minor Memorial*: Income from \$5,000 endowment available annually to a student having financial need.

*Municipal Public Works Association of Rhode Island*: \$200 awarded annually to a student from Rhode Island having financial need and majoring in civil and environmental or mechanical engineering.

*Grant H. Potter Memorial*: Income from \$50,000 endowment, a bequest of Warren L. Offer, for scholarships to students having financial need, with preference to Rhode Island engineering students specializing in the fields of electronics or aeronautics.

*Providence Engineering Society*: \$400 awarded annually to a student in engineering selected on the basis of financial need and scholastic accomplishment.

*Nelson C. White*: \$500 awarded annually to students exhibiting most creative thinking in engineering.

### Home Economics

\**Elizabeth W. Christopher Memorial*: Income from \$6,000 endowment awarded to students in home economics who have completed their fourth semester at the University. Selection will be made on the basis of scholarship and evidence of potential for service and concern for the welfare of others.

\**Mable Streeter Perrin Memorial*: Income from \$9,500 endowment awarded annually to students in home economics on the basis of scholastic performance and financial need. Restricted to Rhode Island residents.

### Nursing

See also page 26.

*M. Adelaide Briggs Memorial*: Income from \$19,000 endowment available to nursing students having financial need.

*Oscar Lapierre Memorial*: \$300 grant each year for four years to a student in the College of Nursing from Central Falls, R.I., who has financial need.

\**Esther A. Watson Memorial*: Income from \$9,500 endowment awarded annually to students having financial need, with preference to graduates of The Pawtucket Memorial Hospital School of Nursing and then relatives of such graduates.

**Oceanography**

\**Andrew D. Starr Memorial*: \$200 awarded annually to a graduate student having financial need.

**Pharmacy**

\**American Foundation for Pharmaceutical Education*: Five \$100 annual awards based upon scholastic achievement and need. Given by the AFPE with the understanding that the University will match the awards to the students selected.

*Sidney Cohn Memorial*: Income from \$9700 bequest awarded to a student from the College of Pharmacy with financial need.

\**Consumer Value Stores (CVS)*: Three \$500 awards to students who are in their fourth or fifth year, having satisfactory academic standing, financial need, and interest in a career in retail (community) pharmacy, with high preference to children of CVS employees.

\**John W. Dargavel Foundation*: \$200 awarded annually to a student in either his third, fourth or fifth year of pharmaceutical education and in good scholastic standing.

\**Barney M. Goldberg Fund*: Available to students in third, fourth or fifth year who have financial need.

\**Florence Champlin Hamilton Memorial*: Income from \$6,000 endowment awarded annually to a student in the College of Pharmacy on the basis of scholastic ability and financial need.

\**La Verdiere Drug Company*: \$250 awarded annually to students in third, fourth or fifth years on the basis of satisfactory scholastic standing and financial need.

\**Edward M. Lee Memorial*: Income from \$5,000 endowment awarded annually to students from the Woonsocket and North Smithfield area.

\**Mrs. C. Gordon MacLeod*: \$250 awarded annually to student(s) in the College of Pharmacy on the basis of scholastic ability and financial need.

\**William G. Peckham Memorial*: Established by the will of Mary M. Peckham (Mrs. William G.), the scholarship provides \$200 to a first-year student registered in pharmacy and continues until graduation if merited by scholastic performance.

*Rhode Island College of Pharmacy*: Income from \$147,000 endowment, for scholarships in the field of pharmacy.

*Rhode Island College of Pharmacy Class of 1926*: A sum of \$2,000 from which scholarships are awarded on the basis of financial need and scholarship.

\**R.I. Pharmaceutical Association*: \$300 awarded annually to an upperclass student in the College of Pharmacy on the basis of scholastic ability and financial need.

\**R.I. Traveling Men's Auxiliary*: \$300 awarded annually to an upperclass student of the College of Pharmacy on the basis of scholastic ability and financial need.

\**Walter B. Thompson Memorial*: Income from \$5,000 endowment awarded annually to a deserving student.

\**Waterbury Druggists' Auxiliary*: \$200 available annually to a worthy third, fourth, or fifth year student from the area of Waterbury, Conn.

**Resource Development**

*Anonymous*: Income from endowment awarded annually to students in Fisheries and Marine Technology having financial need, with preference to graduates of Martha's Vineyard Regional High School and then to graduates of Cape Cod High School.

\**Ashaway Line and Twine Manufacturing Co. (Lloyd Robert Crandall Memorial)*: Income from \$15,000 endowment awarded annually to students in Fisheries and Marine Technology having financial need.

\**John W. Atwood Memorial*: Income from \$5,000 endowment awarded annually to a junior or senior student in animal science programs; students to be selected by a committee on the basis of financial need, academic performance and interest.

\**John Samuel Clapper Memorial*: Income from \$8,000 endowment established by Orville O. Clapper in honor of his father who pioneered the development of modern turf. Awards to outstanding juniors or seniors showing marked and abiding interest in turf culture.

\**Cedric C. Jennings '37 Memorial*: Income from \$33,000 endowment available annually to students having financial need who are studying entomology or plant pathology.

\**Dr. J. T. Kitchin Memorial*: \$200 to \$400 awarded annually by the Rhode Island Fruit Growers Association to a deserving student with an interest in fruit growing.

\**Alice P. Mayer*: Three annual awards of \$500 each for agricultural students who reside in Newport County. Preference to first and second year students.

\**Jean Louise Pimental ('70) Memorial*: \$200 annual award to a student in animal science, with preference to a woman from Rhode Island.

*Point Judith Striped Bass and Blue Fish Tournament*: \$500 awarded annually to a student in Fisheries and Marine Technology having financial need.

\**John E. Powell Memorial*: Income from \$5,000 endowment available annually to students on basis of worth and need.

\**Ralston Purina*: \$500 awarded annually to a student with interest related to animal agriculture. Selection on basis of scholarship, leadership, character, citizenship potential, and need.

\**Rhode Island Golf Course Superintendents' Assn.*: \$200 annual award to an undergraduate who is studying for the profession of Turfgrass Management.

\**Charles (Scotty) Ross Memorial*: \$200 awarded annually on the basis of need, character and scholarship to an upperclassman interested in the processing and production of quality milk and milk products.

**SPECIAL AWARDS**

*Danforth Leadership Training Scholarship*: All expenses for two weeks of leadership training at the American Youth Foundation Camp at Shelby, Michigan, awarded to an outstanding freshman with preference given to students having special interest in dairy, poultry or agricultural education.

*Danforth Summer Fellowship*: Awarded jointly by Danforth Foundation and Ralston Purina Co. to a junior.

Preference to students with special interest in dairy, poultry, or agricultural education. Covers expenses during two weeks in St. Louis and vicinity and two weeks of leadership training at the Amercian Youth Foundation Camp, Shelby, Mich. Basis is attainment in mental, physical, social, and religious development.

\**Rhode Island State Grange*: Three annual awards of \$200 each to students entering any accredited college in Rhode Island. Student must be a member of a R.I. Subordinate Grange in good standing and have shown an active interest in Grange work for at least two years. Applications should be made to the Secretary of the Rhode Island State Grange on or before July 1 preceding junior year.

*Rhode Island Tuberculosis and Respiratory Disease Association Award*: \$500 awarded annually in honor of its former president, Harry L. Gardner, to a senior accepted by accredited medical school. Based on need. Apply to chairman of Faculty Pre-Medical Advisory Committee.

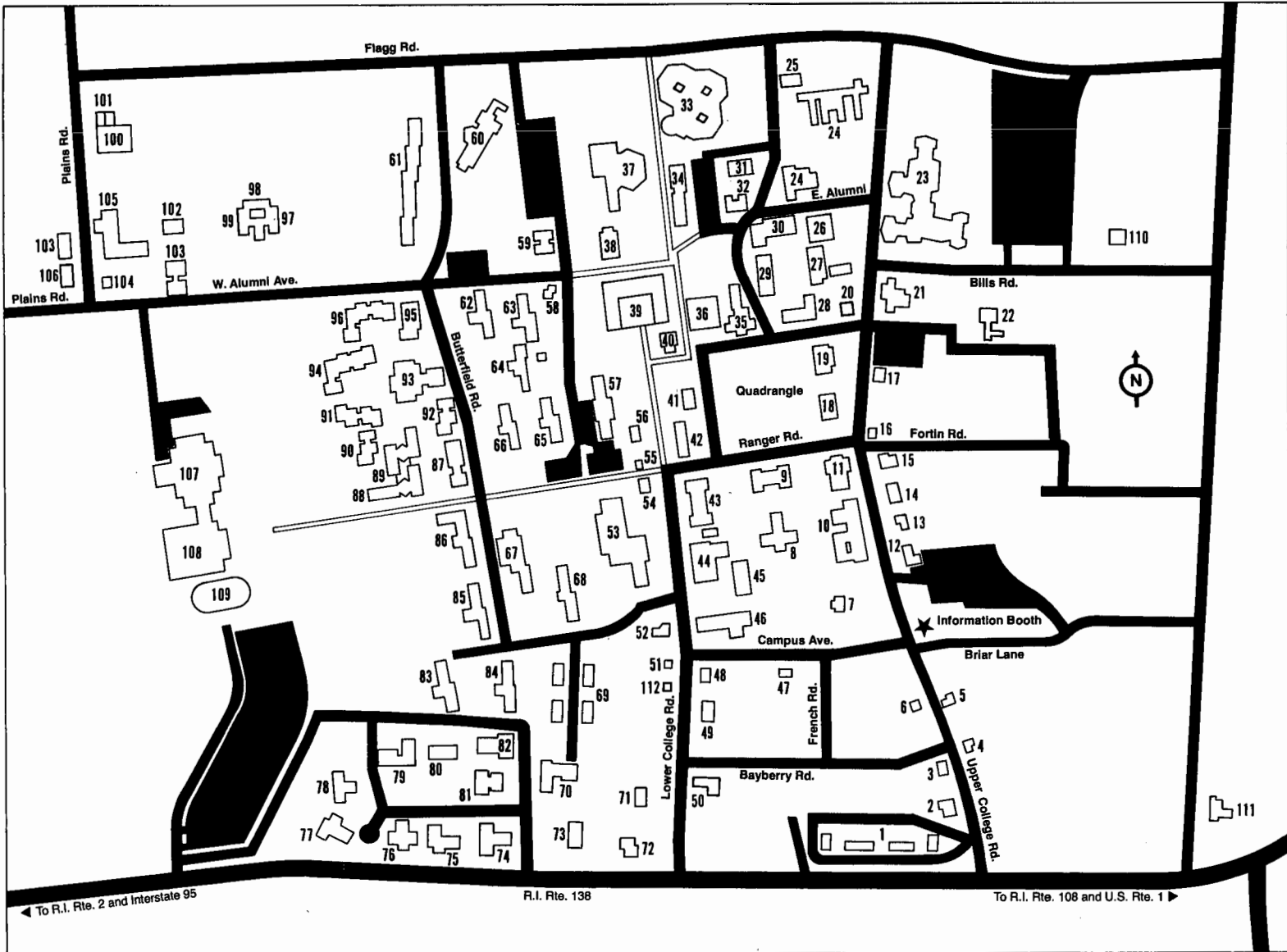
\**Richard Dawson Wood Memorial Award*: Annual award of \$300 to a senior in the botany department who intends to enter graduate study in the field of botany.

## Historical Outline

- 1888 State Agricultural School established.  
Agricultural Experiment Station established.  
Watson farm purchased as site.
- 1889 Taft Laboratory.  
John H. Washburn appointed principal.
- 1890 South Hall.
- 1891 Davis Hall.  
Ladd Laboratory.
- 1892 Rhode Island College of Agriculture and Mechanic Arts founded May 19.  
John H. Washburn, President.
- 1894 First class graduated.  
Alumni Association formed.
- 1895 Davis Hall burned and rebuilt.
- 1897 Lippitt Hall.  
First Grist published.
- 1898 Preparatory school established.
- 1902 Homer J. Wheeler, Acting President.
- 1903 Kenyon L. Butterfield, President.
- 1904 Extension Department organized.
- 1906 Howard Edwards, President.  
Greenhouse and Horticultural Building.
- 1907 Master's degree awarded for the first time.
- 1908 Preparatory school discontinued.  
The Beacon (student newspaper) established as a monthly.  
Rho Iota Kappa (first fraternity).
- 1909 East Hall.  
By charter amendment, name changed to Rhode Island State College.
- 1910 Theta Chi (first national fraternity).
- 1912 First fraternity house (Beta Phi, now Phi Gamma Delta).
- 1913 Ranger Hall.  
Chapter of Phi Kappa Phi, national honor society.
- 1918 Academic work suspended April 28.  
Student Army Training Corps.
- 1919 Academic work resumed January 2.
- 1921 Washburn Hall.
- 1924 Home Management House.
- 1928 Memorial Gateway.  
Bliss Hall.  
Edwards Hall.  
Rodman Hall.  
East Farm acquired.
- 1930 John Barlow, Acting President.
- 1931 Raymond G. Bressler, President.  
President's House.
- 1932 Reorganization of college: Schools of Engineering, of Science and Business, and Agriculture and Home Economics.
- 1934 Asa Sweet and Edward Sweet lands purchased.
- 1935 Chapter of Phi Sigma Society, national biological honor society.
- 1936 Chapter of Alpha Zeta, national agricultural society.  
Narragansett Marine Laboratory.  
Animal Husbandry Building.  
Eleanor Roosevelt Hall.  
Quinn Hall.  
Central Heating Plant.  
Peckham farm purchased.
- 1937 Green Hall.
- 1938 Meade Field.
- 1939 Board of Trustees of State Colleges created.
- 1940 John Barlow, Acting President.
- 1941 Carl R. Woodward, President.
- 1942 Accelerated war program with summer term initiated.  
Reorganization of School of Science and Business into separate schools of Science and Business Administration.  
Engineering Experiment Station.  
Industrial Extension Division.
- 1943 Army Specialized Training Unit assigned to college.
- 1944 Second Peckham farm purchased.  
Industrial Extension Division replaced by Division of General College Extension.  
War-accelerated program ended in September.
- 1945 Degree program in nursing.  
Sherman farm acquired.
- 1946 Quonset hut colony erected as emergency housing project.  
School of Home Economics.
- 1947 Chapter of Phi Alpha Theta, national history honorary society.
- 1948 School of Arts and Sciences.  
Bachelor of Arts degree authorized by Board of Trustees.
- 1949 B.A. degree awarded for first time at June Commencement.
- 1950 Butterfield and Bressler Halls.
- 1951 Name changed to University of Rhode Island by act of General Assembly.  
Chapter of Omicron Nu, national home economics honor society.
- 1952 Pastore Chemical Laboratory.
- 1953 Chapter of Sigma Xi, national scientific society.  
Frank W. Keaney Gymnasium.  
Laboratories for Scientific Criminal Investigation.
- 1954 Chapter of Tau Beta Phi, national engineering honor society.  
Rhode Island Memorial Union.
- 1955 Chapter of Pi Sigma Alpha, national political science honor society.
- 1956 Ranger Hall remodeled and rededicated.
- 1957 College of Pharmacy.



- 1958 URI Foundation.  
Francis H. Horn, President.  
Degree of Doctor of Philosophy authorized by Board of Trustees.  
Child Development Center.  
Hutchinson, Peck and Adams Residence Halls.  
Hope Dining Hall.
- 1959 Woodward Hall.  
Administration Building.  
Computer Laboratory.  
Chapter of Rho Chi, national pharmaceutical honor society.  
Potter Infirmary.  
Wales and Kelley Halls.
- 1960 Fish Oceanographic Laboratory.  
Independence Hall.  
Davis Hall and East Hall remodeled.  
Two-year program in dental hygiene.  
Bureau of Government Research.  
Faculty Senate established.
- 1961 Graduate School of Oceanography.  
Quinn Hall and Washburn Hall remodeled.  
Tucker, Merrow and Browning Halls.  
Gilbreth Hall.
- 1962 Crawford Hall.  
W. Alton Jones Campus.  
Trident commissioned.  
Chapter of Kappa Delta Pi, national education honor society.
- 1963 Bliss Hall remodeled.  
Tyler Hall.  
Graduate Library School.  
Weldin and Barlow Halls.
- 1964 Chapter of Omicron Delta Epsilon, national economics honor society.  
Fogarty Health Science Building.  
Watson House restored.
- 1965 Addition to the Memorial Union.  
University Library.  
Law of the Sea Institute.  
Sherman Maintenance Building.  
Bachelor of Fine Arts and Bachelor of Music degrees authorized.  
Research Center in Business and Economics.  
Water Resources Research Center.
- 1966 Aldrich, Burnside, Coddington, Dorr, Ellery, and Hopkins Halls, and Roger Williams Center.  
Justin S. Morrill Science Building.  
Fine Arts Center (phase I).  
Institute of Environmental Biology.
- 1967 Two-year program in commercial fisheries.  
Ballentine Hall.  
F. Don James, Acting President.
- 1968 Kelley Hall Research Annex.  
Pell Marine Science Library.  
Horn Laboratory.  
First Sea Grant.  
Werner A. Baum, President.  
New England Marine Resources Information Program.
- 1969 Home Management Center.  
Curriculum Research and Development Center.  
Chapter of Sigma Pi Sigma, national physics honor society.  
Chapter of Sigma Delta Pi, national Spanish honor society.  
Heathman Hall.  
Faculty Center.
- Dental hygiene bachelor's program.  
International Center for Marine Resource Development.
- 1970 Fayerweather Hall.  
Gorham Hall.  
Consortium for the Development of Technology.  
Marine Advisory Service.  
Chapter of Beta Gamma Sigma, national business administration honorary society.
- 1971 Tootell Physical Education Center.  
Fine Arts Center (phase II).  
Conference Center, Jones Campus.  
Administrative Services Center.  
Chapter of Beta Alpha Psi, national accounting honorary society.  
Board of Regents for Education (Education Act of 1969) takes over direction of higher education.  
Named one of first four Sea Grant Colleges and designated National Sea Grant Depository.
- 1972 Biological Sciences Building.  
Chafee Social Science Building.  
University College established.  
Coastal Resources Center.  
Graduate apartment complex.
- 1973 William R. Ferrante, Acting President.  
Research Aquarium.  
Science Research and Nature Preserve Buildings, Jones Campus.  
Community Planning Building.
- 1974 Frank Newman, President.
- 1975 Addition to the University library building.
- 1976 Research ship Endeavor commissioned.
- 1977 Bachelor of General Studies.  
Chapter of Phi Beta Kappa, national liberal arts honor society.  
Center for Ocean Management Studies.  
Center for Energy Study.  
Regional Coastal Information Center.  
Chapter of Delta Pi Epsilon, national business education honor society.
- 1978 College of Human Science and Services.  
Norman D. Watkins Laboratory.



◀ To R.I. Rte. 2 and Interstate 95

R.I. Rte. 138

To R.I. Rte. 108 and U.S. Rte. 1 ▶

## CAMPUS MAP

### Academic and Service Buildings

Administration Bldg. 42  
Administrative Services Ctr. campus mail 102  
Animal Pathology Laboratory (off Rte. 138 S.W.)  
Animal Science Bldg. 97  
Athletic Bubble 109  
Ballentine Hall business administration 36  
Biological Sciences Bldg. 33  
Bliss Hall engineering 28  
Career Planning and Placement 54  
Catholic Ctr. 22  
Central Receiving 100  
Chafee Social Science Ctr. 37  
Child Development Ctr. 71  
Community Planning Office 6  
Community Planning Laboratory 25  
Commuters' Hostel (Rte. 138 W.)  
Crawford Hall chemical engineering 29  
Davis Hall 41  
East Farm (off Rte. 108)  
East Hall physics 19  
Edwards Hall 11  
Episcopal Ctr. 50  
Fine Arts Ctr. 23  
Fire Station 110  
Fogarty Health Science Bldg. pharmacy 46  
Garage 99  
Gerontology 16  
Gilbreth Hall industrial engineering 26  
Green Hall 8  
Greenhouses 24  
Home Management House 72  
Hull House forestry (Plains Rd.)  
Independence Hall 10  
International House 104  
Keaney Gymnasium 108  
Kelley Hall electrical engineering 30  
Lands and Grounds 98  
Library 39  
Lippitt Hall 35  
Memorial Union 53  
Memorial Union Annex 48  
Morrill Science Bldg. life sciences 45

Pastore Chemical Laboratory and Annex 44  
Peckham Farm animal pathology (off Rte. 138 S.W.)  
Personnel and Payroll 56  
Pharmacy Annex 51  
Plains Field House (Plains Rd.)  
Planetarium 20  
Police and Safety 52  
Potter Bldg. health services 87  
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Quinn Hall home economics 43  
Ranger Hall biological sciences 9  
Riding Stables (off Rte. 138 S.W.)  
Rifle Range 106  
Rodman Hall library school 38  
Roosevelt Hall 57  
Ruggles House Ocean Management Studies 4  
Sherman Bldg. purchasing and maintenance 105  
Taft Hall 40  
Tootell Physical Education Ctr. 107  
Tucker House 17  
Turf Field House (Plains Rd.)  
Tyler Hall computer laboratory 31  
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Wales Hall mechanical engineering 27  
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Aldrich Hall 95  
Barlow Hall 84  
Bressler Hall 68  
Browning Hall 86  
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Dorr Hall 91  
Ellery Hall 90  
Faculty Apartments 1

Fayerweather Hall 89  
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Hope Hall dining 64  
Hopkins Hall 92  
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Phi Mu Delta 74  
Phi Sigma Kappa 3  
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Sigma Chi 14  
Sigma Delta Tau 77  
Sigma Kappa 76  
Sigma Nu 15  
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Theta Chi 2  
Theta Delta Chi 32  
Zeta Beta Tau 80

## 1978-79 Calendar

The dates listed below are subject to change. Students will be notified of any changes in the calendar during the course of the year.

First Semester		Second Semester	
Sept. 5, Tuesday	University registration, 8:00 a.m. - 5:00 p.m.	Jan. 15, Monday	University registration, 8:00 a.m. - 5:00 p.m.
Sept. 6, Wednesday	Classes begin, 8:00 a.m.	Jan. 16, Tuesday	Classes begin, 8:00 a.m.
Sept. 6, Wednesday	University Convocation, 3:00 p.m.	Jan. 23, Tuesday	University faculty meeting, 3:30 p.m.
Sept. 12, Tuesday	University faculty meeting, 3:30 p.m.	Jan. 29, Monday	Final day for students to drop courses without \$5.00 fee
Sept. 19, Tuesday	Final day for students to drop courses without \$5.00 fee	Jan. 29, Monday	Final day for students to add courses, to add S/U grading option, and to change to audit registration
Sept. 19, Tuesday	Final day for students to add courses, to add S-U grading option, and to change to audit registration	Mar. 7, Wednesday	Mid-semester
Oct. 9, Monday	Holiday, Columbus Day	Mar. 9, Friday	Final day for students to drop courses, and to change from S/U option to grade
Oct. 23-27	Advance registration for spring semester	Mar. 26-30	Advance registration for fall semester
Oct. 24, Tuesday	Mid-semester	Apr. 9, Monday	Spring recess begins, 8:00 a.m.
Oct. 25, Wednesday	Final day for students to drop courses and to change from S/U option to grade	Apr. 16, Monday	Classes resume, 8:00 a.m.
Nov. 7, Tuesday	Holiday, Election Day	May 2, Wednesday	University faculty meeting, 3:30 p.m.
Nov. 8, Wednesday	Tuesday classes meet	May 4, Friday	Classes end
Nov. 8, Wednesday	University faculty meeting, 3:30 p.m.	May 5-6	Reading days
Nov. 23, Thursday	Thanksgiving recess begins, 8:00 a.m.	May 7-12	Final examinations
Nov. 27, Monday	Classes resume, 8:00 a.m.	May 15, Tuesday	Final grades due in Registrar's Office, 4:00 p.m.
Dec. 15, Friday	Classes end	May 27, Sunday	Commencement
Dec. 16-17	Reading days	May 28, Monday	Holiday, Memorial Day
Dec. 18-23	Final examinations		
Dec. 28, Thursday	Final grades due in Registrar's Office, 4:00 p.m.		

### Summary of Enrollment, Fall Term, 1977

#### Undergraduate Matriculated Students by College, Kingston Campus

College of Arts and Sciences	1560
College of Business Administration	607
College of Engineering	378
College of Home Economics	332
College of Nursing	197
College of Pharmacy	339
College of Resource Development	551
University College	4728
Unassigned	11
<b>Total</b>	<b>8703</b>

<b>Undergraduate non-degree (credit)</b>	<b>165</b>
<b>Total Undergraduates</b>	<b>8868</b>

#### Graduate Students

Degree	1606
Degree (Continuous Registration)	215
Non-Degree (Permanent)	156
Post Baccalaureate (Temporary)	299
<b>Total Graduates</b>	<b>2276</b>

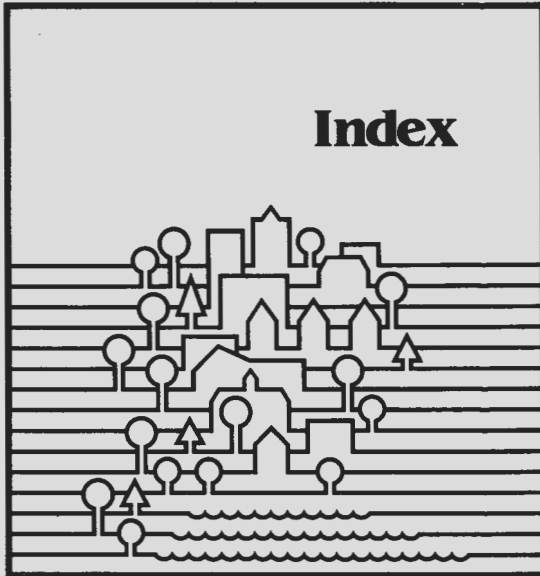
#### Total Enrollment, Kingston Campus

	Male	Female	Total
Undergraduates	4739	4129	8868
Graduates	1301	975	2276

#### Summer Session, Kingston and Providence, 1977

#### Division of University Extension

Undergraduates	688
Graduates	232
Non-Degree (credit)	2403
<b>Total Extension Division</b>	<b>3323</b>



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