

THE UNIVERSITY
OF

Vermont

BULLETIN APRIL, 1960

FOUNDED 1791 • BURLINGTON, VERMONT

Bulletin of

THE UNIVERSITY OF
VERMONT

THE CATALOGUE • 1959-1960

ANNOUNCEMENTS • 1960-1961

CORRESPONDENCE

Admissions

For all matters pertaining to the admission of undergraduate students, including requisitions for the catalogue, and information concerning rooms, tuition, and scholarships *Director of Admissions*

Evening Division *Director of Evening Division*

College of Medicine *Dean of the College of Medicine*

Graduate College *Dean of the Graduate College*

Summer Session *Director of the Summer Session*

Transcripts of Records *Office of Admissions and Records*

Employment of Seniors and Alumni *Director of Placement*

Matters of Alumni Interest *Alumni Secretary*

Matters of General University Interest *The President*

Bulletin of The University of Vermont

VOLUME 57

APRIL, 1960

NUMBER 14

Published by the University of Vermont, Burlington, Vermont, sixteen times a year—twice each in September, November, December, February, and May; once in January and April; and four times in March. Second-class postage paid at Burlington, Vermont.

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THE UNIVERSITY OF VERMONT

§ The University is located at Burlington, Vermont, overlooking an attractive tree-shaded city situated on the shores of Lake Champlain.

§ Burlington, the largest city in the State, with a population of 35,000, is 95 miles from Montreal, 230 miles from Boston, and 300 miles from New York City. The city has daily plane and bus service to these urban points.

§ Chartered in 1791, the University is the twenty-fifth oldest institution of higher learning in the United States authorized to grant degrees and the second institution founded by state legislative action to offer instruction at the university level.

§ Although its legal title is the University of Vermont and State Agricultural College, the University is known to its students and alumni as UVM. This popular abbreviation is derived from the Latin *Universitas Viridis Montis*—the University of the Green Mountain.

§ Within the nine divisions of the University, instruction is offered in more than fifty programs leading to twenty-five different degrees.

§ The University is accredited by the following associations:

The New England Association of Colleges and Secondary Schools

The National Council for Accreditation of Teacher Education

The American Medical Association

The American Dental Association

National League for Nursing

The Engineers Council for Professional Development

The American Chemical Society

Education at Vermont

The motto "Studiis et rebus honestis," Integrity in Theoretical and Practical Pursuits, selected before the University's first graduation in 1804, reflects the spirit of the University throughout its century and a half of educational service to Vermont and the nation. The university would have been out of step with the state whose name it bears had it not served as a training ground for men and women who were to become leaders in many parts of a constantly expanding America.

From the granting of a charter by the Vermont General Assembly in 1791, the university's development has been closely identified with that of the state. Immediately the Assembly set aside about 29,000 acres throughout the state for the support of the university; it provided that the governor and speaker of the house should be ex-officio members of the university's corporation; and it required that the by-laws of the university should give no preference to any religious sect or denomination.

Thus the University of Vermont took its place among the handful of colleges founded in this country in the seventeenth and eighteenth centuries for the higher education of young colonials and Americans of the first post-revolutionary generation. The University was the fifth college to be chartered in New England, the third to be chartered by a state, after the formation of the United States, for the higher education of all its youth, and the second institution of this type to confer the bachelor's degree.

After a half century of life guided by a self-perpetuating corporation, made possible by much private as well as public support, another step in the direction of public education was taken when the State of Vermont chartered the Vermont Agricultural College in 1864. This college was established under the provisions of the Land-Grant Act of 1862, which had been sponsored by Hon. Justin S. Morrill, member of Congress from Vermont, to make possible higher education for "sons of farmers and those in the mechanic arts," and to provide education in agriculture and the mechanic arts as well as the so-called liberal and scientific courses. In 1865 the new agricultural college was merged with the university, to form the University of Vermont and State Agricultural College. Under later federal laws the services of the university were expanded by the addition of the Agricultural Experi-

ment Station and the Agricultural Extension Service. In 1955 the Vermont legislature formally recognized the entire University as an instrumentality of the State and thus reestablished it as The University of Vermont.

Colleges and Curricula

The University now consists of six colleges, a school of dental hygiene, a summer session, and an evening division.

In common with the practice at most of the early universities, the original curriculum was based on languages, rhetoric, mathematics, theology, and moral philosophy. Today, the College of Arts and Sciences, often considered the direct descendant of the original University, provides a general four-year curriculum leading to the degree of Bachelor of Arts, with opportunity for concentration in one or more of the following studies: botany, chemistry, economics, English, French, geology, German, Greek, history, Latin, mathematics, music, philosophy, physics, political science, psychology, sociology, Spanish, speech, and zoology.

Students interested in continuing their studies beyond the Bachelor's degree may, by making a proper selection of courses, meet all requirements for admission to graduate schools, and to such professional schools and colleges as those of medicine, dentistry, law, theology, and social work. Those who have completed three years of premedical study at the University may qualify for the degree of Bachelor of Science after successfully completing one year of study in an approved college of medicine.

With the passage of the Morrill Act of 1862, the way was prepared for the establishment of studies in agriculture. Today the College of Agriculture and Home Economics offers four-year curricula in agriculture, agricultural engineering, and home economics. It also offers two-year programs in preforestry and preveterinary sciences which prepare students for admission to other institutions for professional training in these fields.

The curriculum in agriculture leading to the degree of Bachelor of Science in Agriculture provides options in general agriculture, agricultural economics, agricultural education, agronomy, animal and dairy production, botany, dairy industry, foreign agricultural service, horticulture, and poultry husbandry. The curriculum in agricultural engineering leads to the degree of Bachelor of Science in Agricultural Engineering.

The curriculum in home economics, leading to the degree of Bache-

lor of Science in Home Economics, provides options in the fields of food and nutrition, related arts, clothing and textiles, and home economics education. The department also offers an option in general home economics for students who wish a liberal education in addition to instruction in those areas related to the home and family.

The University of Vermont was probably the first nonmilitary institution in America to offer instruction in engineering, and was certainly the first of the present land-grant colleges to give any instruction in this area, which was later incorporated into the Morrill Act. Engineering was taught in a separate department until 1911, when a College of Engineering was established. In 1946 the College of Technology was formed to include the curricula in civil, electrical, mechanical, and management engineering; professional chemistry; commerce and economics; and, later, medical technology.

Majors in the Department of Commerce and Economics may select from many options in which to specialize, including accounting, banking, finance and insurance, business administration, industrial management, and secretarial studies.

The education and preparation of teachers has always been a major objective of the University; although the techniques have varied over the years, the primary concern has been to graduate qualified teachers who have a broad background in academic subject matter and a modern professional training in the methods of teaching. The College of Education and Nursing, established in 1946, offers four-year curricula leading to the Bachelor of Science degree in the fields of elementary, junior high, secondary, business, and music education. The college also offers a four calendar-year curriculum leading to the degree of Bachelor of Science in Nursing.

Under a program established by the State in 1949, the University offers a two-year curriculum in the School of Dental Hygiene leading to a Certificate in Dental Hygiene. Recipients of this certificate are eligible to take all state board examinations for licensing as dental hygienists. Enrollment in this school is limited to women.

The College of Medicine is historically almost as old as the University itself. Medical lectures became part of the offerings in 1804 and degrees were granted in medicine in 1822. There were some interruptions in the operation of the medical courses in 1836, but since 1853 qualified physicians have been graduated annually to serve Vermont and neighboring states. Today, the College of Medicine offers a four-year graduate curriculum leading to the degree Doctor of Medicine

and also provides facilities for a limited number of candidates for other graduate degrees in the Graduate College to take courses in its departments.

In 1952 the Graduate College was established. Graduate programs had been administered for many years prior to this date on a purely departmental basis. The Graduate College not only serves as coordinator of all studies beyond the Bachelor's degree (with the exception of the program leading to Doctor of Medicine), but offers graduate programs on the basis of fields of concentration. Since it is frequently appropriate for students in various fields of concentration to cross departmental lines, it is felt that such coordination makes for more effective use of the University's resources for advanced study and research.

Regional Cooperation

The University of Vermont is participating with the other five state universities of New England in a growing program of regional cooperation to increase opportunities in higher education for the residents of their six-state area. Under the program New England residents are given admission preference and in some cases, resident tuition privileges in certain specialized curricula. A special descriptive booklet has been prepared and is available from the Admissions Office, Waterman Building.

The University of Vermont offers the following programs in which the Vermont in-state tuition rate is available for students from the states named beginning with the year indicated. Students from the New England states may enter the programs earlier than the year indicated but in that event the out-of-state rate of tuition would apply.

Classics, junior year, Maine, Massachusetts, New Hampshire, Rhode Island.

Commercial Education, junior year, Maine.

Dairy Manufacturing, junior year, Maine, New Hampshire, Rhode Island.

Medical Electronics, graduate, Maine, Massachusetts, New Hampshire, Rhode Island.

Medical Technology, senior year, Massachusetts, Rhode Island.

Microbiology, graduate, Maine, Rhode Island.

Nursing, freshman year, New Hampshire.

Secretarial Science, junior year, Maine.

The University Development Program

Many colleges and universities experienced significant enrollment increases following World War II. The University of Vermont was no exception. When the pre-war enrollment of about 1,300 increased to more than 3,000, temporary facilities were "made to do," but the need for new facilities became pressing.

The University embarked upon a Development Program in 1955. Projects that have been completed include residence halls for women, housing about 400 with dining facilities for 600; a classroom addition to the University's oldest building, the historic Old Mill; and a complete renovation of the inside of the Old Mill itself.

The Medical Alumni Building, housing laboratories and research areas for the College of Medicine, has been dedicated as the first phase of a new medical building project. Funds for the second phase of the medical building are now being sought.

The next step in the development program is the construction of the new University Library to begin in the Spring of 1960. The plans call for a building which will seat about 700 and will hold about 500,000 volumes. It is expected that this building will be completed sometime in 1961. It will house all of the University library except the medical library. When this building is completed, the released space in the present Billings Library building will provide a much needed area for student organizations and activities.

Specifications for a new residence hall to house 135 women and a new residence and dining hall unit to provide for about 400 men, have been approved for a federal housing loan and construction will begin in the Spring of 1960.

The latest step in the development program is the new University Gymnasium. The present gymnasium, dedicated in 1902, is now inadequate for the University's needs. The new gymnasium plans call for three complete playing floors, seating capacity for about 6,000, a swimming pool and a baseball cage, as well as facilities for numerous other activities.

The Vermont Campus

The University of Vermont is fortunate in having one of the most beautiful campuses in New England.

The campus and present buildings had their origin in 1800 when Burlington was a frontier town in the Vermont wilderness. The first president and his first four students felled trees from ground which is today the College Green. From their labors and from financial con-

tributions made by the residents of Burlington, the first college building rose. When it was destroyed by fire, it was rebuilt—again through financial support of the people of Burlington—and that second building still stands today, the historic Old Mill for which General Lafayette laid the cornerstone in 1825. In 1883, John P. Howard of Burlington, donor of the Lafayette statue and the fountain, made extensive remodeling of the Old Mill possible. Alumni contributions have made possible the building of Lafayette Hall as an addition to the Old Mill. Business and professional men and women of Burlington have again contributed financially to this building, keeping alive a long and worthy tradition. From 1800, when the first building was given form, the University has continued to grow, and its buildings have been described as “a history of college architecture covering a period of a century and a half.”

The campus is divided into three general areas: the College Green, the East Campus adjacent to the Green, and the Redstone Campus for women, four blocks south of the Green. Centennial Field, a fine outdoor athletic plant, is two blocks east of the College Green. In addition to its main campus, the University has extensive acreage for teaching and research, including the University Farm, the Morgan Horse Farm in Weybridge, and areas in Jericho, Charlotte, Shelburne, and Underhill for research in botany, forestry, and horticulture.

Founded in 1791 by legislative action, the University has had a unique development. Whereas many state universities receive their major support from state appropriations, the University has only recently begun to receive substantial appropriations from the state. These amount to about half of the operating budget. State funds make possible a reduction of tuition for qualified residents of Vermont, and provide agricultural research and services through the College of Agriculture and Home Economics. In addition, a generous appropriation is made to research and teaching in the College of Medicine.

Many of the buildings have been built, as was the Old Mill, from gifts and bequests of Alumni and friends.

The Billings Library was one of several structures to be dedicated in the late 1800's. A fine example of the work of Henry Hobson Richardson, the well-known American architect, the Library was the gift of Frederick Billings of Woodstock. It was built in 1885 at a cost of \$135,000. The Williams Science Hall, the first completely fire-proofed college building in this country, was added in 1896 to house the expanding departments of the several sciences. The gift of Dr. and Mrs. Edward H. Williams of Philadelphia, it was built and furnished at a

cost of \$160,000. Converse Hall, an unusual design of Gothic architecture, was the gift of John H. Converse, class of 1861. Completed in 1895, it was built at a cost of \$125,000. Mr. Converse purchased the land on which Converse stands, erected the building, and turned the complete gift over to his alma mater. He also gave two houses for faculty members on the "south common." The present engineering building, a new one is a dream of the future, and the present gymnasium were built in the early 1900's. Morrill Hall, named to honor Vermont's Senator Justin S. Morrill, father of the Land-Grant Act, was the first UVM building to be provided by an appropriation from the people of Vermont. It was erected in 1907 and houses administrative offices for the College of Agriculture and Home Economics.

The twentieth century has seen the construction of several buildings of Georgian architecture. The Ira Allen Memorial Chapel, with an imposing bell tower which has become a symbol of the University, was completed in 1927. It was the gift of James B. Wilbur, who also made a generous gift to provide scholarships for Vermont residents. In 1955 a sixty-four-bell electronic carillon was installed in the tower, at a cost of \$5,000 provided by the directors of Kake Walk. This was dedicated to all the men and women of the University who had served in the armed forces. Mr. Wilbur's bequest also provided \$100,000 toward the cost of the Fleming Museum. Named for Robert Hull Fleming, the Museum was made possible by a gift of \$150,000 from Miss Katherine Wolcott of Chicago, Mr. Fleming's niece, and by gifts of \$75,000 from other friends of the University. Completed in 1931, it houses an extensive collection, including the University's art collection and the Library of Vermontiana in the Wilbur Library.

The Waterman Building, built in 1941 at a cost of \$1,250,000, was the gift of Charles W. Waterman, class of 1885, and Anna R. Waterman. It contains administrative offices, classrooms, laboratories, recreation facilities, the cafeteria and the University Store. In connection with the work in modern foreign languages, a well-equipped "language laboratory" is maintained in the Waterman Building with tape-recording facilities and listening stations. As an aid to pronunciation, aural comprehension, and pattern practice, recordings in French, German, Hebrew, Russian and Spanish are available for student use.

The Redstone campus for women was originally a large estate. The mansion and the carriage house now serve as Redstone and Robinson Halls. The Mabel Louise Southwick Memorial Building, another imposing Georgian structure, was completed in 1936 as a center for

women's activities. The family of Miss Southwick, a University graduate in the class of 1905, gave \$65,000 toward the cost of the building. A bequest from Miss Shirley Farr provided \$75,000, about \$60,000 in federal funds were available for the building, and a student subscription of \$4,200 was made toward the cost of the building and its furnishings.

Slade Hall, built in 1929 near Robinson Hall, is of Colonial-type architecture. Mrs. William G. Slade made a gift of \$50,000 toward this building, in memory of her daughter, Harriet Slade Crombie. In 1947, Grace Goodhue Coolidge Hall, a residence for women, was built adjacent to Southwick. Grace Goodhue, class of 1902, was the wife of Calvin Coolidge, President of the United States.

Coolidge Hall and the three men's dormitories, Buckham, Chittenden and Wills Halls, were the first University resident halls to be financed by a bond issue guaranteed by the State of Vermont. Through this guarantee, the University was able to gain a favorable rate of interest in its financing. Room rents paid by students living in these residences eventually will liquidate the bond issue.

Also built on these terms are the three residence halls for women south of Coolidge. Mason, Simpson, and Hamilton Halls were completed in 1957 at a cost of \$1,800,000. Among the finest dormitories in New England, they are named, appropriately, to honor three distinguished UVM women. Mason Hall and Hamilton Hall honor UVM's first two women graduates, Lida Mason Hodge and Ellen Hamilton Woodruff, Class of 1875, who were also the first women admitted to Phi Beta Kappa at the University. Simpson Hall honors Dean of Women Emeritus Mary Jean Simpson, class of 1913. Construction of a new hall in this area to house 135 women will begin in March 1960.

In 1949, a group of modern buildings, financed by state appropriation, was erected on the East campus. These are the Hills Agricultural Science Building, named to honor Joseph L. Hills, outstanding Dean of the College of Agriculture; the Bertha M. Terrill Home Economics Building; and the Dairy Science Building.

Other buildings of interest include Grassmount, a gracious Georgian mansion which was the home of a former Governor of Vermont and which now houses University women; Pomeroy Building, erected in 1829 for the medical department and now used to house the department of speech. The Wasson Infirmary, believed to have been an underground railway stop for escaping Negro slaves at the time of the Civil War was purchased for the University in 1944 by a group of

Alumni, and named for the first dean of women, Pearl Randall Wasson.

The University Library

The University Library, including the Billings Library, the Wilbur Library, and the Medical Library, contains more than two hundred thousand volumes, making it the largest library in Vermont. Each year by purchase and by gift the collections are enlarged by more than four thousand volumes. Fourteen hundred periodical titles are regularly received. An experienced reference, public, and technical staff is required to make the material available for the faculty, students, and extension needs of the University.

Funds for the support of the library are derived mainly from the University and partly from the income from endowments designating the library as beneficiary. A large group of friends of the library, called the Library Fellows, interest themselves in the library and its collections and contribute annually to its support.

The Billings Library Building houses the main library. Here is to be found the working collection of library materials most useful to students and faculty. The library is a depository of U. S. Government publications. Newspapers, pamphlets, maps, state agricultural publications, and microfilms round out the collection. Special collections include the George P. Marsh Library, comprising about twelve thousand volumes notably in the humanities, the Howard-Hawkins Civil War collection, and the Whittingham-Stevens collection of Chiswick imprints.

The James B. Wilbur Library, housed in the Fleming Museum, is rich in manuscript materials, early Vermont imprints, books relating to Vermont, and books by Vermont authors. The Wilbur Library has recently been given the personal collection of Dorothy Canfield Fisher, consisting of books, correspondence, and literary manuscripts. All of these collections will be housed in the new library in 1962.

The Medical Library, a working collection in its field, serves the needs of the College of Medicine as well as the faculties and advanced students in other departments of the University.

The Robert Hull Fleming Museum

The Museum, an integral part of the University's teaching program, provides a fourfold educational service to the University and the people of Vermont through its permanent collections covering the entire history of art, temporary exhibitions, the Fleming Museum Associa-

tion, and Children's Classes in the Creative Arts. The Museum building was dedicated in 1931 and is named in honor of Robert Hull Fleming of the class of 1862.

The permanent collection is arranged to augment in so far as possible the University's teaching in varied fields. Particular galleries are devoted to ancient, medieval, and renaissance art; baroque and modern painting and sculpture; American art; primitive art; and the Orient. Two galleries are often devoted to temporary exhibitions which supplement the permanent collections by representing various aspects of painting, sculpture, graphic arts, architecture, photography and related material. Group shows such as the Vermont Camera Club Exhibition and the Northern Vermont Artists' Show are held annually.

The Fleming Museum Association, open to the public, is composed of Friends of the Museum whose support makes possible certain special exhibitions, guest lectures and films. Gallery talks related to exhibitions and the permanent collections are given from time to time and guide service for schools and club groups throughout the state is available. Children's classes offer instruction in painting and the dance to youngsters of the Community.

Besides providing classrooms and study area for courses in art and other departments the Museum also has a conference room, a lounge with a high-fidelity phonograph, and a kitchenette available for meetings and social functions. Also housed in the Museum are the Wilbur Library of Vermontiana, the University's seismograph station and geological collection, and a collection of several thousand photographs of painting and sculpture.

In 1958 the auditorium of the Museum was reconstructed to provide space for an arena theater. A lighting and control room was added and the interior of the auditorium was redesigned to contain about 300 theater seats on the four sides. The new arrangement provides the intimate atmosphere of a small theater with well-planned facilities which have already contributed much to the dramatic offerings of the college year.

The George Bishop Lane Artists Series

This series, supported in part by a gift of \$300,000 from the late Mrs. Lane of Minneapolis in honor of her husband, George Bishop Lane, of the class of 1883, makes it possible for the University to sponsor for a moderate admission fee a continuing program of outstanding musical, theatrical, dance and other artistic productions.

Students, faculty and staff, and community leaders plan and pro-

duce this series, which make a vital contribution to the cultural life of the campus and the Burlington area.

Recent offerings have included the London Philharmonic Orchestra, the American Ballet Theatre, violinist Zino Francescatti, the Vermont State Symphony Orchestra, the Canadian Players, *Tea and Sympathy*, the Vienna Choir Boys, the Juilliard String Quartet, the Pearl Lang Dance Company, the New York City Opera Company, the Vienna Philharmonic, pianist Rudolf Serkin, honorary D.Mus. U.V.M. 1957, the Societa Correlli, Anna Russell, Dave Brubeck, the National Ballet of Canada, basso Boris Christoff, the Detroit Symphony Orchestra. *No Time for Sergeants*, *The Rivalry*, Mantovani, the Budapest String Quartet, actor Sir John Gielgud, the Stuttgart Chamber Orchestra, the Chicago Symphony Orchestra, the Danish National Orchestra, Erroll Garner, Benny Goodman, the *Diary of Anne Frank*, *Li'l Abner*, soprano Roberta Peters, and violinist Isaac Stern, *Dark at the Top of the Stairs*, the Philadelphia Orchestra, guitarist Andres Segovia, *Dear Liar*, the Modern Jazz Quartet, the New York *Pro Musica*, the Weavers, *Look Homeward, Angel*, pianist Guiomar Novaes, the Robert Shaw Chorale, the Lamoureux Orchestra, and dancer José Greco.

During the summer session, the fund underwrites the Lane Summer Series. Recent programs have included the New York Woodwind Quintet, tenor Richard Dyer-Bennett, dancer Paul Draper, *A Portrait of Broadway*, fourteen members of the Boston Symphony Orchestra, the André Eglevsky Ballet Quartet, the After Dinner Opera Company, the Kroll Quartet, UVM graduate Robert Goss and his wife Louise Whetsel in *Make a Show*, tenor Robert Rounsville, the Beaux Arts Trio of New York, pianist Eugene Istomin, and the Ballet Rambert of London.

Student Life

The general welfare of students is the responsibility of the Offices of the Dean of Women and the Dean of Men.

Housing

All undergraduate women who do not live locally with their spouse, parents or legal guardian or in a sorority house are required to live in a residence hall and have a meal contract with Saga Food Service. The housing requirement for men is one year in residence. All male freshmen and all male transfer students in their first year of residence who do not live locally with their spouse, parents or legal guardian are required to live in a residence hall and have a meal contract with Saga Food Service.

Contracts for room and board are binding for the college year, unless cancelled for due cause with the sanction of the Offices of the Dean of Women or the Dean of Men. In August each new student will receive notification of a room assignment, and the date and hour of the opening of his or her residence hall. The rooms for freshman women and men may not be occupied until the first day of the Preliminary Days program. Other students may occupy their rooms no earlier than twenty-four hours before the day of enrollment. Each student is expected to leave the residence hall no later than twenty-four hours after his or her last examination, at the close of the school year.

The University furnishes pillows, mattresses and mattress pads for each student. Facilities for doing personal laundry are provided in each residence hall, also, a moderate amount of space for the storage of trunks, baggage, and skis. Bed linen and towels may be furnished by the student or rented from a commercial linen service, currently at \$23.00 for the academic year. The rental service provides weekly delivery of two sheets, a pillow case, and three towels to each student who has arranged for this service. Students provide their own window draperies, metal waste baskets, bureau covers, desk lamps and reading lamps.

Women

There are twelve residence halls for women and seven sorority houses. The residents of the halls on the Redstone Campus: Coolidge, Hamilton, Mason, Redstone, Robinson, Simpson and Slade Halls,

will have their meals in Simpson Dining Hall on a twenty-meal per week annual contract. The residents of Allen, Claggett, Grassmount, Mansfield and Sanders will have their meals on an eighteen-meal per week annual contract at the Waterman Cafeteria.

Normally, only junior and senior women are permitted to live in sorority houses. All other residences have a prorated number of residents from each of the four undergraduate classes.

Each women's residence is under the direction of a Head Resident, who is a member of the Dean of Women's Staff. The Women's Student Government Council appoints a student House President, who is the presiding officer of the House Committee. The members of this committee are elected by the students in each house.

Men

Chittenden, Buckham, Wills and Converse Halls are residence halls for men. Each occupant is provided with a bed, pillow, chest of drawers, wardrobe, desk and chair. All students who live in University residence halls must have board contracts for the year for eighteen meals per week in Waterman Cafeteria.

Fifteen fraternity houses representing thirteen national fraternities and two local fraternities provide housing, and in most cases, dining facilities for approximately 300 upperclassmen. Freshmen are not permitted to live in fraternity houses.

Many upperclassmen live in private homes near the campus. Rental rates are about the same as those of the University. Students who desire information about apartments or rooms in private homes may find a listing in the office of the Dean of Men. As this information becomes outdated quickly, it is not mailed.

Student Personnel Services

COUNSELLING The offices of the Dean of Women and the Dean of Men offer assistance to students who may have social, vocational and personal problems. Psychiatric counseling is available through the University Health Service.

PLACEMENT SERVICE Seniors register for placement assistance with the Placement Director, 159 Waterman. The Placement Service prepares confidential credentials, arranges campus interviews each February and March, and assists in other ways to enable the graduate to find employment. Alumni may also contact the Placement Service for interviews and for notices of employment opportunities. Occupa-

tional information, as well as employment material distributed by various companies and government agencies, is available in the Placement Service. Placement in the field of education is the responsibility of the Office of the Dean of the College of Education and Nursing.

VETERANS EDUCATION Veterans who are eligible to receive educational benefits under Public Laws 550, 634, or 894 should present a "Certificate for Education and Training" at registration. If the veteran is presently in training at another institution, he should request his school to complete a "Change of Place of Training Form" so that a new certificate will be presented to him for use at the University of Vermont. Questions regarding veterans' benefits should be directed to the Office of the Dean of Men.

PART-TIME EMPLOYMENT Some opportunities are available on campus and in Burlington for students to do part-time work. Students are advised to seek employment only in instances of definite financial need and only when they have reason to believe they can carry successfully a normal college program at the same time. Women students are not eligible for part-time employment during the first semester of the Freshman year, except for occasional baby sitting or hostessing in the dormitories. Second semester Freshman women and also those who have earned under thirty hours of credit and are "on trial" may undertake part-time employment only with the approval of the Office of the Dean of Women.

READING CENTER The University Reading Center provides a free service for students who wish to improve their reading, vocabulary, and study techniques. The first semester classes are open primarily to freshmen who are selected as a result of diagnostic tests given at the beginning of the academic year. Other students may enroll in the reading program as places become available. Students who enroll must attend regularly throughout the semester.

SPEECH CLINIC Services of the speech clinic, located in Pomeroy Hall, are free to students in the University who have problems of articulation, foreign dialect, stuttering, inadequate vocal control, cerebral palsy, or hearing loss.

Health Services

The University has complete facilities for maintaining the physical well-being of members of the student body. The Health Service, with

its headquarters at the Wasson Memorial Infirmary, provides complete physical examinations on all incoming students, the examination of members of athletic squads, care of injuries, and advice on all health and medical problems. It is staffed by an administrative director, a medical director, resident psychiatrists, and associate physicians who hold regular office hours in the infirmary and are on call for emergencies. An orthopedic surgeon holds a regular clinic for consultation at the infirmary. Registered nurses are on duty at all hours. A student may employ a private physician using the facilities of the infirmary if desired. Cases of serious illness are sent to one of the two modern, well-equipped hospitals which are adjacent to the campus. Parents of a student are notified of an illness by letter or telephone, depending on the nature of the illness.

Every student who pays full tuition for the normal college year of nine months is entitled to a maximum of five days of free infirmary care and such routine medical care as is needed and as the infirmary and health service can render during the nine months' period. Students who require infirmary care for more than five days in the college year are charged at the rate of \$8.00 per day.

Every student at the University is required to participate in the physical education program for two years. Normally this work is taken in the freshman and sophomore years, but may be postponed on the advice and authorization of the medical director, or the student's own physician, who must forward statements to the medical director concerning disability.

Student Activities

The University officially recognizes the activities of a large number of organizations supplementing the social and recreational needs of students, developing their cultural and religious interests, providing them with valuable business and executive experience, and broadening their contacts. Because it is within this area that qualities of leadership may be developed, the University encourages participation consistent with its scholastic requirements. The Student Advisory Committee, composed of officers of instruction and administration, is concerned with the system of student organizations and activities, with University policy relative to student organizations, and, in general, with the relationships between the University and these organizations. The student organizations control their own affairs and handle their own finances within the framework of the University's regulations.

RELIGIOUS LIFE Although the University cannot itself attempt to guide the religious life of its students, this work is carried out by four independent agencies; the B'nai B'rith Hillel Foundation at the University of Vermont; The Council for a Cooperative Ministry at the University of Vermont representing the Baptist, Congregational Christian, Methodist, and Presbyterian churches; The Episcopal Church at the University of Vermont, and the Newman Club at the University of Vermont. Directing these agencies are Prof. Harry H. Kahn, the Rev. Richard E. Leidberg, the Rev. Donald E. Boyer, and the Rev. Philip J. Branon, respectively.

UVM STUDENT ASSOCIATION All students enrolled in the undergraduate colleges and schools are charged a student activity fee and thus become members of the UVM Student Association. A council, consisting of elected officers and class representatives, holds weekly meetings during the year and conducts the regular business of the association. However, the student body may be convoked by the council or by any group of students to hold a referendum or to conduct extraordinary business. There are many opportunities for large numbers of students to participate in the work of the standing committees, such as the Election, Financial, Orientation, Pep, Religious Activities, and Social Committees.

STUDENT COURT The judicial authority of the Student Association is vested in the Student Court, which consists of representatives of each of the undergraduate colleges. The Court has exclusive jurisdiction in all cases concerning interpretation of the Constitution and Bylaws of the Student Association and legislation enacted in pursuance thereof. The Court hears cases referred to it by the Dean of Women, Dean of Men or the Standing Committee on Jurisdiction.

WOMEN'S STUDENT GOVERNMENT ASSOCIATION Every woman who enrolls as an undergraduate student at the University becomes a member of the Women's Student Government Association. W.S.G.A. Council, elected by the women students, works to educate students to become self-directing individuals, to respect the rights of others, and to develop into responsible citizens of the college community. Through the Honor System high ideals of personal integrity and social consciousness are fostered.

W.S.G.A.'s primary purpose is to promote the academic success and the social development of all, while at the same time respecting the personality and the worth of the individual.

HONORARY SOCIETIES The Boulder Society, a local senior honorary society for men, is recognized as an organization responsible for student leadership. Election to this society is counted one of the highest honors that a Vermont man may achieve. Other honorary class societies for men are Key and Serpent, a junior society, and Gold Key, a sophomore society.

Mortar Board is a national honorary society for senior women. Though membership in Mortar Board comes as a great honor for a Vermont woman in recognition of outstanding service, scholarship, and leadership, it is also a challenge for continued sound and honest scholarship, and for unselfish service in the best interests of the college campus. Other honorary class societies for women are Staff and Sandal for juniors and Sophomore Aides.

The Phi Beta Kappa Society established the Vermont Alpha Chapter at the University in 1848, and initiates are chosen primarily on the basis of high scholastic standing. The local chapter was the first in Phi Beta Kappa to initiate women into membership.

The Society of the Sigma Xi, established at the University in 1945, initiates those who have proved their ability to do research in one of the sciences and, if students, who have a high scholastic standing.

Other national honorary societies include Alpha Omega Alpha, medicine; Alpha Zeta, agriculture; Kappa Delta Pi, educational; Tau Beta Pi, engineering; Omicron Nu, home economics; Tau Kappa Alpha, debating; Sigma Delta Psi, men's physical education; National Collegiate Players, dramatics; Commerce and Economics Honorary Society; and Alpha Lambda Delta, freshman women's scholastic. Ethan Allen Rifles and the Astronaut Air Society are honorary societies for outstanding students in the Reserve Officers Training Corps.

ATHLETICS A well-rounded program of intramural sports enjoys voluntary participation by men in all classes. Competitions are arranged among fraternities, dormitories, independent groups, and individuals. A program of intercollegiate competition for men is maintained in football, skiing, baseball, basketball, track, cross-country, tennis, golf, and rifle marksmanship. The athletic policies of the University are under the direction of the Athletic Council, composed of members of the faculty, the student body, and alumni. Athletic relations are maintained with colleges and universities in New England and the eastern seaboard. The University is a member of the "Yankee Conference," which is composed of the land-grant colleges and univer-

sities in New England, of the National Collegiate Athletic Association, the New England Intercollegiate Athletic Association, and the Eastern College Athletic Conference.

The Women's Recreation Association endeavors to encourage leadership and to cooperate in establishing, promoting, and administering a program of recreational activities for all women students. It sponsors a large number of activities including archery, badminton, basketball, bowling, field hockey, folk dancing, square dancing, modern dancing, table tennis, riflery, skiing, skating, swimming, tennis, and volleyball. The Square Dance Club and the Modern Dance Club are co-recreational.

The Outing Club sponsors for both men and women students mountain climbing expeditions, ski trips, and the other outdoor activities.

FRATERNITIES AND SORORITIES Chapters of Greek letter fraternities and sororities have long been recognized as part of the social and extra-curricular life on the UVM campus. These groups provide valuable experience for their members in the form of interfraternity athletic competition, interfraternity sings, dances, social work projects, house operation, and meal service. Fraternities and sororities are under the jurisdiction of the University Council, and policies regarding the establishment of new chapters and the operation of present groups on the campus are subject to its control. Fraternity activities are coordinated by the Interfraternity Council and sorority activities are coordinated by a Panhellenic Council. The following are active chapters of national and local fraternities: Acacia, Alpha Epsilon Pi, Alpha Tau Omega, Delta Psi, Kappa Sigma, Lambda Iota, Phi Delta Theta, Phi Mu Delta, Phi Sigma Delta, Sigma Alpha Epsilon, Sigma Nu, Sigma Phi, Sigma Phi Epsilon, Tau Epsilon Phi, and Theta Chi. Chapters of the following national and local sororities are recognized as UVM: Alpha Epsilon Phi, Alpha Chi Omega, Alpha Delta Pi, Delta Delta Delta, Gamma Phi Beta, Kappa Alpha Theta, and Pi Beta Phi.

KAKE WALK The outstanding social event of the year is the Kake Walk week end in February. This unique celebration is UVM's gala occasion and many returning alumni attend annually. Festivities include a formal ball at which a king and queen are crowned, snow sculpture, and athletic events. For two nights, the fraternities compete with one another in original skits and in *Walkin' fo' de Kake*.

MUSICAL ACTIVITIES Opportunities for participation and appreciation are provided for students with strong musical interests. The Uni-

versity Choir, the University Orchestra, and the University Band appear in public presentations many times during the year. Christmas and Easter concerts and a spring operetta are regular events.

The University Band is under the guidance of a director who is a member of the music department. The band appears at military reviews, Kake Walk, football games and parades. The band also performs as a concert band in which valuable experience for students in musical education is obtained.

FINE ARTS FESTIVAL A Fine Arts Festival is held each spring primarily to show student talents and work in the fine arts. Among the highlights of the Festival are exhibitions of painting, sculpture, and arts and crafts. Productions include an opera, a dance program, and student directed plays, as well as choral and orchestral concerts. One issue of the *Centaur*, devoted to student creative writing, is published during the Festival, and exhibitions, lectures and movies are scheduled at the Fleming Museum.

DRAMA, DEBATING, AND RADIO The University Players, an organization of students interested in theatre arts, offers opportunities for student participation. These include two or more full length plays, an annual opera or musical comedy, a faculty-student variety show, Readers Theatre productions, and a Drama Workshop for qualified student directors. Outstanding juniors and seniors are eligible for membership in National Collegiate Players, a national theatre honorary.

The Lawrence Debate Club provides opportunities for participation in all types of forensic activities—debate, discussion, oratory, after-dinner, and extemporaneous speaking. Members of the club appear before service clubs, farm organizations, high schools, and other groups throughout the state. The members of the club participate in more than three hundred intercollegiate debates annually with the beginners getting as extensive an experience as the veterans. The club travels to various discussion programs and to outstanding tournaments in the East. Outstanding performers receive recognition by election to Tau Kappa Alpha, the national honorary forensic fraternity.

The Radio-Television Workshop operates the campus radio station WRUV and produces many radio and television programs emanating from the University. Open to all students, it provides opportunity for participation in broadcasting activities. The Workshop currently produces *Spotlight UVM*, a weekly documentary report of campus activ-

ities, plus a student interview service for ten stations in the State. It presents a daily newscast over one local station, operates another all day Sunday every other week, and assists in the production of the university television series, *Living and Learning*.

WRUV, a student owned and operated wired-wireless station, broadcasts to the campus daily. It has its own United Press teletype wire service and is financed mainly through the sale of advertising.

STUDENT PUBLICATIONS A college newspaper, literary magazine, and annual yearbook offer interested students the opportunity for journalistic, literary, and editorial expression. The newspaper, the *Vermont Cynic*, is published weekly by students. *Centaur*, the literary magazine, is published three to four times each year by students. The *Ariel*, the annual yearbook, is published by members of the senior class. The annual *Freshman Handbook* and the *Freshman Record Book* for all incoming students are published by a committee of the Student Association.

CLASS ORGANIZATIONS The members of each freshman class form a class organization which retains its identity throughout the undergraduate years of its members and extends through subsequent years as long as there are living alumni of the class. Members of each undergraduate class elect officers each spring, except that officers elected at the end of the junior year serve through the senior year and to the end of the first reunion. Each senior class conducts the events of Senior Week.

LIBRARY FELLOWS This society of students, faculty members, alumni, and members of the public at large aids the libraries in carrying on various phases of their work by special contributions. Membership is open to all who are interested in books, knowledge, and the advancement of learning.

The Admission of Students

To be fully qualified for admission an applicant must have his application on file with the Director of Admissions before March 1 of the year in which admission is sought. Applications filed after this date can be considered only as curriculum and dormitory capacities allow. Forms for admission will be sent upon request. A non-refundable application fee of \$10 is required of all out-of-state applicants.

Admission to the freshman class is determined after careful consideration of the high school record, rank in graduating class, recommendation of the high school principal, scores on the College Entrance Examination Board Scholastic Aptitude Test and a personal interview if requested by the Director of Admissions. The Scholastic Aptitude Test should be taken in December, January, or February of the senior year.

At least three quarters of the grades for high school courses should be at the college certifying level or higher as determined by each high school. The quality of work in the junior and senior years is especially important.

Candidates for admission are expected to present not less than sixteen units from high school. These must include:

English	4 years
Mathematics (as specified below)	2 years
Foreign language, ancient or modern	2 years of one
Science	2 years
History	1 year

The two years of mathematics should be one year of algebra and one year of geometry. Students planning to enter the College of Agriculture and Home Economics should present a second year of algebra for a total of three years of mathematics. Students who plan to specialize in engineering, mathematics or science should present both a second year of algebra and a course in trigonometry for a total of four years of mathematics.

Exceptionally qualified students may in some instances be admitted even though they do not meet the above requirements in full.

Additional courses in mathematics, history and a third year in the foreign language are recommended as desirable preparation for college.

SCHOOL OF DENTAL HYGIENE Enrollment is limited to women who are eligible to enter the freshman class of the University. Attributes necessary for success are good health, emotional stability, interest in the work, and the ability to get along well with people. Candidates who plan to practice in Vermont or Massachusetts must be seventeen years of age before the first of June preceding their entrance.

SPECIAL STUDENTS Special students are those who are not candidates for a degree in one of the regular curricula, or who are carrying fewer than twelve credit hours. Subject to the usual entrance requirements of the University, persons who are qualified for regular admission may, on payment of specified fees, pursue certain studies in regular college classes as special students. This arrangement is intended to accommodate those whose previous study and attainments enable them to pursue with profit special courses of study in particular departments. Students who have been dismissed for low scholarship may not re-enter as special students.

Special students are registered and enrolled in the same manner as regular students, and are subject to all regulations of the University. Credit for courses completed may be subsequently counted toward a degree. Special students are not eligible to hold University scholarships.

College Entrance Examinations

The College Entrance Examination Board will administer a series of tests during 1960 on May 21, August 10 and December 3 and in 1961 on January 14, February 4, March 18, May 20 and August 9. Complete information may be obtained from the College Entrance Examination Board, P.O. Box 592, Princeton, New Jersey.

Admission to Advanced Standing

All applicants for admission who have attended another collegiate institution are required to file with the Director of Admissions and Records an official transcript of high school and college records. A confidential report from the college attended is also required.

A student who transfers to the University from another accredited college or university may be given provisional credit for all courses satisfactorily completed, provided that similar courses are counted toward graduation at The University of Vermont. Transfer credit is not allowed for work completed with grade "D" or its equivalent, unless a more advanced course in the same subject has been passed

with a higher grade in the institution from which the student transfers.

The credit is provisional, pending satisfactory completion of a semester's work at the University. The provisional transfer credits are fully granted if the student is in good standing at the end of the first semester.

Advanced Placement

The University of Vermont welcomes applications from high school students who have taken college level courses offered in their high schools under the Advanced Placement Program of the College Entrance Examination Board. The departments of Chemistry, English, German, Mathematics, Physics and Zoology have indicated their readiness to review Advanced Placement examinations and the scores received in order that qualified students may not be required to repeat work already covered adequately and to permit enrollment in courses above the freshman level.

Preliminary Registration Program

The days immediately preceding the opening of class work are devoted to certain preliminary events designed to facilitate the adjustment of freshmen to conditions of life and study at college. The full schedule of events is given in a special circular, *Preliminary Days at U. V. M.*, which is sent to all prospective freshmen by the Office of Admissions and Records one month before the opening of college.

All new students are given a reading ability test at the opening of the college year. Freshmen also take several placement tests on the basis of which some students are placed in more advanced courses. The scores on all tests are used in advising students regarding the course of study to pursue and vocational plans. A personal data report, physical examination, and registration photograph are also included in the program.

Student Expenses

The student expenses outlined in the following paragraphs are the anticipated charges for the academic year 1960-61. Changing costs, however, may require an adjustment of these charges.

TUITION The tuition charges are in accordance with the following schedule. However, refundable deposits are required to cover loss or breakage in certain departments. Additional charges are made for individual lessons in music and for some expenses in the Dental Hygiene and Nursing programs.

Undergraduate Colleges and Divisions, per year \$1040.

College of Medicine, per year \$1500.

Graduate and Special Students, \$44 per credit hour.

1. **VERMONT RESIDENTS** Tuition rates for Vermont residents for the year 1960-61 will be:

	<i>Per Year</i>
All Undergraduate Colleges and Divisions.	\$416
College of Medicine	550
Graduate and Special Students	18 per credit hour
(Semester maximum, \$208)	

2. **NON-RESIDENTS OF VERMONT**

	<i>Per Year</i>
All Undergraduate Colleges and Divisions.	\$1040.00
College of Medicine	1500.00
Graduate and Special Students	44.00 per credit hour
(Semester maximum, \$520.00)	

COLLEGE OF MEDICINE There are a limited number of State Scholarships of \$200.00 a year each available to Vermont residents. Students allowed to repeat a year are charged full tuition for that year.

An application fee of \$10.00 is charged each applicant for admission.

NURSING STUDENTS The charges for the eight weeks session in the summer following the Freshman year is \$104.00 for Vermont residents and \$260.00 for non-residents. The charge for the six weeks session at the end of the junior year is the same as for enrollment in the regular summer session.

GRADUATE COLLEGE A tuition fee of \$25.00 per semester is charged each graduate student who has completed all course requirements but who is in residence for the purpose of completing his thesis.

EXCEPTIONAL ENROLLMENTS For an enrollment of fewer than twelve hours the charge is \$18.00 per semester hour for residents of Vermont; for non-residents, the charge is \$44.00 per hour.

Students who by reason of conditions over which they have no control require more than four years to complete the requirements for a degree shall be charged no more than the full tuition for four years.

TUITION FOR COURSES IN APPLIED MUSIC Private lessons are approximately one-half hour in length, fifteen being given in each semester. Students who enroll as regular full-time students in the music education curriculum, paying full tuition, are charged one half the regular rates for applied music for such courses as are required in the curriculum. All others pay the scheduled charges.

PIANO, ORGAN, VIOLIN AND SINGING

One lesson a week	\$35.00 per semester
Two lessons a week	60.00 per semester
Use of organ one hour a day	25.00 per semester

STUDENT ACTIVITY FEE All students who are enrolled in twelve semester hours or more in the College of Arts and Sciences, Technology, Agriculture and Home Economics, Education and Nursing, and the School of Dental Hygiene are charged a fee of \$7.50 per semester. This fee is assessed, allocated, and controlled by Student Association and covers the support of student organizations and activities, and includes subscriptions to the *Vermont Cynic* and the *Ariel*. First-year medical students who enter the College of Medicine after three years in the College of Arts and Sciences are charged this same fee.

Graduate students, special students, unclassified students, and students in the College of Medicine may, by paying this fee, become entitled to the benefits listed above.

LATE REGISTRATION FEE A late registration fee of six dollars is charged students who fail to complete enrollment at the appointed times. In unusual cases, exemption from this charge may be made by the deans.

CHANGE OF ENROLLMENT FEE A fee of three dollars is charged, except in the College of Medicine, for any change of enrollment requested by the student concerned. Deans may waive this fee in exceptional cases.

ADVANCED DEGREE FEE A fee of twenty-five dollars, payable during the semester prior to graduation, is charged degree candidates in the Graduate College. This fee includes the cost of thesis binding and the academic hood.

DEPOSIT A deposit of thirty-five dollars is required of every applicant after he has received notification of his acceptance as a student at the University. This deposit is held until he graduates or discontinues his course of study, at which time the deposit minus any indebtedness to the University will be returned to him.

An applicant to an undergraduate college or the College of Medicine who cancels an application prior to July 15 will receive a refund of fifteen dollars.

An applicant to the Graduate College for a program beginning in July or September will receive a \$15 refund if the Dean is notified by May 1; if the program is to begin in February, the deadline is December 1.

BREAKAGE CHARGE A charge will be made, as recommended by the department or office involved, for excessive or unusual breakage or damage and for breakage or damage of expensive equipment.

ROOM CHARGE Rooms in college residence halls are rented for the entire year and the prices are uniform in all residence halls. Single rooms rent for \$167.50. All others rent for \$145.00 per occupant per semester. Nominal charges for the use of certain electrical appliances may be levied upon occupants of the residence halls. A \$2.00 fee is collected from each male dormitory resident to be administered by the Men's Residence Hall Council for the Residence Hall's activities program. The University

2. No refund is made of the student activity fee.
3. Refund of board is made on a pro rata basis.
4. Contracts for rooms are canceled for the remainder of the year for all students not enrolled for the second semester.

Banking Facilities

An arrangement with the Howard National Bank and Trust Company of Burlington enables students to open and maintain regular checking accounts through the University Cashier's Office. Applications for new accounts, deposits to individual accounts, and orders for checkbooks are accepted during office hours in the Cashier's Office. The bank's normal charge of $12\frac{1}{2}$ ¢ per check is made for this service. The Cashier's Office cashes personal checks for students in good standing who furnish satisfactory identification.

Student Aid

Student fees do not meet the full cost of an education at the University. The income from endowments, State and Federal appropriations and current gifts furnish the balance. Many worthy and deserving students are still unable to meet the financial charges and for them the University provides, so far as its resources permit, considerable aid in the form of scholarships, grants-in-aid, loans, prizes and employment. The extent of need and the type of financial assistance most desirable is determined by the Student Aid Committee.

New students should request application forms for aid from the Director of Admissions or from the principal if they are attending a Vermont high school. All applicants for financial assistance must submit a Parents' Confidential Statement to the College Scholarship Service. These forms may be obtained from the local high school principal.

SCHOLARSHIPS During the past year, a total of \$203,210.70 was awarded to students. Of this amount, \$169,520.50 was provided by the University from scholarship endowments and in the form of prizes. Eighty-four per cent of the scholarships were awarded to residents of Vermont, however, there are a number of scholarships available to nonresidents.

Following is a list of some of the scholarships and prizes available. A complete list of scholarships and loan funds will be found on pages 197-200.

Memorial Scholarship Fund. Worthy students who are in need of funds and who meet the qualifications of scholarship, character, leadership, and indicate athletic promise are recommended to the Student Aid Committee by the Director of Athletics.

Honor. A scholarship of two hundred dollars, credited toward the tuition of the freshman year only, is awarded in each accredited Vermont high school to the highest standing boy and girl eligible for admission to the University.

Prize Contests. In order to encourage student activities in the high schools and preparatory schools in Vermont, the University conducts annual contests in writing, debating and mathematics proficiency. Announcements of these contests are sent to all secondary schools in the State.

Wilbur Fund. The income from the fund is available on a basis of need to students who are residents of Vermont and who have earned entrance to college or who have college records that indicate excellent scholastic ability.

LOAN FUNDS Loan funds are apportioned annually to needy and deserving students, permitting them to pay a part of the cost of college attendance at some future time. The notes are payable following graduation.

NATIONAL DEFENSE EDUCATION ACT STUDENT LOAN PROGRAM The University participates in this loan program in which a student, depending upon ability and need, may borrow as much as \$5,000 during his college years (maximum for one year, \$1,000). Freshmen may borrow under this program. The applicant and his parents sign a promissory note which is non-interest bearing while the student is in college. Interest of 3% is charged on the unpaid balance of the loan beginning one year after the borrower ceases to be a full-time student. Loans are to be repaid in ten equal installments beginning one year after the borrower ceases to be a full-time student. Teaching full-time in a public school permits cancellation at the rate of 10% per year of teaching up to a maximum of 50% of the total loan and interest. Death and permanent disability is cause for total cancellation.

Application forms should be obtained from the Admissions Office.

General Information

Definition of "Vermont Resident"

The following rules of residence, adopted by the Board of Trustees on October 18, 1952, are used in determining a student's eligibility to benefit from the reduced tuition rate for residents of Vermont.

1. A student who is of age when he first enrolls in the University shall be deemed to be a Vermont resident if, and only if, he had his domicile in Vermont for a period of one year next preceding his first enrollment in the University, except as otherwise provided by these rules.

2. A student who is a minor when he first enrolls in the University shall be deemed to be a resident of Vermont, if, and only if, his parents had their domicile in Vermont for one year preceding his first enrollment at the University, except as otherwise provided in these rules.

3. A student who, at the time of his first enrollment at the University, has his domicile fixed by a special rule of law (as a student under guardianship, a married woman, etc.) shall be deemed to be a resident of the State of Vermont if, and only if, the governing rule of law made Vermont his residence for a period of at least one year preceding his first enrollment.

4. In all cases in which a nonresident student claims that he has become a resident of the State of Vermont by reason of the application of a special rule of law (resulting from the appointment of a guardian, marriage of a woman student, etc.), the circumstances claimed to have made the student a resident must have taken place at least one year prior to the next regular student enrollment. In all such cases, the new resident status of the student shall take effect at the time of the next regular enrollment.

5. Whenever a resident student shall lose his Vermont domicile (as in the case of a minor whose parents move from the State and excepting women who marry nonresidents), the student shall immediately be reclassified as a nonresident.

6. It shall be incumbent upon any student whose status changes from resident to nonresident, to inform the dean of his college, or the Registrar, promptly, of the facts relating to his residence.

7. The burden of proof shall, in all cases, rest upon the student claiming a residence of the State of Vermont.

8. The Board of Trustees may, whenever justice requires, make exceptions to these rules.

The Committee on Residence has been authorized by the Board of Trustees to consider exceptions as stated in rule 8 above. Appeals from the decision of the committee may be made to the Board of Trustees.

Application for change of residence classification should be made to the Director of Admissions and Records, who is chairman of the Committee on Residence.

Academic Discipline

The disciplinary authority of the University is vested in the President. In such cases as he considers proper, this authority may be delegated to the several deans and to appropriate judicial bodies. The continuance of each student at the University, the receipt by him of academic credits, his graduation and the conferring of any degree or the granting of any certificate are strictly subject to the disciplinary powers of the University. The University is free to cancel his registration at any time on any grounds, if it considers such action to be for the welfare of the institution.

Reserve Officers' Training Corps

As a land-grant institution, the University provides military training in its curriculum as its contribution toward national defense. A senior division unit of the

Army ROTC is maintained. Its mission is to produce junior officers with qualities and attributes essential to their progressive and continued development as officers in the Army.

The Army ROTC curriculum is designed to develop the leadership potential of the individual. Instruction is given in subjects common to all branches of the Army, and qualified graduates of the four-year course are commissioned as lieutenants of armor, artillery, engineers, infantry, signal, quartermaster, ordnance or other branch depending upon aptitudes, the individual's choice, and the needs of the Army.

The Army Flight Training Program is open to selected senior Army ROTC students. It is designed to train a reserve pool of pilots and it affords trainees the opportunity to qualify for a civilian pilot's license.

THE BASIC COURSE A two-year course is required of all undergraduate, male students except the following:

1. *Veterans and Reservists.* Those who have served on active duty in the Armed Forces for one year or more may be excused from the entire basic course. Those who are definitely committed to a Reserve or National Guard program which requires at least six months of active duty and an over-all obligation, including active duty, Ready Reserve, and Standby Reserve, of at least six years may be excused from the entire basic course. Those who have served on active duty for six months but less than one year and do not have the Reserve obligation mentioned above may be excused from the first year of the basic course. All reservists should consult their Reserve advisors or the ROTC Department on campus as to possible advantages for them in taking the ROTC program.
2. *Former ROTC Students.* Those who have successfully completed three or more years of an accredited Junior ROTC program may be excused from the freshman basic course upon presentation of a military training certificate.
3. *Transfer Students.* A student who transfers to this institution and who would be an accredited junior or senior at his former college may be excused from the entire basic course provided no ROTC training was offered at the former institution, or was offered on a voluntary basis; or provided he has successfully completed it if it were a required course.
4. *Those not physically qualified.*
5. *Noncitizens.*

Uniforms, arms, and equipment are furnished the student by the military department. The class meets at least three periods a week and carries two hours credit per semester. *These eight hours for the two years are in addition to the total number required for a degree in a specific curriculum.*

THE ADVANCED COURSE This is a two-year elective course open to juniors, and carries three hours credit per semester or twelve hours for the full four semesters. Students are selected by the department chairman and the President. Ex-service personnel, with the approval of the dean of the college, may apply in the spring of their sophomore year for Advanced Army ROTC. Each student receives a uniform allowance credit of \$100.00 and a daily subsistence allowance which during recent years has averaged \$27.00 per month. The class meets at least five periods per week.

Attendance at a summer camp is mandatory. Duration of the Army ROTC summer camp is six weeks. During such attendance the student is paid at the pay scale of an enlisted man in the seventh grade. Mileage at five cents per mile is paid to and from camp. Students attend camp between the junior and senior academic years, but deferment may be made, for cogent reason, when approved by the department.

On successful completion of the advanced course, ROTC students are normally

commissioned as second lieutenants in the United States Army Reserve. Distinguished military students may receive regular commissions upon graduation.

Twelve semester hours of elective credit are granted for advanced military science.

Physical Education

Two years of physical education, normally completed during the freshmen and sophomore years is required of all undergraduate students. Medical examinations are required of all new students. Those with serious defects may be given restricted work or may be excused by the Director of Student Health. Students twenty-five years of age or older are exempt from physical education requirements. The semester hours listed for physical education are in addition to the total number of hours required for graduation in a specific curriculum.

University Responsibility

Many courses involve instruction in and the use of various types of power equipment, laboratory apparatus, and specialized facilities. The University takes every precaution to provide competent instruction and supervision of such courses. It is expected that students will cooperate by following instructions and exercising precaution. In case an accident does occur resulting in personal injury, the University can assume no responsibility except for medical care that is provided by the Student Health Service.

Student Health Insurance

Through an arrangement with the Vermont Accident Insurance Company students are able to procure a policy providing for payment up to \$500 for each accident and each illness. The cost for one year's coverage is \$23.00 for men and \$21.00 for women. Further details may be obtained from the Treasurer's Office.

Enrollment

Every student is required to register and enroll on the designated days. All charges for the ensuing semester must be paid, or otherwise provided for, before enrollment is completed. After enrollment, no changes of studies will be allowed except such as are authorized by the dean of the college in which the student is registered. After Saturday of the first full week of the semester, no enrollment or changes of studies will be permitted, except that a student may drop a course with his dean's permission during the first three weeks of a semester without incurring any academic penalty.

Auditing Courses

With the approval of his dean and the instructor concerned, a student who is regularly enrolled and carrying a normal program may audit a course. In such cases no entry is made on the student's permanent record; no credit is given for the work; and no charge is made. Full tuition is charged those students who are not regularly enrolled in at least twelve credit hours.

Undergraduate Degree Requirements

Degrees are conferred on the recommendation of the several colleges, and specific requirements will be found in the sections devoted to the respective colleges.

In addition to the course requirements of the several curricula, students must also fulfill the general requirements in physical education, military science, and hygiene.

To be eligible for graduation, a student must have attained a grade average of 72 or above in the work required for graduation in his curriculum. Grades in courses accepted for transfer credit are excluded in computing this average.

To be eligible for a degree, a student must have completed eight semesters or the equivalent as a full-time student. Exceptions to this rule may be made in special cases by the University Council.

Every candidate for a degree is required to have taken 30 of the last 42 semester hours of credit in residence at the University, except that those who have completed three years of premedical study in the University are awarded their degrees after successful completion of one year of study in any approved college of medicine. Courses taken in the regular session or in summer session at the University are counted towards residence.

Honors

The Bachelor's degree may be conferred with honors, by vote of the Senate, in recognition of general high standing in scholarship. Three grades are distinguished and indicated by inscribing on the diploma the words *cum laude*, *magna cum laude*, or *summa cum laude*. In the College of Medicine, the five students who have attained the highest average of marks during the entire four years' course are graduated *cum laude*. The names of those who receive these honors and of those who win academic awards are printed in the commencement program.

DEAN'S LIST The deans of the undergraduate colleges publish at the beginning of each semester the names of those students who have attained an average of at least 85 in their college credit courses during the preceding semester.

Grades and Reports

Scholarship is graded on a percentage scale. Grades are reported and recorded numerically. The minimum passing grade in the undergraduate colleges is 60; any grade lower than 60 represents a failure and indicates that the course must be repeated if credit is to be obtained.

All students enrolled in the undergraduate colleges receive reports of scholarship from the respective deans' offices after the close of each semester. These reports are also sent by the Recorder to the parent or guardian of each freshman student and to the principal of the secondary school from which he was graduated. Reports of upperclass students are sent to parents only upon request. Special reports of low standing are sent by the deans' offices about the middle of each semester, both to the students concerned and to the parents or guardians.

Each student, former student or graduate student may procure one photostatic transcript of his record without charge. For additional orders the charge is one dollar when one transcript is ordered. When more than one transcript is ordered at a time, the charge is one dollar for the first copy and fifty cents for each additional copy.

Use of English

Correct English usage is demanded by all departments in the University. Written work of any kind which is unsatisfactory in manuscript form, grammar, punctuation, spelling, or effectiveness of expression may be penalized, regardless of contents. Stu-

dents whose written work falls below the standard of correct usage may be remanded to the English Department for additional instruction, even though the freshman course in English has been passed.

Before they may be admitted to the University, foreign students must offer evidence that they are capable of reading and writing English on the college level.

The College of Agriculture and Home Economics

The College of Agriculture and Home Economics performs four public functions: it teaches resident students; it investigates problems; it disseminates information; it renders related services. These four lines of work are carried out respectively by the resident instruction division; the research division, or Vermont Agricultural Experiment Station; the extension division, or Vermont Agricultural Extension Service; and the Related Services Division.

The resident instruction division offers professional curricula in agriculture, agricultural engineering, and home economics and, in addition, two-year programs in forestry and preveterinary science. The curriculum in agriculture leading to the degree of Bachelor of Science in Agriculture provides a variety of options. The curriculum in agricultural engineering offered in cooperation with the College of Technology leads to the degree of Bachelor of Science in Agricultural Engineering. Young women may earn the degree of Bachelor of Science in Home Economics by selecting one of several options. The two year preveterinary program prepares students for admission to other institutions for professional training. Forestry students complete their last two years at the University of Maine.

Most curricula in the College of Agriculture and Home Economics leading to the Bachelor of Science degree require 130 semester hours of prescribed and elective courses, exclusive of those in basic military and air science, physical education, and hygiene. The Agricultural Engineering Curriculum requires 136-140 semester hours of prescribed and elective courses. Normally 15 to 18 credit hours of courses exclusive of the afore-mentioned courses constitute a semester program.

In each field, to provide a well-balanced and integrated educational program and to insure reasonable concentration, a sequence of courses is prescribed with allowance made for the election of additional courses. Faculty advisers counsel students in the selection of elective courses and other educational problems. The courses listed for each of the curricula are those prescribed for the years indicated.

As part of the preliminary registration program, a mathematics placement test is given. Freshman mathematics courses are normally assigned on the basis of the scores made in these tests.

A student may transfer from one curriculum, option or program in the College to another, provided the course requirements established for the curriculum, option or program are satisfied. Arrangements may be made for transfer within the College through counsel with the student's faculty advisor.

The Honors Program

This program in the College of Agriculture is designed to help the superior student. It is intended to provide an environment for such students which will insure that they are constantly challenged by the most advanced work their talents will allow. It is assumed that honors students will have mastered more subject matter upon graduation than other graduates.

Such students are selected on the basis of their academic performance usually as second semester freshmen or during the sophomore year. Their curricula are developed in consultation with an honors committee and are relatively free of the customary restrictions. Special colloquia or consultations may be arranged in lieu of regular class work. Prerequisites may be waived and in general the student is encouraged to work as an individual.

The Curriculum in Agriculture

The curriculum in agriculture leading to the degree of Bachelor of Science in Agriculture provides the following options: general agriculture, agricultural economics, agricultural education, agronomy, animal and dairy production, botany, dairy industry, foreign agricultural service, horticulture, and poultry husbandry.

Freshman Year—A

Options in General Agriculture, Agricultural Economics, Agricultural Education

	1st	2nd
	SEMESTER	
English Composition	3	3
Introductory Botany	..	4
Elementary Algebra	3	..
World Agriculture	..	3
General Dairying	3	..
General Soils	..	3
General Poultry	3	..
Public Speaking	3	..
Elective	0-3	2-5

GENERAL AGRICULTURE This option is designed for students wishing to return to farming, to become farm managers, to enter work allied to farming; for those seeking a general rather than a specialized knowledge in the field of agriculture; for those desiring to prepare for county extension work; and for those preparing to work in the general field of agriculture with commercial concerns such as feed, fertilizer or seed companies, meat packers, agricultural implement and equipment

concerns, dairy products and supplies companies, and for organizational and publicity work for farm organizations. Through the proper selection of electives, a student may choose a field of concentration in agriculture, and at the same time select courses that contribute to a liberal education.

Students taking a major part of their work in forestry under this option may prepare for entrance to professional forestry schools granting the Master of Forestry degree. Students contemplating preparation for county extension work should, not later than their sophomore year, seek the advice of the state extension leaders.

Each student in the general agriculture option must complete a minimum of 21 credit hours of agricultural courses in addition to the courses listed. At least two advanced courses in one subject and one advanced course in a related subject recommended by the chairman of the department in which the major part of the work is done must be taken in the junior and senior years.

The Sophomore Year	1st	2nd	The Junior Year	1st	2nd
	SEMESTER			SEMESTER	
English	3	3	General Horticulture	3	..
Intro. Chem. or Intro. Physics	4-3	4-3	Rural Sociology	3	..
Principles of Economics	3	3	Woodland Management	3	3
General Farm Crops	3	..	*Extension Methods	..	2
Elective	2-6	5-9	Elective	6-9	10-13
The Senior Year				1st	2nd
				SEMESTER	
History of the U. S. or Amer. Govt.				3	3
*Extension Methods				..	2
Farm Power, Mach. and Elec. or Farm Structures and Util., and Soil and Water Engr.				3 or 3	
Farm Management				3	3
Elective				6-9	4-7

AGRICULTURAL ECONOMICS Training in agricultural economics prepares students wholly or in part for appraising land; marketing activities; supervising agricultural loan departments in private banks; directing farmer cooperatives such as the production and farm loan association affiliated with the Farm Credit Administration; public relations research and sales work for the manufacturers of agricultural tools or products; organizational and publicity work for farm organizations and cooperative associations; positions in state, county, and local government service; research work in farm management, farm credit, taxation, marketing, farm population and rural life trends; for operating numerous enterprises where a knowledge of economic principles is an essential supplement to knowledge of the technical requirements of the business. This course of study satisfies the entrance requirements for graduate schools, for applicants for research or teaching fellowships in agricultural economics.

The Sophomore Year	1st	2nd	The Junior Year	1st	2nd
	SEMESTER			SEMESTER	
Agricultural Cooperation	2	..	Rural Sociology	3	..
Agricultural Business	..	3	Woodland Management	3	3
English	3	3	Farm Credit	3	..
Intro. Chem. or Intro. Physics	4-3	4-3	Marketing Farm Products	..	3
Principles of Economics	3	3	*Extension Methods	..	2
General Farm Crops	3	..	Elective	6-9	7-12
Elective	0-4	2-6			

*Junior or senior year, alternate year course.

The Senior Year	1st	2nd
	SEMESTER	
Farm Management	3	3
Public Problems of Agriculture	..	3
¹ Extension Methods	..	2
Seminar	1	1
Elective	11-14	6-11

A minimum of two other courses in accounting, statistics, or economics and a minimum of four additional courses in the College of Agriculture and Home Economics are required of each student. Selection of these courses is to be made with the advice of the student faculty advisor.

AGRICULTURAL EDUCATION This option prepares students to teach vocational agriculture at the high school level and to teach young farmer classes and adult farmer classes. Preparation for advising local chapters of the Future Farmers of America is also given. The students are prepared for advanced study in the field of agricultural education. Many of the agencies and commercial concerns which employ farm service personnel consider experience in teaching vocational agriculture as excellent preparation for work in their fields.

The Sophomore Year	1st	2nd	The Junior Year	1st	2nd
	SEMESTER			SEMESTER	
English	3	3	Farm Management	3	3
Intro. Chem. or Intro. Physics	4-3	4-3	Woodland Management	3	3
Principles of Economics	3	3	Feeds and Feeding	4	..
General Psychology	..	3	Dairy Cattle and Milk Production	3	..
General Farm Crops	3	..	Farm Shop	3	..
Farm Power, Mach. & Elec.	3	..	Rural Education	..	3
Elective	0-2	2-6	Methods of Teaching Vo-Ag I	..	2
			Elective	0-2	4-7

The Senior Year	1st	2nd
	SEMESTER	
*Methods of Teaching Vo-Ag II	3	..
*Methods of Teaching Young and Adult Farmer Classes	3	..
†Directed Practice Teaching in Vocational Agriculture	8	..
Seminar	..	1
Farm Structures and Utilities & Soil and Water Engineering	..	3
Marketing Farm Products	..	3
Elective	0	8-11

*First 8 weeks of semester.

†Second 8 weeks of semester.

Freshman Year—B

OPTIONS in Agronomy, Animal and Dairy Production, Botany, Dairy Industry, Foreign Agricultural Service², Horticulture, and Poultry Husbandry

	1st	2nd
	SEMESTER	
English Composition	3	3
Freshman Math.	3-5	3-5
Intro. Chemistry or General Chemistry	4-5	4-5
Intro. Botany or Intro. Zoology	4	..
Public Speaking	..	3
Elective	0-4	0-5

¹ Junior or senior year, alternate year course.

²Students in the Foreign Agricultural Service option take Introductory Chemistry or Introductory Physics both semesters; Public Speaking in the 1st semester; and World Agriculture in the 2nd semester.

AGRONOMY This option is designed to give students a fundamental background in the theory and practice of crop and soil science and to prepare them for graduate study in these fields. By proper selection of electives, students may specialize in either crops or soils. Upon completion of four years study, agronomy majors may enter federal, state or commercial employment in such areas as soil conservation, soil survey, soil analysis, fertilizers, field or forage crop production and management, seed production, weed control, and crop breeding, or engage in practical farming. Graduates are qualified to do research, teaching or extension work in the above or related fields.

The Sophomore Year	1st	2nd	The Junior Year	1st	2nd
	SEMESTER			SEMESTER	
English	3	3	General Physics	4	4
Organic Chemistry	5	..	Forage and Pasture Crops	..	3
Principles of Economics	3	3	*Soil Chemistry and Fertility	3	..
Intro. to Zoo. or Intro. Geology	4	..	Elem. Quant. Analysis	3	..
General Soils	..	3	*Field Crops	3	..
Bacteriology	..	3	Elective	2-5	8-11
Elective	0-3	3-6			

The Senior Year	1st	2nd
	SEMESTER	
*Soil Physics	3	..
Farm Management	3	3
Plant Physiology	5	..
Seminar	1	1
Elective	3-6	11-14

ANIMAL AND DAIRY PRODUCTION This option provides technical and practical instruction in the field of animal husbandry with emphasis on the selection, breeding and management of dairy cattle. It prepares students for the operation of dairy farms and livestock enterprises; for field work in federal and state extension services, breed associations, farm organizations and commercial concerns; for positions in industries related to the processing and sale of dairy products and meats or with feed companies, dairy equipment and supply agencies; for graduate study leading to college teaching and research.

The Sophomore Year	1st	2nd	The Junior Year	1st	2nd
	SEMESTER			SEMESTER	
English	3	3	Prin. of Economics	3	3
Organic Chem.	5	..	Anatomy and Physiology	3	..
Elem. Biochemistry	..	5	Animal Nutrition	..	3
Intro. Zoology or Intro. Botany	..	4	Dairy Bacteriology	3	..
General Dairying	3	3	Feeds and Feeding	4	..
Livestock other than Dairy	..	2	General Soils	..	3
General Farm Crops	3	..	Diseases of Farm Animals	..	2
Elective	1-4	0-1	Advanced Judging	..	2
			Elective	2-5	2-5

*Junior or senior year, alternate year courses.

The Senior Year	1st	2nd
	SEMESTER	
Marketing Farm Products	..	3
Farm Management	3	3
Milk Processing	3	..
Heredity	3	..
Animal Breeding	..	3
Dairy Cattle and Milk Production	3	..
Seminar	..	1
Elective	3-6	5-8

BOTANY Botany is that subdivision of biology which is the foundation of the various branches of plant sciences, whether theoretical or applied. Students from both the College of Agriculture and Arts and Sciences may select the botany option. The student receives general instruction in the physical and biological sciences while obtaining a liberal education. Such an undergraduate experience can be applied to many fields of future endeavor. A student takes beginning and general botany and physiology as prerequisite to four advanced courses. These courses are selected depending on the student's own interest in any one of the fields which constitute botany. In these courses he is introduced to the ideas, the technics and appropriate modern scientific apparatus. Students have a variety of choices open to them upon receiving the Bachelor's degree. Some go directly into agriculture, industry, government services, applied research, or biology teaching in the secondary schools. Others enter professional schools. Still others go on to graduate school to prepare themselves for more advanced positions.

The Sophomore Year	1st	2nd	The Junior Year	1st	2nd
	SEMESTER			SEMESTER	
English	3	3	General Physics	4	4
Intro. Botany or Intro. to Zoo.	4	..	Foreign Language	3	3
General Botany	..	4	Plant Physiology	5	..
Organic Chem.	5-4	0-4	Elective	3-6	8-11
Social Science	3	3			
Elective	0-3	5-12			

The Senior Year	1st	2nd
	SEMESTER	
Foreign Language	3	3
Elective	12-15	12-15

Four semester courses in botany are required in addition to those prescribed. Math. 11, 12 is strongly recommended for students in this option.

DAIRY INDUSTRY Technical and practical instruction in management of milk plants and the processing of milk and milk products prepares students for supervisory or management positions in the various fields of operation in the dairy industry, and also for advanced study and research in these fields. Choice of electives with assistance of an advisor enables students to choose one of the following major fields.

Major 1. Dairy Plant Management

Preparation for supervisory or management positions in the dairy industry. In addition to the courses listed below a minimum of 18 hours must be chosen in the departments of Commerce and Economics, and Agricultural Economics with the assistance of an advisor.

Major 2. Dairy Technology

Preparation for technical positions or advanced study and research in the dairy and related food industry. In addition to the courses listed below a minimum of 18 hours must be courses in chemistry and/or the biological sciences, chosen with the assistance of an advisor.

The Sophomore Year	1st SEMESTER	2nd SEMESTER	The Junior Year	1st SEMESTER	2nd SEMESTER
English	3	3	Chem. and Testing of Dairy Prod.	..	3
Organic Chemistry	5	..	General Physics	4	4
Principles of Economics	3	3	Dairy Plant Engineering or Manufactured Milk Products	..	3
General Dairying	3	3	Dairy Bacteriology	3	..
General Bacteriology	..	3	Milk Processing	3	..
Electives	1-4	3-6	Marketing Farm Products	..	3
			Electives	5-8	2-5

The Senior Year	1st SEMESTER	2nd SEMESTER
Manufactured Milk Products or Dairy Plant Engineering	..	3
Dairy Plant Management	..	2
Seminar	..	1
Ice Cream	3	..
Electives	12-15	9-12

FOREIGN AGRICULTURAL SERVICE This option is designed to prepare students for opportunities in the vast field of foreign service with particular emphasis on agriculture. Positions available to graduates include those with commercial concerns engaged in foreign trade in agricultural products, with the agencies of the federal government engaged in world-wide activities, and with the international organizations contributing to the solution of world agricultural problems. Graduates are well qualified to enter graduate school.

The Sophomore Year	1st SEMESTER	2nd SEMESTER	The Junior Year	1st SEMESTER	2nd SEMESTER
English	3	3	Elementary Statistics	3	3
Principles of Economics	3	3	International Trade & Finance	3	..
Foreign Language	3	3	Marketing Farm Products	..	3
Intro. to Political Science	3	3	Extension Methods	..	2
Agr. Cooperation	2	..	Foreign Language	3	3
Electives	1-4	3-6	Sociology, Psychology or Anthropology	3	3
			Electives	3-6	1-4

The Senior Year	1st SEMESTER	2nd SEMESTER
International Relations	3	3
Sociology, Psychology or Anthropology	3	3
Farm Management	3	3
Agr. Econ. Seminar	1	1
Public Problems in Agriculture	..	3
Electives	5-8	2-5

The electives will include a minimum of 11 additional credit hours in technical agriculture. Remaining elective credits should be taken in the social sciences and/or humanities.

HORTICULTURE This option is designed to prepare students for opportunities in the vast field of horticulture with particular emphasis on fruits and vegetables. Posi-

tions available to graduates include those with private or commercial concerns producing, manufacturing and distributing horticultural products and supplies; fruit or vegetable farm management; agricultural extension and positions with the U. S. Department of Agriculture. Students who so desire may prepare for advanced study.

The Sophomore Year	1st	2nd	The Junior Year	1st	2nd
	SEMESTER			SEMESTER	
English	3	3	Social Science	3	3
Organic Chemistry	5-4	0-4	General Physics	4	4
Intro. to Zoology	4	..	Foreign Language	3-4	3-4
Plant Propagation	..	3	Plant Physiology	5	..
General Horticulture	3	3	Elective	0-3	5-8
Elective	0-4	2-9			

The Senior Year	1st	2nd
	SEMESTER	
Foreign Language	3	3
Heredity	3	..
*Plant Breeding Seminar	..	3
Elective	1	1
	8-11	8-11

*Junior or senior year, alternate year course.

POULTRY HUSBANDRY The poultry husbandry option gives training for poultry farm or hatchery operation; for commercial fields, such as marketing of poultry products, the manufacturing, selling and services of feed and equipment, and other allied industries; for graduate work; and for positions in teaching, extension, and research.

The Sophomore Year	1st	2nd	The Junior Year	1st	2nd
	SEMESTER			SEMESTER	
English	3	3	Principles of Economics	3	3
Organic Chemistry or Elem. Quant. Analysis	5-4	5-4	Poultry Sanit. & Disease Control or Incub. and Brooding	..	4
General Bacteriology	..	3	Poultry Feeding or Processing & Pkging. Poultry Products	3-4	..
General Poultry Husbandry	3	..	Poultry Judging and Selection	..	2
Incubation & Brooding or Poultry Sanitation & Disease Control	..	4	Forage & Pasture Crops	..	3
Elective	4-8	0-4	Farm Structures, Utilities and Soil & Water Engr.	..	3
			Elective	9-11	0-3

The Senior Year	1st	2nd
	SEMESTER	
General Physics	4	4
Poultry Feeding or Processing & Packaging Poultry Products	4-3	..
Anatomy & Physiology	3	..
Farm Management	3	3
Poultry Seminar	1	1
Elective	0-4	7-10

The Agricultural Engineering Curriculum

The curriculum in Agricultural Engineering leads to the degree of Bachelor of Science in Agricultural Engineering. It provides fundamental training in engineering similar to that provided by the engineering curricula in the College of Technology. In addition, it provides specialized training in the several subdivisions of Agricultural Engineering. The curriculum, the teaching staff, and the course content are approved

jointly by the College of Technology and the College of Agriculture and Home Economics.

The graduate is prepared for professional engineering work in soil and water control, agricultural machinery and equipment, agricultural structures, the application of electricity and refrigeration to agriculture, and rural water supply and sanitation. The program prepares the student for advanced study in agricultural engineering.

Employment opportunities exist in government agencies and schools; in manufacturing plants, utility companies, insurance companies and processing plants; in contracting, selling, farming, consulting, and many other types of work which demand college training in engineering or agriculture.

The specific courses required for graduation are given below. These courses provide 118 semester hours and the student must select additional courses to meet the full requirement of 136 semester hours. At least six semester hours in these selected courses must be in the fields of literature, sociology, religion, political science, psychology, history, philosophy, art, music or language.

Normally, a student who has a good record in high school mathematics, which includes two years of algebra, one year of geometry and a half year of trigonometry, and who qualifies in the placement test in mathematics given at the University during freshman preliminary days, may enroll in Mathematics 5 or 11 during the first semester and Math 12 during the second semester; these students may graduate in four years with 136 semester hours of credit. Students who do not qualify for Math 5 or 11 will enroll in Math 9 during their first semester and Math 10 in their second semester, but the graduation requirement is then 140 semester hours. Since graduation in four years requires the completion of sophomore mathematics, Math 21-22, by the end of the second year, students taking Math 9, 10 in their freshman year must take Math 12 in summer school between their freshman and sophomore years, or take more than four years to complete the curriculum.

The Freshman Year		The Sophomore Year	
	1st SEMESTER		2nd SEMESTER
*Freshman Math., 11-12	5	Soph. Math., 21-22	3
Intro. Chemistry, 1-2	4	Gen. Physics, 21-22	5
English Composition, 1-2	3	Farm Shop, 101	3
Engin. Problems (M.E. 3-4)	1	Statics (C.E. 24)	3
Mechanical Drawing (E.G. 1)	2	Plane Surveying (C.E. 53)	4
Descr. Geometry (E.G. 2)	..	Dynamics (C.E. 130)	..
		General Soils (Agron. 2)	..
		Public Speaking (Speech 11)	..
			3
The Junior Year		The Senior Year	
	1st SEMESTER		2nd SEMESTER
Junior Seminar, 181, 182	1	Princ. of Econ. (C. & E. 11-12)	3
Diff. Equations (Math. 211)	3	Farm Management (A. Econ. 201-202)	3
Mech. of Materials (C.E. 131)	3	Senior Seminar, 183, 184	1
Thermodynamics (M.E. 113)	3	Farm Structures, 151 or	1
Elec. Circuits & Mach. (E.E. 101)	4	Soil & Water Engr., 155	3
Soil & Water Engr., 155 or	3	Farm Utilities, 152 or	..
Farm Structures, 151	3	Farm Power Mach., 158	3
Farm Power Mach., 158 or	..	Electricity in Agr., 156 or	..
Farm Utilities, 152	..	Agr. Mach. & Equip., 154	..
Agr. Mach. & Equip., 154 or	..		3
Elec. in Agr., 156	..		3
Expository Writing (Engl. 16)	..		3
Hydraulics (C.E. 162) or	..		3
Fluid Mech. (M.E. 142)	..		3

*See text above for variations.

The Forestry Program

This program provides the first two years of study in a four-year forestry curriculum. The last two years of technical education must be taken at an institution that confers the degree of Bachelor of Science in Forestry. Special arrangement with the University of Maine permits Vermont resident students in good standing to continue their forestry education at that University after completion of the two-year program. They will receive full credit for all courses passed and they will pay the same tuition as resident students in Maine. Transfers may be made to other institutions under the usual conditions. Nonresident students enrolled in this program complete their last two years as transfer students to the University of Maine or to any other forest school of their choice.

Professional forestry prepares men to manage large and small public woodlands for timber production and use; to manage wildlife areas; for technical and managerial work in the wood-using industries; for positions in the United States Forest Service, Wildlife Service, National Park Service, Soil Conservation Service, and other federal and state agencies; for research and teaching; and to function as private forestry consultants.

Forest Management

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
Introductory Botany	..	4	Introductory Chemistry	4	4
English Composition	3	3	Dendrology (For. 5)	2	..
Dendrology (For. 3, 4)	1	3	Forest Fire Control	..	2
Mechanical Drawing (E.G. 1)	2	..	Forest Mensuration	2	..
Elements of Forestry	..	3	Forest Products	..	3
Introductory Geology	4	..	Introductory Physics	3	3
Mathematics 1 or 9, 2	3	3	Public Speaking	3	..
Political Science	3	..	Plane Surveying (C.E. 53)	4	..
*Elements of Woods Practice (Freshman Summer Camp)	..	2	Introduction to Zoology	..	4

Wildlife Management

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
Introductory Botany	..	4	Introductory Chemistry	4	4
English Composition	3	3	General Bacteriology (Bot. 116)	..	3
Dendrology (For. 3, 4)	1	3	Dendrology (For. 5)	2	..
Mechanical Drawing (E.G. 1)	2	..	General Entomology (Zoo. 31)	4	..
Elements of Forestry	..	3	Forest Fire Control	..	2
Mathematics 1 or 9, 2	3	3	Public Speaking	..	3
Political Science	3	..	Introductory Physics	3	3
Introduction to Zoology	4	..	Plane Surveying (C.E. 53)	4	..
*Elements of Woods Practice (Freshman Summer Camp)	..	2	Elective	..	3

*Two week period preceding enrollment for the first semester of the sophomore year.

The Preveterinary Program

This program offers preparation for entrance to colleges of veterinary medicine. Adjustments of individual programs may be made to meet the requirements of

different colleges. Students completing the prescribed courses with good grades and suitable qualifications may expect consideration for admission to veterinary colleges. Some farm experience is a definite advantage. Opportunities are available for graduate veterinarians in general practice, the armed services, public health, teaching and research, and federal, state and municipal disease control work.

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
English Composition, 1-2	3	3	Vertebrate Zoology, 41	4	..
Introductory Chemistry, 1-2	4	4	Introductory Physics, 1-2	3	3
Introduction to Zoology, 1	4	..	Organic Chemistry, 131-132	4	4
Public Speaking (Speech 11)	3	..	American Govt. or History	3	3
Prin. of Evolution (Zool. 2)	..	4	Introductory Botany, 1	..	4
Elem. College Algebra, 1	..	3	Elective	1-4	1-4
Elective	1-4	1-4			

The Curriculum in Home Economics

This curriculum has two purposes: first, to provide a liberal education including the areas of learning which are related to home and family; second, to provide several options which are organized to give a more specialized training and background for the interesting professions that are a part of home economics.

Every candidate for the degree of Bachelor of Science in Home Economics must present a total of 130 semester hours of credit, exclusive of courses required in physical education. All students are required to take 41 credit hours in non-home economics subjects and 42 credit hours of home economics subjects. The choice of additional credit hours required for graduation is dependent upon the chosen option of each student.

The food and nutrition option allows special adjustments in curriculum requirements for men taking institutional management.

Required Core Courses

Non-Home Economics	Hours	Home Economics	Hours
English	12	Orientation, 1	1
Speech	3	Design, 21	3
Political Science or History	6	Survey of Textiles, 83	3
*Laboratory Science	8	Clothing Selection and Construction, 22	3
Psychology	3	Family Relationships, 161	3
Economics	6	Child Development, 111	3
Sociology	3	Basic Concepts of Food and Nutrition, 43	3
		Survey of Food Preparation, 35	4
		Meal Management, 137	3
		Household Technology, 53-54	4
		House Planning, 51	3
		Family Economics, 103	3
		Home Management Theory, 102	2
		Home Management Residence, 152	3
		or Home Management Problems, 203	
		Senior Seminar, 151	1

*Students choosing Food and Nutrition or Education options must take Chemistry.

BUSINESS AND LIBERAL OPTION To provide a general education in home economics and liberal arts. The business major provides more concentration in commerce and economics courses and is planned to prepare a student for business positions in home economics. The liberal major provides more concentration in liberal arts courses as well as general background in home economics.

A student in the liberal major may concentrate in Child Development and Family Life through the selection of electives. A student concentrating in this area will spend one semester in the junior year at the Merrill-Palmer School in Detroit, Michigan. The cost of this semester, including transportation, is comparable to the cost of one semester at the University of Vermont.

The Freshman Year			The Sophomore Year		
	1st	2nd		1st	2nd
	SEMESTER			SEMESTER	
English 1-2	3	3	Science, Laboratory	4	4
Political Science or History	3	3	Economics, 11-12	3	3
Speech	3	or 3	Survey of Textiles, 83	3	..
Orientation, 1	1	..	Household Technology, 53-54	2	2
Clothing Selection and Construction, 22	..	3	House Planning, 51	3	..
Design, 21	3	..	Psychology, 1	..	3
Basic Concepts of Food and Nutrition, 43	3	or 3	Elective	3	6
Survey of Food Preparation, 35	4	or 4			
The Junior Year			The Senior Year		
	1st	2nd		1st	2nd
	SEMESTER			SEMESTER	
Business Major			Business Major		
Sociology, 1	3	..	English	3	3
Communication	3	..	Communications	..	3
Commerce and Economics	..	3	Commerce and Economics	3	3
Meal Management, 137	3	..	Demonstration Techniques, 169	..	2
Family Economics, 103	3	..	Family Relationships, 161	3	or 3
Home Management Theory, 102	..	2	Senior Seminar, 151	1	..
Child Development, 111	..	3	Home Management Residence, 153	..	3
Home Economics electives	3	3	Electives	3	3
Electives	3	6			
Liberal Major			Liberal Major		
Sociology, 1	..	3	English	3	3
Meal Management, 137	3	..	Family Relationships, 161	..	3
Family Economics, 103	3	..	General Institutional Management, 139	2	..
Child Development, 111	3	or 3	Home Nursing, Nursing 7	1	..
Home Furnishing I, 130	..	3	Senior Seminar, 151	1	..
Home Management Theory, 102	..	2	Home Management Residence, 153	..	3
Arts or Science electives	6	6	Home Economics elective	..	3
			Arts or Science electives	6	3
			Electives	5	3

EDUCATION OPTION To provide a background which prepares students to teach home making at secondary and adult levels, or to become home demonstration or 4-H club agents. Students must have a 75 average in their home economics subjects to be eligible for student teaching during their senior year. Preparation for extension or 4-H club work may be fulfilled by appropriate selection and substitution of recommended courses: Extension participation, Extension methods, American History since 1900, Local government, and Elements of Radio and Television Broadcasting.

THE CURRICULUM IN HOME ECONOMICS

The Freshman Year	1st	2nd	The Sophomore Year	1st	2nd
	SEMESTER			SEMESTER	
English, 1-2	3	3	English	3	3
Political Science or History	3	3	Speech	..	3
Chemistry 1-2	4	4	Psychology, 1	3	..
Orientation, 1	1	..	Economics, 11-12	3	3
Clothing Selection and Construction, 22	..	3	Sociology, 1	..	3
Design, 21	3	..	Household Technology, 53-54	2	2
Basic Concepts of Food and Nutrition, 43	3 or 3	3	Pattern Design and Advanced Construction, 73	3	..
Survey of Food Preparation, 35	4 or 4	4	House Planning, 51	3	..
			Elective	..	3
The Junior Year	1st	2nd	The Senior Year	1st	2nd
	SEMESTER			SEMESTER	
Education	3	or 3	Methods of Teaching, 165	3	..
Introduction to Home Economics			†Student Teaching, 167	..	7
Education, 115	2	..	Senior Seminar, 151	1	..
Advanced Food Preparation, 135	3	..	Home Nursing, Nursing 7	1	..
Meal Management, 137	..	3	†Home Management Residence, 153	..	3
Survey of Textiles, 83	3	..	Family Relationships, 161	3	..
Home Furnishing I, 130	..	3	General Institutional Manage- ment, 139	2	..
Family Economics, 103	3	..	Demonstration Techniques, 169	2	..
Home Management Theory, 102	..	2	†Teaching Adults, 216	..	2
Child Development, 111	3	or 3	Elective	4	3
Applied Normal Nutrition, 144	..	3			
Elective	..	3			

†First half of semester.

‡Second half of semester.

FOOD AND NUTRITION OPTION To prepare students to be nutrition or food specialists. The selection of the dietetic or institutional management major fulfills academic requirements for American Dietetic Association internship.

The Freshman Year	1st	2nd	The Sophomore Year	1st	2nd
	SEMESTER			SEMESTER	
English, 1-2	3	3	Organic Chemistry, 35	5	..
Political Science or History	3	3	General Bacteriology, Bot. 116	..	3
Chemistry, 1-2	4	4	Zoology, 1	4	..
Orientation, 1	1	..	Agricultural Biochemistry, 172	..	5
Basic Concepts of Food and Nutrition, 43	3 or 3	3	Economics, 11-12	3	3
Survey of Food Preparation, 35	4 or 4	4	Psychology, 1	..	3
Design, 21	3	..	Household Technology, 53-54	2	2
Clothing Selection and Construction, 22	..	3	House Planning, 51	3	..

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Physiology, Zoology, 52	..	3	Food and Nutrition Major		
Advanced Food Preparation, 135	3	..	English	3	3
Meal Management, 137	..	3	Nutrition and Diet, 243	4	..
Quantity Food Production, 186	..	3	Family Relationships, 161	..	3
Survey of Textiles, 83	3	..	Senior Seminar, 151	1	..
Family Economics, 103	3	..	Home Management Residence, 153	..	3
Home Management Theory, 102	..	2	Institutional Administration, 187	3	..
Speech	..	3	Child Development, 111	3	..
			Sociology, 1	..	3
			Dietetic or Institutional Management Major		
			English	3	3
			Nutrition and Diet, 243	4	..
			Family Relationships, 161	..	3
			Senior Seminar, 151	1	..
			Home Management Residence, 153	3	..
			Institutional Administration, 187	3	..
			Institutional Marketing and Accounting, 288	..	4
			Diet Therapy, 244	..	3
			Child Development, 111	3	..
			Sociology, 1	..	3

Note: For men majoring in the Food and Nutrition option the following adjustments will be made:
 Omit—Related Art 21; Clothing and Textiles 22; Home Management 51, 103, 153; Family Living 111.
 Add—Commerce and Economics 141, 251.

RELATED ART, CLOTHING AND TEXTILES OPTION To provide the opportunity for concentrated study in fields of costume and textile designing, fashion illustration, merchandising, interior design, and textile testing.

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
English, 1-2	3	3	Science, Laboratory	4	4
History	3	3	Economics, 11-12	3	3
Orientation, 1	1	..	Speech	..	3
Basic Concepts of Food and Nutrition, 43	3 or 3	3	Survey of Textiles, 83	3	..
Survey of Food Preparation, 35	4 or 4	3	Pattern Design and Advanced Construction, 73	..	3
Design, 21	3	..	Costume Design, 71	2	..
Clothing Selection and Construction, 22	..	3	House Planning, 51	3	..
Elective	3	3	Household Technology, 53-54	2	2
The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Psychology, 1	3	..	English	3	3
Sociology, 1	..	3	Family Relationships, 161	3	..
Science	3	..	Senior Seminar, 151	1	..
Family Economics, 103	3	..	Advanced Textiles, 182	..	3
Child Development, 111	..	3	Home Management Residence, 153	3	..
*Tailoring, 123	3	..	*Costume Design and Draping, 221	3	..
Home Management Theory, 102	..	2	*Home Furnishing II, 230	..	3
History of Costume, 120	..	3	Household Technology, 53-54	2	2
Home Furnishing I, 130	..	3	Electives	3	6
Meal Management, 137	3	..			
Elective	3	3			

*Three elective hours may be substituted for one of the starred courses.

The College of Arts and Sciences

The College of Arts and Sciences aims to provide for young men and women the means and opportunity of fitting themselves intellectually, emotionally, and spiritually to play a responsible part in the world of thought and action.

It devotes itself to the inculcation of ideals and the cultivation of ideas. It seeks to encourage habits of clear, independent thinking and effective expression; to stimulate an appreciative understanding of the thought and achievement of man; to develop sound critical judgment and a spirit of tolerance; to arouse the intellectual curiosity which is the basis of continuing self-education.

Its fundamental purpose is to instill the courage and conviction to exemplify the enduring values of American democracy.

The Liberal Arts Curriculum

The curriculum in liberal arts, leading to the degree of Bachelor of Arts, is designed to assure adequate training in language, particularly in English, as the mother tongue and the chief tool of thought and expression, and in certain other subjects essential to an understanding of the various fields of human knowledge; and to provide for further study and mastery of a chosen field of concentration.

Every candidate for this degree must fulfill the requirements stated below, and present a total of 120 semester hours of credit. For those required to take military or air science and physical education the total of credit hours is increased by the number of hours required in those subjects.

Required of all Students

1. English. English Composition the first year, and the second year either English-American Literature or World Literature.
2. Foreign Language. One year course of at least intermediate grade in a foreign language, to be completed as early as possible in the college career.
3. Science. One laboratory course, normally the first year, to be chosen from botany, chemistry, geology, physics and zoology. A semester of botany may be combined with a semester of zoology to meet this requirement.
4. Physical Education and Military Science. Two years of physical education for men and women, two years of military science for men, a year course in hygiene for women.
5. Field of Concentration. Each student, in consultation with his advisor, must choose a field of concentration during his sophomore year. The specific courses making up the field, as well as the student's whole program for the last two years, are chosen in consultation with the Chairman of the Department in which the major part of the work is to be taken and must have his approval. There are certain restric-

tions to be met. (A) The field must be a well integrated whole, adapted to the student's special interests. (B) It must include a minimum of twelve semester courses totalling not less than 36 semester hours, at least half, but not all, to be taken in one subject and at least twelve in a related subject. (C) It must contain at least four semester courses of advanced level in one subject and two related semester courses of advanced level in another subject. (D) Each student must take at least one course, normally an advanced course, in his field of concentration in each semester of his junior and senior years.

Additional Distribution Requirements for Students Concentrating in Fields in the Following Divisions

1. *Language and Literature, or Music; History (American, Ancient, Medieval, or European Civilization) normally the first year; a second foreign language reaching the intermediate level†; a second course in the social science division.
2. Social Science: History (American, Ancient, Medieval, or European Civilization) normally the first year; during the first two years a total of two year courses in different subjects, chosen from the following: economics, philosophy, political science, psychology, and sociology.
3. Science and Mathematics: Introductory Chemistry (except for students concentrating in mathematics), mathematics and physics as indicated below under requirements for special departments, and a total of at least four semester courses (twelve semester hours) in departments other than the sciences and mathematics.

Additional Specific Requirements for Concentration in Special Departments

BOTANY Mathematics 1, 2 or 7, 8 or 11, 12; Physics 5-6; Chemistry 131-132; Zoology 1; Botany 1, 2, 103, and four additional semester courses. The advanced related course (six semester hours or more) is normally in one of the other sciences.

CHEMISTRY Mathematics 21; Physics 21-22; Chemistry 11-12, 21-22, 131-132, 141-142; 181-182, and 183-184. No advanced related course is required. Those who wish to qualify for accreditation by the American Chemical Society must also complete 237, six additional hours in advanced courses, and also German 11-12. Physics 171, 172 is recommended. Only those who qualify as above will be recommended by the department as chemists.

ECONOMICS Courses in economics totalling at least twenty-four semester hours, including twelve or more of advanced grade. The related courses are chosen in consultation with the departmental advisor on the basis of the student's individual needs and plans. See page 51 for economics courses for which credit is granted in the Liberal Arts Curriculum.

ENGLISH Satisfactory completion of English-American Literature and six semester courses of advanced grade. The advanced related course may be in language, music, or any course approved by the department; it is expected that this advanced related

*It is strongly recommended by the respective departments that students who wish to choose modern foreign language as their field of concentration complete Intermediate Latin in college unless they presented four years of Latin for entrance. The English Department considers courses in Latin to be a distinct aid to students concentrating in English.

†Students concentrating in English substitute an advanced literature course in foreign language for the second foreign language.

course will be taken in the senior year. An advanced literature course in a foreign language is required, but an intermediate course in a second foreign language is not required.

GEOLOGY Mathematics 11-12; Physics 5-6; Introductory Chemistry; eight semester courses in geology, of which four are of advanced grade; one advanced related course (six semester hours or more) in one of the other sciences or mathematics. A course in some other subject may be approved to meet particular needs.

GERMAN Satisfactory completion of eight semester courses in German, including at least four of advanced grade, and at least one advanced related year course, normally in a language.

GREEK Satisfactory completion of twenty-four semester hours, twelve of which must be in courses numbered above 100, and one advanced related course (at least six semester hours).

HISTORY Satisfactory completion of twenty-four hours in history and twelve semester hours in a related subject in another department. At least twelve of the hours in history and six in a related subject must be in courses numbered above 100.

LATIN Satisfactory completion of eighteen hours in courses numbered above 100, and one advanced related course (at least six semester hours). Courses in Greek are strongly recommended, particularly to those who contemplate graduate work in classics.

MATHEMATICS Physics 5-6 or 21-22; Mathematics 21-22 and two advanced courses. The advanced related course is chosen in consultation with the department.

MUSIC Satisfactory completion of 1, 2, 7-8, and two of the following: 201-202; 205-206; 207-208; 209-210; 221, 222. It is recommended that the related course be an advanced course in French or German.

PHILOSOPHY Satisfactory completion of Philosophy 1, 2, 4, 107, 108, 214, and either 202 or 206, and an advanced related course or courses, chosen in consultation with the departmental adviser to fit the needs of the individual students.

PHYSICS Mathematics 211, 212; six semesters of physics courses numbered above 100, including Physics 115, 116, and 271. A student who plans a heavy concentration should take Phys. 5 with Math. 11, or Phys. 1 with Math. 9, in the freshman year, postponing his language. Russian or German is recommended.

POLITICAL SCIENCE Satisfactory completion of four semesters of advanced courses in political science and an advanced course (six or more semester hours) ordinarily in one of the other social sciences.

PSYCHOLOGY Satisfactory completion of at least twelve semester courses, eight in psychology including 1, 109-110, 223, and 281-282; the other four to be chosen in consultation with the department from mathematics, philosophy, physics, sociology, or zoology.

ROMANCE LANGUAGE Satisfactory completion of six semester courses of advanced grade, of which at least four must be in literature, and at least one advanced course, six semester hours or more, ordinarily in another foreign language or English.

SOCIOLOGY Satisfactory completion of 21, 31 and 251, and at least five additional semester courses in sociology, including two numbered above 100. A minimum of four semester courses in a related field must include two numbered above 100.

SPEECH Students concentrating in speech meet the "additional distribution re-

quirements" either of the languages or of the social sciences, the former if the advanced related course is in language or music, the latter if it is in the social sciences. They must complete satisfactorily nine semester courses in speech, as indicated below, and an advanced related course or courses (six semester hours or more) chosen in consultation with the departmental advisor. The courses in speech must include 1, 11, a one-semester course in three of the following five areas: public speaking (other than 11), oral interpretation, drama, radio, and speech correction, and four semesters of advanced courses.

ZOOLOGY Mathematics: One year of courses other than Mathematics 1, 2* (Mathematics 7, 8 should be chosen only by students certain that they will not wish to study branches of zoology in which mathematics is an important tool); Physics 5-6; Botany 1; Zoology 1, 41, 150, 281, 282, and five additional semester courses, including at least eight semester hours in advanced courses. The advanced related courses (six semester hours or more) may be in one of the other sciences or psychology. A student concentrating in zoology must attain an over-all average of 72 or above in the courses in mathematics and science required for concentration in the department.

*Effective with the Class of 1963.

Courses Offered in Other Colleges Acceptable for Credit Toward the B.A. Degree:

Agr. Biochem. 172: Elementary Biochemistry	Econ. 242: Collective Bargaining
Agr. Biochem. 252: Plant Biochemistry	Econ. 286: Economic Analysis
Agr. Biochem. 253: Microbial Biochemistry	Econ. 292: International Economic Problems and Policies
Botany: all courses	Econ. 293-294: Money, Income and Prices
Chem.: all courses except Outline of Organic Chemistry	Econ. 295: History of Economic Thought
Econ. 1-2: World Economic Geography	Econ. 296: Modern Economic Thought
Econ. 11-12: Principles of Economics	Econ. 297, 298: Seminar
Econ. 15-16: Economic History of the United States	Educ. 202: Philosophy of Education
Econ. 141: Labor Economics	Family Living 161: Family Relationships
Econ. 181: Transportation	Forestry 208: Biological Statistics
Econ. 183: Economic Life and Government Control	Mathematics: all courses
Econ. 187, 188: Economic Statistics	Music Education 151-152: Secondary School Methods
Econ. 201-202: Money and Banking	Phys. Ed. 50: Dance Technique and Analysis
Econ. 203: Economics of Taxation	Sec. Educ. 102: Principles of Education
Econ. 204: State and Local Finance	Sec. Educ. 252: Teaching Latin

THE RESTRICTED LIST A given student may elect from this list courses totalling not more than twelve semester hours, provided he has completed his basic distribution requirements, and provided that these courses are not to be counted as part of the minimum requirement for concentration:

Agr. Econ. 103: Rural Sociology	Econ. 109-110: Business Law
Chem. 35: Outline of Organic Chemistry	Econ. 206: Securities Markets
C. & T. 22: Clothing Selection	Econ. 208: Investments
Civ. Engrg. 24: Statics	Educ. 145-146: Learning and Human Development
Civ. Engrg. 130: Dynamics	Family Living 111: Child Development
Civ. Engrg. 131: Mechanics of Materials	Food and Nutrition 43: Basic Concepts
Econ. 13-14: Principles of Accounting	

Graphics 1, 2: Engineering Drawing
 Home Management 102: Home Management
 Related Art 21: Design
 Sec. Educ. 180: Secondary Methods and Procedures
 Sec. Educ. 181: Student Teaching in Secondary Schools

Sec. Educ. S225: Teaching Social Studies in Secondary Schools
 Sec. Educ. S227: Teaching Science in Secondary Schools
 Sec. Educ. S232: School Administration
 Sec. Educ. S250: Guidance
 Sec. Educ. S257: Teaching Mathematics

Special Honors

The honors program at both the junior and senior levels is designed for the superior student with unusual initiative and intellectual curiosity, and provides an opportunity to pursue a special project without the restrictions of classroom routine. Such a student enters a program of reading, research, or creation under the direction of the department of his choice. A student may take honors in either or both years.

A student in the College of Arts and Sciences who, at the end of his junior year, has an average of 85 or above for the work of the sophomore and junior years may become an applicant for special honors in a particular subject. His program for the senior year must be approved not later than the end of the junior year by the department in which honors are sought and by the Committee on Honors, and he must present a satisfactory written report and pass an oral examination on the field of special study.

A program called junior honors, which may be considered introductory to but distinct from special honors, is available to juniors who have a sophomore average of 85 or above and who have the permission of their department chairmen. The program for each junior honors candidate will be determined by the department concerned.

Preprofessional Preparation

Students who plan to enter professional colleges requiring previous collegiate preparation will find the variety of courses offered in the College of Arts and Sciences and the freedom of election in that college is such that all the requirements for any professional school may be met. Many students will desire so to direct their four-year undergraduate course as to provide, in addition to a sound general education, appropriate preprofessional training for later work in the medical sciences, law, or theology.

LAW American law schools, as a rule, require graduation from a four-year college with a Bachelor's degree prior to admission. There is no prescribed curriculum which is requisite for admission, but the student is advised to include in his undergraduate course substantial elections in the fields of languages, literature, history, economics, political science, and philosophy.

THEOLOGY Graduation from a four year college is prerequisite for admission to most theological seminaries. Although no prescribed curriculum is demanded as preparation for such professional schools, the student is advised to elect substantially from the departments of languages (particularly classics), history, philosophy and religion, psychology, and social studies.

The School of Dental Hygiene

The School of Dental Hygiene, established in the fall of 1949 on authorization and a grant of money by the State Legislature and recently accredited by the Council on Dental Education of the American Dental Association, offers a two-year curriculum leading to a Certificate in Dental Hygiene. The purpose is to meet the ever-increasing need for dental health service.

The curriculum conforms to the requirements for accrediting of schools of dental hygiene as adopted by The Council on Dental Education of the American Dental Association on June 20, 1951. On successful completion of this curriculum, the student is eligible to take various examinations given by the State Board of Dental Examiners for licensing by that body.

Graduates of this school will be qualified to give oral prophylactic treatment; to chart the mouth, and to carry dental health education into the private dental practice, public institutions, hospitals and industrial clinics. The hygienist may be called upon to perform the following subsidiary functions as the supervising dentist may direct or approve: to X-ray teeth and develop X-ray films; to assist with laboratory work; to make appointments and keep office records; to give demonstrations of the proper method of using a toothbrush and massaging the gums; to lecture on oral hygiene, and to teach oral hygiene and the relation of diet to oral health. The role of the dental hygienist in the achievement of oral health is an extremely important one, and opportunities for well-rewarded service are practically unlimited.

The course of study is designed to give the student a background of knowledge sufficient to enable her to perform intelligently the tasks of her profession. Students applying for this program should be interested in and have aptitude for scientific studies. A general scientific background is acquired by courses in chemistry, bacteriology, anatomy, and physiology. Courses specifically relating to dental problems give the student an insight into the field of dentistry and dental health. English composition and public speaking teach the individual to express herself clearly on paper and by word of mouth. The proper approach to the patient is taught by courses in psychology and sociology. Skill and self-confidence are acquired by extensive work during the second year in the dental clinic.

The School of Dental Hygiene operates a ten-chair clinic and offers its service for examination and charting of the teeth, prophylaxis treatments and the teaching of dental health to students, employees and faculty members of the University, in addition to the school children in surrounding areas.

Enrollment is limited to women who are high school graduates and otherwise eligible to enter the freshman class of the University. All candidates who plan to practice dental hygiene in Massachusetts or Vermont must be seventeen years of age by the first of June preceding their entrance into the School. Prospective applicants are invited to write the Director of Admissions for detailed information concerning such matters as requirements for admission and expenses. High school subjects which are helpful prerequisites include algebra, chemistry, physics or biology. Attributes necessary for success in this curriculum are good health, emotional sta-

bility, interest in the work, and the ability to get along well with people. Since the laboratory equipment in the School of Dental Hygiene is limited, prospective students are advised to submit their application by May of their senior year in high school. Applicants in this curriculum are required to take the Dental Aptitude Test. Application for the test should be made to the American Dental Hygienists' Association, 522 Fifth Avenue, New York 36, N. Y.

The Freshman Year	1st	2nd	The Sophomore Year	1st	2nd
	SEMESTER			SEMESTER	
English Composition	3	3	Psychology	..	3
Dental Anatomy	4	..	Introductory Sociology	3	..
Dental Histology and Embryology	2	..	Oral Pathology	2	1
Chemistry (Nursing 9-10)	4	4	Radiology	1	..
Dental Hygiene Orientation	1	..	Public Health	..	2
Instrumentation	..	3	Clinical Practice	5	5
First Aid	..	1	Dental Health Education	..	2
Bacteriology	..	4	Pharmacology and Anesthesia	..	2
Human Anatomy and Physiology (Nursing 15-16)	3	3	Ethics and Office Management, Dental Assisting	1	1
			Public Speaking	3	..
			Food Selection	3	..

The College of Education and Nursing

The College of Education and Nursing offers four-year curricula leading to the following degrees: in elementary, junior high and secondary education, the degree of Bachelor of Science in Education; in business education, the degree of Bachelor of Science in Business Education; and in music education, the degree of Bachelor of Science in Music Education.

This College also offers a curriculum of two calendar and two academic years leading to the degree of Bachelor of Science in Nursing.

The objectives of the several curricula include growth in appreciation and understanding of the cultural heritage, development of social and civic competence, improvement of personality, stimulation of intellectual curiosity, strengthening of personal integrity, and development of competence and enthusiasm for the professions of teaching and nursing. To attain these objectives each curriculum provides for a balance of general education courses, professional courses, and laboratory experiences.

General education courses may be elected in the Colleges of Arts and Sciences, Technology, and Agriculture and Home Economics. Professional courses are taken in the College of Education and Nursing. Professional laboratory experiences are provided in the College of Education and Nursing and in schools and hospitals under the supervision of the College of Education and Nursing.

Education curricula in the College of Education and Nursing meet requirements for teaching certification in most of the states. Adjustments in individual programs may be made to fit special requirements for certification in specific states. If in doubt about certification requirements, students should consult with their advisers or with the dean of the college.

FIFTH-YEAR CERTIFICATE IN EDUCATION A special fifth-year program culminating in a certificate of advanced study is offered for students who wish to work beyond the bachelor's degree but who need or desire more flexibility than is possible in any of the standard programs for master's degrees.

The certificate program is especially designed to meet the needs of teachers who are developing new teaching fields, for advanced students who are meeting requirements for state certification, and for experienced teachers who desire flexibility in choice of courses at both graduate and undergraduate levels.

Each certificate program is individualized to fit the qualifications and the professional objectives of the candidate. Undergraduate courses may be approved for the

program when such courses appropriately support the candidate's professional objectives.

The program for the *Fifth-Year Certificate* is governed by the following regulations:

- (1) Candidates must hold a bachelor's degree.
- (2) Candidates must make written application on forms obtained from the Office of the Dean of the College of Education and Nursing.
- (3) Candidates are admitted to the program by action of a faculty committee.
- (4) A maximum of twelve credits may be applied to the program at the time of admission.
- (5) A maximum of nine credits may be transferred from other institutions.
- (6) Credits for the program may be earned in the regular academic year, the Summer Session, and the Evening Division.
- (7) The program for each candidate must include a minimum of thirty credits approved by a faculty adviser.
- (8) A minimum mark of 72 (C) must be made in any course which is to be included in the program.
- (9) No comprehensive examination or formal thesis is required for completion of the program, but the candidate will submit a culminating paper under the direction of his faculty adviser.
- (10) The program must be completed within seven years after the time of admission.

In addition to the planned program leading to the *Fifth-Year Certificate*, the Department of Education will arrange for college graduates special programs leading to qualification for teaching certificates in either elementary or secondary education. To be accepted for these special programs, candidates must have included appropriate academic courses in their degree curricula, and they must satisfy the Department of Education that they have desirable personal qualifications for teaching.

Requests for further information about fifth-year programs should be directed to the Dean of the College of Education and Nursing.

Elementary Education

The elementary education program is intended to prepare teachers for any of the elementary grades in schools of Vermont and other states. The degree Bachelor of Science in Education is awarded upon satisfactory completion of an approved program.

The elementary education curriculum includes a base of required academic courses, a planned sequence of professional courses, laboratory experiences, and elective academic courses. The student must use electives during the four years to build an academic major.

The foundation in general education includes required courses in the social sciences, in laboratory science, in English and literature, in psychology and in speech. All students are required to demonstrate proficiency in general mathematics by attaining satisfactory scores on standardized tests. Courses in fine arts and in languages may be elected.

The professional program begins with an orientation to education in the freshman year. The purpose of this orientation is to give the student an opportunity to learn about the professional courses and experiences in the several education curricula and to consider the desirability of a career in education. Educational films, contacts

with teachers and administrators from the field, presentations by upper classmen, and opportunities for small group discussion are included in the orientation experiences.

In the sophomore year, the students are offered field experiences with children's groups in the community. These experiences serve the dual purpose of giving first-hand information about children and of providing opportunity for determining the satisfaction which association with children of different age levels brings to the student.

The junior year emphasizes professional course work and special content courses for elementary teaching. Professional courses include classroom observation and participation in local elementary schools.

The senior year continues the professional methods courses and includes seven full weeks of student teaching in the elementary schools of Burlington, South Burlington, Winooski, and Essex Junction.

In each year of the program, the curriculum provides for elective courses from other colleges. Total electives approximate fifty semester hours and open to the student in elementary education attractive majors in music, art, speech, language, literature, history, and other fields of study offered by the University.

The Freshman Year	1st	2nd	The Sophomore Year	1st	2nd
	SEMESTER			SEMESTER	
Orientation to Education	1	1	Child & Community	1 or 1	
Speech	3	3	Psychology	3 or 3	
Science	4	4	World Geography	3 or 3	
English Composition	3	3	Literature	3	3
*Approved Electives	3-6	3-6	American History	3	3
			*Approved Electives	6-9	6-9
The Junior Year	1st	2nd	The Senior Year	1st	2nd
	SEMESTER			SEMESTER	
Art for Elem. Schools	3	..	Methods and Materials	3	..
Learning & Human Development	3	3	Music Methods	3	..
Children's Literature	3	..	Phys. Educ. for Elem. Schools	2	..
Methods and Materials	..	3	Student Teaching	7	..
Music	3	3	Philosophy of Education	..	3
Teaching Reading	..	3	Health Education	..	2
*Approved Electives	6	6	*Approved Electives	..	12

*A political science course in local and state government must be included during the four-year curriculum. Some of the electives must be concentrated in an academic major.
A minimum of 125 approved semester hours is required for the degree.

Junior High School Education

The curriculum in junior high school education is intended to prepare teachers for departmentally-organized upper grades in elementary schools and for junior high school positions in Vermont and in other states where certification requirements can be met. The degree Bachelor of Science in Education is awarded upon satisfactory completion of the following program.

The Freshman Year	1st	2nd	The Sophomore Year	1st	2nd
	SEMESTER			SEMESTER	
Orientation to Education	1	1	Literature	3	3
Speech	3 or 3		American History	3	3
*Science	4	4	Geography	3 or 3	
English Composition	3	3	Psychology	3 or 3	
**Mathematics	3 or 3		*Science	4	4
†Approved Electives	3-6	3-6	Participation	2 or 2	
			†Approved Electives	3-6	3-6

The Junior Year	1st	2nd	The Senior Year	1st	2nd
	SEMESTER			SEMESTER	
Learning & Human Development	3	3	Secondary Methods	3	..
Political Science	3	3	Philosophy of Education	..	3
†Vermont History	..	1	Guidance	..	3
†Approved Electives	9-12	9-12	Student Teaching	..	6
			Health Education	..	2
			†Approved Electives	12-15	3

*A biological and a physical science are to be included during the first two years.

**Students must pass an arithmetic proficiency test.

†Students must have at least one teaching major.

†Vermont students must include Vermont History.

A minimum of 125 approved semester hours is required for the degree.

Secondary Education

The secondary education program is intended to prepare teachers for junior and senior high schools in Vermont and other states. The degree Bachelor of Science in Education is awarded upon satisfactory completion of an approved program.

During the first two years the curriculum consists generally of basic courses in English, fine arts, foreign languages, mathematics, science, and social science. Orientation to education as a career is provided during the freshman year. Sophomores begin concentration on majors and minors in chosen teaching fields and are given opportunity to participate in teaching experiences in local secondary schools. The junior and senior years combine courses in the elected teaching fields, professional courses in education, and laboratory experience in teaching.

PROFESSIONAL REQUIREMENTS Candidates for the degree in secondary education are required to complete with a high standard of scholarship at least eighteen semester hours of course work in professional education.

TEACHING MAJORS AND MINORS Candidates for the degree in secondary education are required to complete two teaching majors or one major and two minors in fields which are commonly taught in secondary schools, or candidates may elect to concentrate in one of two broad fields, such as general science or social science. A teaching major includes at least twenty-four semester hours in a given subject; a teaching minor, fifteen to eighteen semester hours. A single major in a broad field includes approximately fifty semester hours in related courses. The major-minor program must include advanced course work.

Students should choose majors and minors which bear logical relationships and which commonly occur as teaching combinations in secondary schools. Suggested major and minor fields are English, foreign languages, history, mathematics, political science, speech, and the sciences. Advisers can assist students in making choices which are in accord with student aptitudes and interests and which are likely teaching combinations. Outlines of suggested course sequences for majors and minors may be obtained from advisers or from the office of the dean of the college.

Students are expected to maintain a high standard of scholarship in their major and minor fields. A grade of less than 72 may not be credited toward a major or minor unless other grades in the field are sufficiently high to justify an exception.

EXPERIENCES IN PUBLIC SCHOOLS Students in secondary education have direct experiences in public schools at three points in the four-year curriculum. During the sophomore year students observe and participate as teacher assistants in local junior and senior high schools. Before returning to the University campus at the

beginning of the junior year, students are expected to spend one or two weeks in schools of their home communities assisting teachers during the opening days of the new school year. During the senior year students devote six or seven continuous weeks to full-time teaching in public secondary schools. In most cases students must arrange to live off campus during the student teaching assignment.

Applications for all field experiences must be made well in advance of assignments, and the student must assume responsibility for meeting deadlines. Information about application and assignment procedures may be obtained from the dean's office.

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
Orientation to Educ.	1	1	Literature	3	3
Laboratory Science	4	4	Psychology	3 or 3	
English Composition	3	3	Participation	2 or 2	
Foreign Language	3-4	3-4	‡Foreign Language	3	3
*History or Political Science	3	3	Approved Electives	6-9	6-9
†Elective	3	3			
The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Learning and Human Development	3	3	Secondary Educ. Meth.	3	..
English or Elective	3	3	Philosophy of Educ.	..	3
§Approved Electives	9-12	9-12	Student Teaching	..	6
			Approved Electives	12-15	3-6

*If history is chosen, European Civilization is recommended.

†If recommended by adviser.

‡An approved elective if intermediate language has been completed.

§All students are to elect a course in speech.

A minimum of 122 approved semester hours is required for the degree.

PHYSICAL EDUCATION MINOR Students in the secondary education, junior high school education, and elementary education curricula may qualify as physical education instructors in Vermont and certain other states by combining a minor program in physical education with other teaching majors.

Business Education

The curriculum in Business Education is intended to prepare teachers of business subjects for secondary schools in Vermont and other states. Freshman and sophomore years are concerned primarily with the development of a foundation in general education. Junior and senior years emphasize courses in business and in education. Students do six or seven weeks of practice teaching in the final semester of the senior year.

Beginning courses in typing and in shorthand make it possible for students to succeed in the program without previously developed skills in these subjects.

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
Orientation to Education	1	1	English-American Literature	3	3
English Composition	3	3	General Psychology	3 or 3	
*Social Science	3	3	Principles of Economics	3	3
Mathematics	3	3	Laboratory Science	4	4
Speech	3	..	Principles of Accounting	4	4
Elective	3	6	Elective	3 or 3	

The Junior Year	1st	2nd	The Senior Year	1st	2nd
	SEMESTER			SEMESTER	
Learning and Human Dev.	3	3	Advanced Shorthand	4	..
†Elementary Shorthand	4	..	Advanced Typing	3	..
Intermediate Shorthand	..	4	Office Management	3	..
†Elementary Typing	3	..	Elective	3	..
Intermediate Typing	..	3	Sec. seminar or elective	3	..
Business Correspondence	3	3	Student Teaching	..	7
Business Law	3	3	Philosophy of Education	..	3
Elective	3	..	Teaching Business Subjects	2	..
Participation	..	2	Secretarial Practice	..	2
Prin. of Business Education	..	2	Transcription	..	4

*European Civilization recommended.

†Students may be exempt by demonstrating satisfactory proficiency.

A minimum of 125 approved semester hours is required for the degree.

Music Education

The curriculum in music education, leading to the degree of Bachelor of Science in Music Education, is recommended to students who have sufficient training and natural musical ability to justify a career in music. Graduates are qualified for positions as instructors and supervisors of music in the public schools.

The Freshman Year	1st	2nd	The Sophomore Year	1st	2nd
	SEMESTER			SEMESTER	
Survey of Musical Literature	3	3	Elementary Harmony	3	3
Elem. Theory and Ear-training	3	3	Adv. Theory and Ear-training	3	..
*Applied Music	3	3	Art	..	3
English Composition	3	3	Applied Music	3	3
†Foreign Language	3-4	3-4	Violin, String Class	1	1
Orientation to Education	1	1	Sophomore English Elective	3	3
Choir, Orchestra, Band	1	1	‡Foreign Language	3	3
			Choir, Orchestra, Band	1	1
The Junior Year	1st	2nd	The Senior Year	1st	2nd
	SEMESTER			SEMESTER	
Advanced Harmony	3	..	§Orchestration	3	3
Counterpoint	..	3	Conducting	..	4
Applied Music	3	2	Applied Music	2	2
Clarinet, Woodwind Class	1	1	Trumpet, Brass Class	1	1
Percussion Class	1	..	Jr. and Sr. High School Music		
Elem. School Music Methods and Practice Teaching	2	2	Methods and Practice Teaching	4	4
Laboratory Science	..	4	¶Social Science	3	3
Learning and Human Development	3	3	Philosophy of Education	1	..
Choir, Orchestra, Band	1	1	Choir, Orchestra, Band	3	1
§Elective	3	3			

*Including a major to be chosen in consultation with the student's adviser.

†German recommended.

‡Or an approved elective if intermediate language has been completed.

§To alternate between junior and senior years.

¶History 11, 12 (European Civilization) recommended.

A minimum of 130 approved semester hours is required for the degree.

The Nursing Curriculum

The faculty of the Department of Nursing accepts as its philosophy that education for nursing should provide general learning experience and professional education which will enhance the development of personal and professional maturity.

To accomplish this, the curriculum is designed to prepare the nurse with knowledge, skills, and attitudes necessary to function in beginning positions as a competent member of the health team in the home, hospital, or public health agency. In addition, the program is intended to assist the student to gain a better understanding of the growth of the profession and the responsibilities of its members. The cultivation of effective self-expression and understanding of self and of others, and the recognition of the responsibilities and opportunities of citizenship are inherent in the program. A foundation is laid upon which subsequent specialization in any area of nursing is possible.

The program is approved by the Vermont State Board of Registration of Nurses and is fully accredited by the National League for Nursing, Inc., including Public Health Nursing. On completion of the program of two calendar years and two academic years, the student receives the degree of Bachelor of Science in Nursing. Applicants must satisfy the general admission requirements of the University. High school courses in biology and chemistry are highly desirable. The department reserves the right to request the withdrawal of any student who fails to adjust satisfactorily in the practice of nursing.

The first academic year is spent at the University. Following this, there is a summer session of eight weeks, during which time instruction is correlated with supervised clinical practice in the Mary Fletcher Hospital, which adjoins the campus. In the sophomore year and one semester of the junior year the program consists of academic work at the University and supervised clinical experience in various units of the Mary Fletcher Hospital and other community agencies. In the junior year clinical experience is also obtained in the following cooperating agencies: Massachusetts Mental Health Center in Boston and the Veterans Administration Hospital in Rutland Heights, Mass., both with Boston University School of Nursing. Following the junior year there is a six weeks summer session at the University of Vermont.

During one semester of the junior year students live in the nurses' residences of the cooperating hospitals and in university dormitories for the other semester. In their fourth year they continue the work at the University in liberal arts and selected professional courses, with field experience provided in the following cooperating agencies: Vermont State Department of Health, the Burlington Visiting Nurse Association, Inc., and the Mary Fletcher Hospital. When field experience in Public Health Nursing requires off-campus residence, appropriate housing arrangements are made for students to live in private homes or other approved facilities.

The Freshman Year	1st	2nd	The Summer Session (8 weeks)	CREDITS	
	SEMESTER				
English Composition	3	3	Fundamentals of Nursing		3
Chemistry	4	4	Nutrition and Food Preparation		3
Human Anatomy and Physiology	3	3	Microbiology		3
History of Nursing	2	..			
Speech	3	..	The Sophomore Year	1st	2nd
Introduction to Nursing	2	4		SEMESTER	
Psychology	..	3	Sociology	3	..
Physical Education	(1)	(1)	Medical and Surgical Nursing	9	9
			Elective	..	6

The Junior Year		CREDITS	The Senior Year		CREDITS
Maternal-Child Nursing		10	Principles of Public Health		2
Psychiatric Nursing		6	Principles of Public Health Nursing		2
Tuberculosis Nursing		2	*Public Health Nursing in the		
Child Growth and Development		3	Community		2
			Analysis of Selective Nursing		
The Summer Session		CREDITS	Situations		4
(6 weeks)			English		3
English		3	Survey of Contemporary Nursing		2
Approved Elective		3	Social Science		3
			Approved Electives		9

EXPENSES

The cost of the program in nursing is approximately the same as for other undergraduate programs at the University with the following exceptions:

1. Nursing students must purchase Blue Cross Hospitalization Insurance or its equivalent each year.
2. Uniforms and other items of special equipment must be purchased.
3. Transportation costs must be met in getting to and from field experiences in tuberculosis nursing, psychiatric nursing, and public health nursing. Also students must pay extra for room during eight weeks of off-campus experience in public health nursing during the senior year.
4. Nursing students must pay for tuition, room, and board for an eight-week summer session following the freshman year and a six-week summer session following the junior year.
5. During the field experience in the junior year, room and board for one semester will be provided by the field agency without cost to the student.

Detailed information concerning cost of the nursing program for each of the four years may be obtained from the Chairman of the Nursing Department.

Insofar as resources permit, the University provides financial aid in the form of scholarships, loans, prizes, and employment. Vermont students in the Nursing Curriculum are eligible for Senatorial Scholarships.

PROFESSIONAL PERSONNEL IN COOPERATING FIELD AGENCIES:

Dr. R. B. Aiken, Commissioner of Health, Vermont State Department of Health
 Dorothy Allen, Supervisor, Division of Public Health Nursing, Vermont State Health Department
 Rosamund Anderson, Head Nurse, Pediatric Department, Mary Fletcher Hospital
 Jean Bridges, Instructor, Tuberculosis Nursing, Boston University School of Nursing
 Grace Buttolph, Director School of Nursing, Mary Fletcher Hospital
 Mrs. Ruby Carr, Supervisor, Division of Public Health Nursing, Vermont State Health Department
 Philip Day, Director of Nursing Service, Mary Fletcher Hospital
 Marie Farrell, Dean, Boston University School of Nursing
 Doris Fish, Supervisor, Division of Public Health Nursing, Vermont State Health Dept.
 Mrs. Anne Hargreaves, Assistant Professor, Psychiatric Nursing, Boston University School of Nursing
 Mrs. Hortense Harwood, Supervisor, Division of Public Health Nursing, Vermont State Health Dept.
 Joseph Kamanduliz, Assistant Chief, Nursing Education, Veterans Administration Hospital, Rutland Heights, Mass.
 Mrs. Suzanne Kusserow, Executive Director, Burlington Visiting Nurse Association, Inc.
 Ruby McKewen, Supervisor, Division of Public Health Nursing, Vermont State Health Dept.
 Esther Martinson, Director, Division of Public Health Nursing, Vermont State Health Department
 Gerald St. Denis, Social Service Worker, Mary Fletcher Hospital
 Mrs. Diane Tallman, Instructor, Operating Room Nursing, Mary Fletcher Hospital
 Gloria Wing, Supervisor, Obstetric Nursing, Mary Fletcher Hospital

*Students must have a valid driving license for this experience.

The College of Technology

The College of Technology includes the Departments of Chemistry, Commerce and Economics, Civil Engineering, Electrical Engineering, Mechanical Engineering, and Mathematics. It offers a number of specialized professional curricula in these fields and in medical technology, leading to the degree of Bachelor of Science in the field of specialization. Details are given in the sections immediately following. In addition to the courses listed in the several curricula, *all students must fulfill the general requirements in physical education, military science, and hygiene.* Students whose curricula require them to take two years of mathematics are referred to the footnote under the offerings of the Department of Mathematics for information concerning the possible sequences of courses in freshman mathematics.

The Chemistry Curriculum

The Department of Chemistry offers a specialized curriculum leading to the professional degree of Bachelor of Science in Chemistry. This curriculum is designed to give a sound basic training in chemistry, to prepare the student for service in some branch of the chemical profession, and to qualify him adequately for advanced study in graduate school. The department is accredited by the Committee on Professional Training of the American Chemical Society, which has established minimum requirements for the training of chemists at the bachelor's level. In accepting accreditation, the department has planned a curriculum which permits the student to reach these minimum objectives and will qualify the graduate for certification.

Those who wish a less intensive training in chemistry may take the liberal arts curriculum with a concentration in chemistry and receive the Bachelor of Arts degree. These students may also qualify for accreditation by satisfactorily completing certain courses beyond the minimum required for concentration, and *only those who so qualify will be recommended as chemists by the department.* A student can elect to concentrate in chemistry at the end of the freshman year or even as late as the end of the sophomore year and still qualify for accreditation. However, the department strongly recommends that the student choose before the start of his sophomore year. In the first year, and to some degree in the second year, prescribed courses are such that a student can transfer into the curriculum from liberal arts, or vice versa.

The Freshman Year	1st	2nd	The Sophomore Year	1st	2nd
	SEMESTER			SEMESTER	
General Chemistry	5	5	Quantitative Analysis	4	4
English Composition	3	3	Sophomore English	3	3
*Algebra, Trig., Anal. Geom.	5	5	†Calculus	3	3
Elementary German	4	4	Intermediate German	3	3
			General Physics	5	5

*See footnote under offerings of the Department of Mathematics.

†Those students whose secondary school mathematics is not adequate and who must enroll in Math. 9 will be required to take Math. 10, 12, and 21. They will not be required to take Math. 22.

The Junior Year	1st	2nd	The Senior Year	1st	2nd
	SEMESTER			SEMESTER	
Physical Chemistry	5	5	Idea. of Organic Compounds	5	..
Organic Chemistry	5	5	Senior Research	2	4
Advanced Physics or Mathematics	3	3	†Advanced Organic Chemistry	3	3
Approved Elective	3	3	†Advanced Physical Chemistry	3	3
Junior Seminar	1	1	†Advanced Inorganic Chemistry	..	3
			†Advanced Theoretical Chemistry	3	..
			Senior Seminar	1	1
			Approved Elective	3	3
			‡Inorganic Preparations	..	2

†Six hours of courses chosen from these offerings are required each semester.

‡Required of students deficient for accreditation in general chemistry laboratory.

THE MASTER'S DEGREE IN CHEMISTRY The department offers work leading to the degree of Master of Science, the thesis problem being selected from the fields of inorganic, analytical, organic, or physical chemistry. Students who do not already have a reading knowledge of German must take German concurrently with their graduate work.

The First Year	1st	2nd	The Second Year	1st	2nd
	SEMESTER			SEMESTER	
*Graduate Research	5	5	Graduate Research	5	5
*Advanced Chemistry	6	6	Advanced Chemistry	6	6
Seminar	1	1	Seminar	1	1

*Identification of Organic Compounds required unless included in undergraduate training. Chemistry 247-248 or the equivalent required of all graduate students.

The Commerce and Economics Curriculum

The Department of Commerce and Economics offers a specialized curriculum, leading to the degree of Bachelor of Science in Commerce and Economics. Those who wish a less intensive or less specialized training in economics may take the liberal arts curriculum, with a concentration in economics, and receive the Bachelor of Arts degree. An advisor from the department will assist students in building programs to meet their individual needs and plans.

The commerce curriculum is recommended for those who are preparing for a business career. It is intended to provide sound basic training in the various phases of business activity. The several options enable students to emphasize such specialized studies as accounting, banking, finance, insurance, government service, industrial management, production, sales management, secretarial studies, and small business. The Department of Commerce and Economics cooperates with the Department of Mechanical Engineering in offering courses in the Management Engineering Curriculum. This curriculum is administered by the Department of Mechanical Engineering and is described in the section on engineering curricula.

The accounting option is registered with The University of the State of New York, The State Education Department, in Albany, N. Y. Students completing the requirements of the accounting option will thus be eligible for admission to the New York State licensure examination in Certified Public Accountancy.

The normal program for the first two years in the commerce and economics curriculum is as follows:

The Freshman Year	1st SEMESTER	2nd SEMESTER	The Sophomore Year	1st SEMESTER	2nd SEMESTER
World Economic Geography	3	3	World Lit. or Engl.-Am. Lit.	3	3
English Composition	3	3	Principles of Economics	3	3
Algebra, Math. of Finance	3	3	Economic History	3	3
Laboratory Science	4	4	Principles of Accounting	4	4
*Foreign Language	3-4	3-4	†Foreign Language, Calculus or American Government	3	3

*In place of the foreign language, students may choose Mathematics 11-12 (plane trigonometry, plane analytic geometry, differential calculus) and 21 (calculus).

†American Government should be elected by students who have completed the intermediate language requirement.

During the junior and senior years, commerce and economics students normally choose one of the following options:

Accounting

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Int. and Adv. Accounting	3	3	Auditing	3	..
Fin. Statement Anal.	3	..	Tax Accounting	..	3
Cost Accounting	..	3	Economic Statistics	3	..
Money and Banking	3	3	C.P.A. Problems	..	3
‡American Government	3	3	Securities Markets	3	..
General Psychology	3	..	Financial Management	..	3
Ethics or Psych. Elective	..	3	Business Law I	3	3
Approved Electives	3	3	Business Law II	..	2
			Approved Electives	3	3

Banking, Finance, and Insurance

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Money and Banking	3	3	Taxation	3	..
Securities Markets	3	..	Investments	..	3
Financial Management	..	3	Insurance	3	3
Economic Statistics	3	3	Money, Income and Prices	3	3
‡American Government	3	3	Business Law I	3	3
General Psychology	3	..	Business Law II	..	2
Ethics or Psych. Elective	..	3	Approved Electives	3	3
Approved Electives	3	3			

Business Administration

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Money and Banking	3	3	Securities Markets	3	..
Economic Statistics	3	3	Financial Management	..	3
General Psychology	3	..	Investments	..	3
Ethics or Psych. Elective	..	3	Business Law I	3	3
Principles of Marketing	3	..	Taxation	3	..
Problems in Marketing	..	3	Money, Income and Prices	3	3
‡American Government	3	3	Approved Electives	3	3
Approved Electives	3	3			

‡If completed, enroll in approved elective.

Industrial Management

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Labor Economics	3	..	Industrial Mgt.	3	..
Collective Bargaining	..	3	Scientific Management and Labor	..	3
Principles of Marketing	3	..	Motion and Time Study	3	..
Problems of Marketing	..	3	Plant Organization	..	4
General Psychology	3	..	Business Law I	3	3
Ethics or Psych. Elective	..	3	Cost Accounting	..	3
*American Government	3	3	Approved Electives	6	3
Economic Statistics	3	3			
Approved Electives	3	3			

Marketing and Merchandising

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Principles of Marketing	3	..	Personal Salesmanship	3	..
Problems in Marketing	..	3	Sales Management	3	..
Money and Banking	3	3	Advertising	..	3
General Psychology	3	..	Business Law I	3	3
Ethics or Psych. Elective	..	3	Cur. Marketing Developments	..	3
*American Government	3	3	Approved Electives	6	6
Economic Statistics	3	3			
Approved Electives	3	3			

*Students who have completed this course will enroll in an approved elective.

Secretarial Studies

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Business Communications	3	3	Office Management	3	..
General Psychology	3	..	Seminar (Secretarial)	3	..
Ethics or Psych. Elective	..	3	Exec. Sec. Procedures	..	3
Business Law I	3	3	Money and Banking	3	3
Public Speaking	3	..	Advanced Typing	3	..
Typing (Elem. and Interm.)	3	3	Advanced Shorthand	4	..
Shorthand (Elem. and Interm.)	4	4	Transcription	..	7
*Approved Elective	..	3	*Approved Electives	3	6

Students who have studied typing and/or shorthand in high school and qualify for advanced work in these fields, will take 6 hours of approved electives in the first semester and intermediate typing and shorthand during the second semester.

*Students will be guided in the selection of electives in the light of professional objectives.

The Engineering Curricula

The engineering curricula are designed to help students learn how to approach and deal in a professional manner with problems and situations they will meet as engineers, citizens and individuals. In so doing, the curricula will assist them in preparing to continue to learn from experience and to grow in stature after graduation.

The Departments of Engineering offer instruction in four curricula, Civil, Electrical, Management, and Mechanical Engineering, each leading to the degree of Bachelor of Science in the field of specialization. Each curriculum includes the gen-

eral subjects: mathematics, chemistry, physics, graphics, elements of electrical engineering, mechanics, economics, and English.

All freshman and sophomore men are required to complete the two basic courses in military science for a total credit of eight semester hours, which become an integral part of the record and are counted toward graduation. Two years of physical education are normally required of all students.

An inspection trip is required of all engineering students in the junior year. This trip requires several days, and visits are made to plants in industrial centers in New England. The trip is required for graduation, but does not carry credit. The expense is borne by the student.

Student enrolled in the civil, electrical, and mechanical engineering curricula may become affiliated with their respective national professional engineering societies, the American Society of Civil Engineers, the American Institute of Electrical Engineers, the Institute of Radio Engineers, and the American Society of Mechanical Engineers, as each of these organizations has authorized a student chapter at The University of Vermont. These student organizations sponsor frequent meetings, the purpose of which is to present an opportunity for students to conduct activities similar to those conducted by members of the national societies. These activities include meetings at which technical papers are presented by students and by engineers who are actively engaged in the profession, attendance at conventions, and inspection trips, all of which provide helpful contact with engineering practice and also assist in the development of the qualities of leadership which are so essential for success in the engineering profession.

The curricula in civil, electrical and mechanical engineering are accredited by the Engineers' Council for Professional Development.

The Freshman Year For All Curricula

	1st	2nd
	SEMESTER	
†Freshman Mathematics, 11, 12	5	5
Introductory Chemistry, 1-2	4	4
Engineering Graphics, 1-2	2	2
English Composition, 1-2	3	3
Engineering Problems (M.E. 3-4)	1	1

†See footnote under offerings of the Department of Mathematics.

Civil Engineering

The Sophomore Year	1st	2nd	The Junior Year	1st	2nd
	SEMESTER			SEMESTER	
Calculus (Math. 21, 22)	3	3	Mech. of Materials I (C.E. 131)	3	..
General Physics, 21-22	5	5	Eng. Geology (Geol. 21)	3	..
Surveying (C.E. 51-52)	4	4	Electrical Circuits and Machines (E.E. 101)	4	..
Expository Writing (Engl. 16)	3	..	Thermodynamics and Heat Transfer (M.E. 113)	3	..
Statics (C.E. 24)	3	..	Prin. of Econ., 11-12	3	3
Dynamics (C.E. 130)	..	3	Mech. of Materials Lab. (C.E. 114)	..	1
*Restricted Elective	..	3	Eng. Contracts (C.E. 151)	..	2
Summer, Engineering Camp (C.E. 54) 4 weeks	..	4	Hydraulics (C.E. 162)	..	3
			Hydraulics Lab. (C.E. 168)	..	1
			Statically Determinate Struct. (C.E. 140)	..	4
			†Approved Elective	3	3
			Inspection Trip	..	0

The Senior Year	1st SEMESTER	2nd SEMESTER		1st SEMESTER	2nd SEMESTER
Concrete and Bituminous Lab. (C.E. 113)	1	..	Substructure Design (C.E. 158)	..	4
Reinforced Concrete (C.E. 155)	3	..	Sewerage and Sewage Treatment (C.E. 166)	..	3
Water Supply Eng. (C.E. 165)	3	..	Adv. Struct. Design (C.E. 176)	..	4
Soil Mechanics (C.E. 173)	3	..	Mechanics of Materials II (C.E. 234)	..	3
Indet. Structures I (C.E. 175)	3	..	†Approved Elective	3	3
Transportation Eng. (C.E. 174)	3	..			

*Restricted Elective must be selected from: Speech 11, Public Speaking; English 26, World Literature; or English 28, English-American Literature.

†Approved Electives—Six hours must be selected from art, history, music, language, literature, philosophy, political science, psychology, religion, sociology, or speech. The remaining six hours may be selected from the same areas, from the natural sciences, from military or air science, or from offerings of the College of Technology.

Mechanical Engineering

The Sophomore Year	1st SEMESTER	2nd SEMESTER
Calculus (Math. 21, 22)	3	3
General Physics (Physics 21-22)	5	5
Mfg. Processes (M.E. 51-52)	2	2
World Literature (Engl. 25)	3	..
Statics (C.E. 24)	3	..
Dynamics (C.E. 130)	..	3
Thermodynamics (M.E. 92)	..	2
Mechanical Instrumentation (M.E. 84)	..	1

The Junior Year	1st SEMESTER	2nd SEMESTER	The Senior Year	1st SEMESTER	2nd SEMESTER
Heat Transfer (M.E. 266)	..	3	Adv. Heat Power Engr. (M.E. 262)	..	4
Mech. of Materials (C.E. 131)	3	..	Adv. Fluid Mechanics (M.E. 243)	4	..
Materials Lab. (C.E. 114)	..	1	Machine Design II (M.E. 151)	4	..
Mechanisms (M.E. 131)	4	..	Economics (Econ. 11-12)	3	3
Thermodynamics (M.E. 111)	4	..	Thesis (M.E. 292) or Elective †	..	3
Differential Equations (Math. 211)	3	..	Engr. Analysis (M.E. 294)	..	1
*Elective	3	3	Indus. Engineering (M.E. 174)	..	3
M.E. Laboratory (M.E. 117)	1	..	Electrical Engineering (E.E. 101-102)	4	4
Industrial Materials (M.E. 102)	..	3	Public Speaking (Speech 11)	3	..
Machine Design I (M.E. 134)	..	3	†Elective	3	..
Fluid Mechanics (M.E. 142)	..	3			
Applied Mathematics (Math. 212)	..	3			
Inspection Trip	..	0			

*The Junior Year electives must be selected from one of the following: literature, sociology, religion, political science, psychology, history, philosophy, art, music, economics, or language.

†The Senior Year elective may be chosen from any area of study. No more than 3 hours credit may be in advanced ROTC.

Electrical Engineering

The Sophomore Year	1st SEMESTER	2nd SEMESTER
Sophomore Math. (Math. 21, 22)	3	3
General Physics (Phys. 21-22)	5	5
Statics (C.E. 24)	3	..
Dynamics (C.E. 130)	..	3
Elec. and Mag. Ccts. I (E.E. 25-26)	4	4
Expository Writing (Engl. 16)	3	..
Public Speaking (Speech 11)	..	3

The Junior Year		1st	2nd	The Senior Year		1st	2nd
		SEMESTER				SEMESTER	
*Prin. of Econ. (Ec. 11-12)	3	3		Filters, Lines and Fields (E.E. 225-226)	4	3	
Modern Physics (Phys. 172)	..	3		Elec. Machines (E.E. 117)	4	..	
Diff. Equations (Math. 211)	3	..		Servomechanisms (E.E. 210)	..	3	
Applied Math. (Math. 212)	..	3		Adv. Electronics (E.E. 203)	3	..	
Mech. of Materials (C.E. 131)	3	..		Fluid Mechanics (M.E. 142)	..	3	
Thermodynamics (M.E. 113)	3	..		Contracts (C.E. 151)	..	2	
Elec. and Mag. Ccts. II (E.E. 125)	4	..		‡Seminar (E.E. 281, 282)	1	1	
Elect. and Mag. Ccts. III (E.E. 126)	..	3		†Approved Electives	6	6	
Elect. Machines (E.E. 116)	..	4					
Phys. Electronics (E.E. 109)	3	..					
Electronic Circuits (E.E. 110)	..	4					
Inspection Trip	..	0					

*Students taking Advanced Military may defer Econ. 11-12 until the senior year.

†E.E. 230 may be substituted for E.E. 281 or 282 and two hours of electives.

‡Approved Electives—Six hours must be selected from art, history, music, language, literature, philosophy, political science, psychology, religion, sociology, or speech. The remaining six hours may be selected from the same areas, from the natural sciences, from military, or from offerings of the College of Technology.

Management Engineering

The Sophomore Year		1st	2nd		
		SEMESTER			
Calculus (Math. 21, 22)		3	3		
Gen'l Physics, 21-22		5	5		
Prin. of Econ., 11-12		3	3		
Mfg. Processes (M.E. 51-52)		2	2		
Statics (C.E. 24)		3	..		
Dynamics (C.E. 130)		..	3		

The Junior Year		1st	2nd	The Senior Year		1st	2nd
		SEMESTER				SEMESTER	
Prin. of Accounting (Econ. 13-14)	4	4		Labor Economics, 141	3	..	
Diff. Eq. (Math. 211)	3	..		Collective Bargaining (Econ. 242)	..	3	
General Psych. I	..	3		Business Law (Econ. 109-110)	3	3	
Mech. of Materials (C.E. 131)	3	..		Statistics (Econ. 187-188)	3	3	
Indus. Materials (M.E. 102)	..	3		Motion and Time (M.E. 175)	3	..	
Fluid Mechanics (M.E. 142)	..	3		Plant Organ. (M.E. 176)	..	4	
Thermodynamics and Heat Transfer (M.E. 113)	3	..		Elec. Ccts. and Mach. (E.E. 101-102)	4	4	
Mechanisms (M.E. 131)	4	..		*Electives	3	3	
Public Speaking (Speech) 11	3	..					
World Lit. (Engl. 26)	..	3					
Financial Management (Econ. 207)	..	3					
Inspection Trip	..	3					

*To be selected from one of the following: literature, sociology, religion, political science, psychology, history, philosophy, art, music, or language.

Agricultural Engineering

For the Agricultural Engineering Curriculum see pages 41-42.

The Mathematics Curriculum

This curriculum is designed to provide sound basic training in mathematics, to prepare the student for positions in one of the areas in which mathematicians are sought, and to qualify him for advanced study in graduate school. Students in the

College of Arts and Sciences may also concentrate in mathematics and will receive the Bachelor of Arts degree. An advisor from the department will assist students in the determination of a program best suited to their individual needs and plans.

The Freshman Year		1st	2nd	The Sophomore Year		1st	2nd
		SEMESTER				SEMESTER	
	English Composition, 1-2	3	3		Engl.-Am. or World Lit.	3	3
	*Mathematics, 11, 12	5	5		Math. 21, 22	3	3
	†German or French	4	4		†German or French	3	3
	Laboratory Science	4-5	4-5		Physics, 21-22	5	5
					Approved Electives	3	3
The Junior Year		1st	2nd	The Senior Year		1st	2nd
		SEMESTER				SEMESTER	
	‡Mathematics Electives	6	6		‡Mathematics Electives	6	6
	§Advanced Science	3-4	3-4		§Advanced Science	3-4	3-4
	Approved Electives	9	9		Senior Problem	3	3
					Approved Electives	3	3

*See footnote under offerings of Department of Mathematics.

†If an intermediate language is taken the freshman year an elective may be substituted the sophomore year.

‡Beyond Mathematics 22.

§A Physical Science or Engineering course beyond the Sophomore level, to constitute a minor specialization.

Premedical and Predental Preparation

The prevailing requirements for admission to an accredited medical college usually include not less than three years of undergraduate work, during which courses in biology, chemistry, English and physics must be completed. Any student who wishes to enter medical college should by the beginning of his sophomore year consult the catalogue of the college of his choice and arrange to include in his program courses required by that particular school.

Each student, in consultation with his advisor, plans a four-year program of courses which will fulfill the requirements for a Bachelor's degree. At the end of the sophomore year the student may enroll in the College of Arts and Sciences if a program of work leading to the Bachelor of Arts degree is desired. Those who wish to meet the minimum requirements for admission to medical college may follow the first three years of the program below. By successfully completing these three years and one year in an accredited medical college, they will qualify, on application, as candidates for a Bachelor of Science degree.

In the following outline, courses listed are normally taken in the year indicated. The program may be modified both for the needs of the individual student and to allow for concentration in a particular field. A student must have completed a total of 90 semester hours by the end of the third year to be considered for admission to a medical college.

The First Year		1st	2nd	The Second Year		1st	2nd
		SEMESTER				SEMESTER	
	English Composition, 1-2	3	3		English-Amer., 27, 28; or		
	Introductory Chemistry, 1-2 or				World Lit., 25, 26	3	3
	11-12	5-4	5-4		*Intermediate For. Lang.	3	3
	Mathematics 1, 2 or 7, 8 or				Quantitative Chemistry, 21-22	3	3
	11, 12	3-5	3-5		Physics, 5-6 or 21-22	5	4
	Zoology	4	4		Electives	3-6	3-6
	Foreign Language (Elementary or						
	Intermediate)	3-4	3-4				

	1st	2nd
The Third Year		
	SEMESTER	
Organic Chemistry 131-132	4	4
*Zoology 41	4	..
Social Science Electives	6	6
Courses in field of concentration and electives		
The Fourth Year		
Courses in field of concentration and electives		
*Unless already completed.		

The requirements for admission to colleges of dentistry vary but in all cases include at least two years of college work with at least one course each in biology, inorganic chemistry, physics, and English. Hence, the course of study advised as preparation for medicine may be used as a basis for selection by those interested in dentistry.

The Medical Technology Curriculum

The curriculum is divided into two parts, a three-year preclinical period and a final clinical year of twelve months which is under the supervision of members of the faculty of the College of Medicine.

The program of the preclinical period is designed to provide the student with a background in basic fundamentals essential for the professional work of the clinical year. The clinical year includes didactic courses in the College of Medicine and practical laboratory experience, primarily in the laboratories of the Mary Fletcher Hospital but also in other local health facilities.

After graduation an additional two and one-half months of practical supervised experience in the affiliated laboratories is required. At the end of this additional period, those satisfactorily completing the program will be recommended to the Registry of Medical Technologists as eligible to take the examination for certification by that body.

The Freshman Year	1st	2nd	The Sophomore Year	1st	2nd
	SEMESTER			SEMESTER	
English Composition	3	3	English-American, or World Lit.	3	3
Introductory Chemistry	4	4	Elementary Quantitative Analysis	3	3
Introductory Zoology	4	..	Zoology (Vertebrate and Comparative Anatomy)	4	4
Mathematics (Algebra and Trigonometry)	3	3	Approved Non-Science Electives	6	6
Approved Non-Science Electives	..	6			
Introduction to Medical Technology	0	..	The Senior Year	1st	2nd
				SEMESTER	
The Junior Year	1st	2nd	Biochemistry for Medical Technologists	4	4
	SEMESTER		Bacteriology	7	..
Organic Chemistry	4	4	Basic Techniques	6	3
Introductory Physics	3	3	Clinical Pathology	..	2
Approved Non-Science Electives	9	9	Hospital Assignments	..	6

The Graduate College

The purpose of the Graduate College is to serve the needs of college graduates who desire a broader and more thorough knowledge of scholarship and research in their chosen fields. At present the College offers fifty-three different programs leading to the Master's degree and three programs leading to the degree of Doctor of Philosophy.

Attention is also drawn to the special fifth year program (cf. p. 55) offered by the College of Education and Nursing, leading to a certificate of advanced study in Education.

Master of Education

Programs are planned on an individual basis, and are designed primarily for teachers who intend to qualify for various administrative positions in public school systems. Candidates for this degree must spend at least one Summer Session in residence, as a wider selection of advanced courses in Education is available in summers than in regular sessions.

Master of Arts in Teaching

This degree is unusually appropriate for teachers who are interested primarily in increasing their knowledge of their subject matter fields and thereby the effectiveness of their classroom instruction. Programs are offered in the following fields:

Agriculture
Botany
Chemistry
Commercial Subjects
English
French

German
Greek
History
Home Economics
Latin

Mathematics
Music
Physics
Spanish
Zoology

Master of Science

Programs are offered in the following fields:

Agricultural Biochemistry
Agricultural Economics
Agronomy
Anatomy
Animal and Dairy Husbandry
Animal Pathology
Biochemistry
Botany
Chemistry

Civil Engineering
Commerce
Electrical Engineering
Forestry
Geology
Home Economics
Horticulture
Medical Electronics

Medical Microbiology
Mechanical Engineering
Microbiology
Pathology
Pharmacology
Physics
Physiology and Biophysics
Zoology

Master of Arts

Programs are offered in the following fields:

Economics
English
French
German

Greek
History
Latin
Mathematics

Music
Political Science
Psychology

Doctor of Philosophy

Doctoral programs are offered for qualified students in the fields of Biochemistry, Pharmacology, and Physiology and Biophysics.

Admission

Students seeking admission to the Graduate College must make application to the Dean of the Graduate College.

Applicants should be persons who, prior to the date of their first enrollment, will hold a baccalaureate degree or will have completed work equivalent to that required for a baccalaureate, and whose undergraduate records indicate that they are capable of successful study at the graduate level. Graduates of unaccredited institutions must support their application with satisfactory scores on the Graduate Record Examinations; full information concerning these examinations may be obtained from the Educational Testing Service, Box 592, Princeton, New Jersey.

Admission is limited to (a) students who intend to become candidates for advanced degrees, other than Doctor of Medicine, and (b) students whose enrollment will consist of courses to be taken for graduate credit. Students who hold Bachelors' degrees but whose entire enrollment will be in undergraduate courses, should seek admission as special students in the appropriate undergraduate college.

Admission to the Graduate College does not mean that a student is automatically accepted as a candidate for an advanced degree.

Only applicants who desire to work along lines in which the University offers graduate programs will be admitted to the Graduate College. Students in the Graduate College therefore fall into three categories: (1) duly admitted students accepted to candidacy, (2) degree candidates at other institutions who study at The University of Vermont for transfer of credit, (3) duly admitted students not yet accepted to candidacy.

A deposit of \$35 is required of each applicant upon notification of admission into the Graduate College. This deposit will be returnable when the student graduates or withdraws from the College. A duly admitted student who later decides not to enter the College is eligible to receive a partial refund of this deposit, provided that he notifies the Dean of his change in plans well in advance of the date of his first enrollment (cf. p. 25, Expenses).

A graduate student whose work or deportment is unsatisfactory may be requested at any time by the Dean or the department concerned to withdraw from the Graduate College.

College Regulations Concerning Masters' Degrees

Acceptance to Candidacy

Applications must be made on forms supplied by the Dean's office, and must be approved both by his office and by the department concerned. Acceptance to candidacy is granted only in cases where the student has fully met all undergraduate prerequisites in his chosen field of concentration and has demonstrated to the full satisfaction of the department concerned his capacity for successful study at the graduate level.

Not until a student has been accepted to candidacy is the department obliged to help plan his over-all degree program, supervise his research, and so forth. *Students are therefore advised to apply for acceptance to candidacy as soon as they become eligible for it.*

Minimum Residence Requirements

Each candidate for the Master's degree must satisfactorily complete at least twenty hours of graduate credit while in residence on The University of Vermont campus, either in the regular academic year or in summer sessions.

Maximum Time Limits

A program leading to the Master's degree must be completed within a span of three years if it is pursued on a full-time basis during the regular academic year; if the program is pursued during summer sessions, it must be completed within a span of seven years. Only in special cases will credits earned outside these time limits be re-evaluated and accepted; requests for such re-evaluation must be addressed to the Dean and must be accompanied by a full statement of the extenuating circumstances. This time limit applies both to study at the University of Vermont and to courses taken in other institutions and presented for transfer of credit.

Graduate Credit

Courses numbered 200 and above are offered for graduate credit, and, if taken by graduate students, must be taken for graduate credit.

Courses numbered between 100 and 199 are normally courses for undergraduates. Graduate credit can be allowed for any course so numbered only when a graduate student has already been accepted to candidacy and has obtained in advance the approval of his department and the Dean for the inclusion of this particular course in his Master's degree program. Under no circumstances will graduate credit be allowed for a course numbered below 100.

Transfer of Credit

A maximum of eight semester hours of credit for graduate courses taken in other institutions can be transferred into the program of a duly accepted candidate for the Master's degree. Such courses must have been taken in a fully accredited college or university which offers graduate study and must be acceptable at that institution in partial fulfillment of its requirements for an advanced degree. Credit cannot be transferred for (1) courses which would not, if taken at The University of Vermont, receive graduate credit, (2) courses in which a grade lower than 82 per cent (B-) was received, (3) extension courses, (4) correspondence courses, (5) courses which are inappropriate for inclusion in any Master's program offered by the Graduate College. No transfer is possible prior to a student's acceptance to candidacy.

Extension Courses

Not more than eight semester hours of credit toward the Master's degree may be earned by taking off-campus courses offered by The University of Vermont. A maximum of three hours of graduate credit per semester is permissible to Master's candi-

dates who are full-time teachers in public schools. Graduate credit cannot be allowed for courses which would not offer graduate credit if given in regular or summer sessions at The University of Vermont. Only students whose academic qualifications would qualify them for admission to the Graduate College can be granted graduate credit for work done in off-campus courses. Therefore students seeking graduate credit for such courses who have not been admitted to the Graduate College must have their academic credentials approved by the Dean before graduate credit can be granted.

General Academic Requirements for Masters' Degrees

A total of thirty semester hour credits is the minimum number required by the Graduate College for the Master's degree, of which at least fifteen must be earned in formal courses and seminars. Credit for the preparation of a thesis under the direction of the particular department, when required, is included in the minimum number of required credit hours.

Each student must maintain an average of 85 (B). A course in which a grade lower than 82 (B-) is received will not be accepted in partial fulfillment of requirements for an advanced degree.

Each Master's candidate must acquire appropriate teaching experience in his chosen field prior to the award of his degree. The nature and the amount of this teaching, for which no academic credit is allowed by the Graduate College, will be determined by the department concerned.

Master of Arts and Master of Science

FIELD OF SPECIALIZATION In judging the attainments of candidates, great emphasis is placed upon ability to do original research in the chosen field of specialization. Hence the number of courses required will vary with the preparation and needs of the individual student. In order to plan his individual program, a new student should consult as early as possible with the chairman of the department in which he is specializing.

At least twenty hours of graduate credit, including credit for the thesis and research leading to the thesis, must be earned in the field of specialization. All course credits included in these twenty hours must have been earned in courses which are numbered above 200.

THESIS Each candidate will undertake a problem of original research under the direction of a member of the department in which he is specializing. At the conclusion of the investigation the student must present a thesis which embodies the results of his work and which demonstrates his capability for independent research. The original copy of this thesis must be presented to the Dean for deposit in the University Libraries; some departments require that additional copies be presented to the department. The number of credit hours to be earned in thesis research varies between six (minimum) and fifteen (maximum), the precise number being decided on an individual basis by the department concerned.

RELATED STUDY Sometimes a graduate program will include advanced courses outside the field of specialization. In order to be included as part of the Master's

program these courses must be approved by the department in which the student is specializing.

Master of Education

The graduate program of each student admitted to candidacy for the degree of Master of Education is planned and supervised by an individual committee, which includes *ex-officio* the Deans of the Graduate College and the College of Education. A graduate program is planned in view of a student's undergraduate curriculum and in the light of his aims and purposes in pursuing the Master's degree, and in such a way that its subject matter will be concentrated as far as possible within a general area of study. Each program must include at least thirty semester hours of approved course work. If a student's preparation is inadequate for him to begin study at the graduate level in certain aspects of his program, additional undergraduate courses will be required.

In order to insure effective planning of a graduate program for the degree of Master of Education, not more than twelve hours credit (fourteen if the maximum eight hours of transfer credit is offered) will be accepted in partial fulfillment of degree requirements for courses taken prior to acceptance to candidacy. A prospective candidate should therefore make application for acceptance to candidacy not later than his first semester of residence, or, if he has been a student in summer session, prior to his second summer in residence.

Before acceptance to candidacy for the degree of Master of Education, the student must present a satisfactory score in the Miller Analogies Test, and must demonstrate satisfactory proficiency in written composition. Before the degree is awarded, the candidate must have completed one year of successful teaching experience or other educational service.

Master of Arts in Teaching

A minimum of thirty semester hours is required in courses numbered above 200, of which not less than six semester hours shall be in Education. Apart from this requirement, a student will specialize in a single department offering courses for graduate credit or in any acceptable combination of such departments. In order to be accepted to candidacy for this degree, a student must have completed an undergraduate major within the area of his specialization and must be acceptable to the department or departments concerned.

In his undergraduate and graduate work a student must complete eighteen semester hours in Education which must include the following courses or their equivalent: History or Philosophy of Education, General Methods and Procedures, Student Teaching, and Educational Psychology or Principles of Education.

Final Examinations

The examinations culminating the program of graduate study for the Master's degree are as follows:

- I. *For the Degrees of Master of Arts and Master of Science:*
 - a. A written comprehensive examination (two hour minimum) in the field of specialization.
 - b. An oral examination (one hour minimum) in defense of the thesis.

II. *For the Degree of Master of Education:*

- a. A written comprehensive examination (three hour minimum) in the field of Education.
- b. A comprehensive oral examination (one hour minimum) in the field of Education.

III. *For the Degree of Master of Arts in Teaching:*

- a. A written comprehensive examination (two hour minimum) in the field of Education.
- b. A written comprehensive examination (two hour minimum) or a comprehensive oral examination (one hour minimum) in the field of specialization. The choice between written and oral examination is to be determined by the department after consultation with the candidate.

Success in the written examinations is prerequisite to taking the oral examinations. One re-examination only is permitted for any final comprehensive examination.

Professional Degrees in Engineering

The advanced degrees of Civil Engineer, Mechanical Engineer, and Electrical Engineer will be granted only to engineering graduates of The University of Vermont. At least four years must have elapsed since the candidate graduated. For at least three years the candidate must have held positions of responsibility in his profession and have shown ability to design and execute important engineering work.

At least six months before the end of the year in which the degree is sought the candidate must present to the Dean of the Graduate College a statement of his technical training and experience, together with the topic upon which he proposes to submit a thesis. The thesis must embody the results of original investigation upon some technical subject. The professional record and thesis topic must be approved by the College of Technology and by the Executive Committee of the Graduate College.

The thesis must be presented to the Dean of the Graduate College not later than three weeks prior to commencement. The thesis must then be approved by the College of Technology and by the Executive Committee of the Graduate College.

College Regulations Concerning the Degree of Doctor of Philosophy

At the present time The University of Vermont offers three academic programs leading to the degree of Doctor of Philosophy. Programs are offered in Biochemistry, in Pharmacology, and in Physiology and Biophysics.

Acceptance to Candidacy

In addition to being fully eligible for acceptance to candidacy for a Master's degree (cf. p. 73), a student must have completed satisfactorily one year of graduate study at The University of Vermont before he is eligible for acceptance to candidacy for the degree of Doctor of Philosophy.

Studies and Thesis Committees

Upon admission to the Graduate College, the prospective candidate for the Ph.D. degree will be assigned a Studies Committee by the Dean. This Committee will meet at least once a semester with the candidate to advise him and to help plan his program of study. All courses taken in the program must be approved by this Committee, the department chairmen concerned, and the Dean of the Graduate College. This Committee will also be responsible for administering and evaluating language examinations.

Upon submission of the completed thesis, the Dean of the Graduate College will appoint a Thesis Committee for the oral examination of the candidate. The Committee shall consist of the Dean, the members of the Studies Committee, and at least two other faculty members nominated by the chairman of the department concerned. The acceptability of the thesis and the number of credits to be awarded for it will be determined by the Thesis Committee.

Transfer of Credit

Not more than twenty-five hours of credit for appropriate graduate courses taken in residence at other institutions will be acceptable for transfer into a Doctoral program.

Minimum Academic Requirements

The degree of Doctor of Philosophy requires of candidates a minimum of seventy-five credit hours to be earned in courses and in thesis research.

COURSES At least fifty hours must be earned in courses and seminars. The first year of each Doctoral program consists almost entirely of required courses; in the following years appropriate courses are selected by the individual Studies Committees in consultation with the candidate. Details of each program can be obtained from the appropriate department chairman or from the Dean.

RESEARCH AND THESIS Each candidate, while in residence at The University of Vermont, must complete an acceptable original research project which contributes new knowledge or techniques in his academic field. Fifty printed copies of the thesis or one microfilm copy must be deposited in the University library. If the thesis should be published in slightly abbreviated form, as an article in a scientific journal, fifty reprints of the article will be acceptable if the candidate is the senior author. Whichever option is selected, the candidate must also be prepared to submit three bound type-script copies of the completed thesis to the Dean of the Graduate College. A minimum of twenty credits and a maximum of thirty credits will be allowed for thesis research.

FOREIGN LANGUAGES The candidate must demonstrate the ability to comprehend the contents of scientific articles from the field, written in German and in one other foreign language, not later than one year after acceptance to candidacy.

EXAMINATIONS

- (a) A comprehensive written examination in the field of study must be passed by the candidate at least one semester prior to the semester in which the thesis is

submitted. This examination will be prepared by the Department concerned, in consultation with the candidate's Studies Committee.

- (b) An oral examination, in which the candidate will be expected to defend his thesis, will be scheduled no sooner than one month after the three copies of the thesis have been submitted to the Dean.

Expense and Financial Aids

For information concerning tuition, deposits and other fees, see pages (24-27). Graduate students may receive financial aid on the same basis as undergraduate students, see pages (27-28). Information on loans may be obtained from the Dean of Men or the Dean of Women.

Fellowships

The Graduate College offers each year four Graduate Fellowships, each of \$500 plus a tuition scholarship, which are open to applicants in any field in which the University offers a graduate degree program. Holders of Graduate Fellowships are expected to carry a full-time graduate program towards an advanced degree. Applications for Graduate Fellowships should be addressed to the Dean and must be completed not later than March 15 of the academic year preceding the year for which the application is made.

The George H. Walker Dairy Fellowship is awarded every third year, the next award to be made in 1961-62. It provides a stipend not less than \$700, plus a tuition scholarship. It is available to graduate students who during their undergraduate courses have studied "agriculture, chemistry, and bacteriology" and who desire to study the problems relating to the production of a sanitary milk supply on comparatively small plants and farms. Applications should be addressed to the Chairman of the Department of Animal and Dairy Husbandry.

The College has been assigned three National Defense Fellowships for prospective Ph.D. candidates in Biochemistry for 1960-61; it is hoped that additional fellowships will be assigned for 1961-62 in Biochemistry and in Physiology. Applications should be made prior to November, 1960, to the chairman of the Department.

Teaching Fellowships and Research Fellowships

Graduate Teaching Fellows are normally appointed for nine months with an initial stipend of \$1800, Graduate Research Fellows for eleven months with an initial stipend of \$2100. Teaching and Research Fellows are awarded scholarships to cover tuition up to twelve hours a semester; they are eligible also for reappointment for a second year.

A maximum of half-time assistance in the department is expected of Graduate Teaching Fellows and Graduate Research Fellows, and they must expect that more than one academic year will be necessary to complete the requirements for the Master's degree. If a Teaching Fellow or Research Fellow is a candidate for the Ph.D. degree, he must expect to spend at least four calendar years before his academic program can be completed. While it is customary, it is not obligatory that Fellows select their fields of concentration in the departments in which they are appointed; for example, foreign-born students appointed Graduate Teaching Fellows

in the Department of Romance Languages may be accepted as degree candidates by the Department of English.

Applications for Graduate Teaching Fellowships and Graduate Research Fellowships should be addressed to the chairman of the department concerned and should be filed not later than March 15 of the academic year preceding that for which the application is made. Fellowships for the year 1960-61 are offered by the following departments: Agricultural Biochemistry, Agricultural Economics, Agronomy, Animal and Dairy Husbandry, Biochemistry, Botany, Chemistry, Geology, Horticulture, Mathematics, Medical Microbiology, Pathology, Pharmacology, Physics, Physiology and Biophysics, Romance Languages, and Zoology.

The College of Medicine

Requirements for Admission

The College of Medicine requires that an applicant hold a bachelor's degree, and that his four years of college work be taken in an institution listed among the "Approved Colleges of Arts and Sciences," compiled and published by the Council on Medical Education and Hospitals of the American Medical Association. The College of Medicine requires one year each of: Biology; English; Physics, including laboratory; General Chemistry; Organic Chemistry; Quantitative Chemistry, a satisfactory one-semester course, or Physical Chemistry, including laboratory work and fundamental mathematical principles at the college level. The latter will be required effective September 1961.

The College strongly recommends that the applicant, while in college, study in depth one or more fields of interest to him.

Students must complete satisfactorily all requirements for admission to the College of Medicine in any given year by July 1 preceding the September admission. Ordinarily courses taken in other than a liberal arts college will not meet our admission requirements.

Eligibility for admission to the College of Medicine of an applicant is determined by the Admissions Committee of the College of Medicine on the basis of the following:

1. The scholastic record of the applicant in his premedical work.
2. Personality and general fitness of the applicant for the study and practice of medicine as determined by recommendations of the applicant's college teachers and others, and by personal interview with the Admissions Committee.
3. The applicant's scores on the Medical College Admission Test. Such scores are taken into consideration but are not used as a final determinant in accepting students.

A maximum of fifty students is admitted to the entering class. Preference for admission is according to the following priorities:

1. Qualified residents of Vermont.
2. Qualified residents of other New England states having contractual arrangements with the College of Medicine.
3. Qualified residents of other areas.

Sons and daughters of the alumni of the College of Medicine of the University of Vermont are given special consideration within the framework of the above policy.

Applications for admission to the class entering in September of any year will close January 1 preceding the September admission. Application blanks should be in by December 1 for early consideration.

An application fee of ten dollars, payable to The University of Vermont and State Agricultural College, must accompany all applications and is not refundable.

The Curriculum

FIRST YEAR Anatomy, physiology and biochemistry are integrated in such a fashion that topics are considered simultaneously by all departments in so far as possible. Thus when the abdomen is being dissected, the physiology of the gastro-intestinal system and the biochemistry of digestion are being considered at the same time. The students are introduced to psychobiology and preventive medicine during the first year.

SECOND YEAR The curriculum is divided into three parts and correlated in time.

Course A—Morphology, Physiology, and Chemistry of the Abnormal—runs throughout the entire year and includes pharmacology, pathology, clinical pathology, medical microbiology, psychopathology, preventive medicine and surface anatomy.

Course B—Elicitation of Data—includes history taking and examination which are taught cooperatively by the various specialists under the general supervision of an internist. This is given in the second semester only.

Course C—Introduction to Clinical Medicine—consists of didactic lectures and case presentations covering elementary medicine, pediatrics, surgery, obstetrics, gynecology and oral medicine, and is given in the second semester.

The schedule varies from week to week because the subject material presented by the different departments is correlated.

THIRD AND FOURTH YEARS: The third and fourth years provide a continuing clinical clerkship under the direction of the major clinical departments. A one and a half-month vacation is afforded during the summer at the end of the third year. The schedule provides for clerkship experience in general and specialty hospitals, and includes ambulatory patient services in the Family Care Unit, the outpatient departments of the general hospitals, and in the home. Up to three months of elective time is provided for the student to pursue in depth an area of his interest.

Teaching Facilities

The College of Medicine Building, the College of Medicine Annex, Roberts House and Phase I of the new College of Medicine building contain offices, lecture rooms, medical library, student and research laboratories. Clinical facilities for teaching in the third and fourth years include the two Burlington hospitals with a total of 481 beds (not including bassinets) and 124,960 patient days. Five general and four specialty (tuberculosis and psychiatric) hospitals in Vermont and New York State with a total bed complement of 3,216 are used.

In Burlington there are three outpatient departments with 17,502 patient visits annually, and the Home Care Service with 2,674 home visits annually. Elective preceptorships with general practitioners are available.

The University Extension

The University through its extension services aims to broaden the horizon of those who have not attended college and to afford an opportunity for those who have attended college to keep in touch with academic thought in their favorite fields or to gain information about subjects which were not studied in college.

The Summer Session

Summer Session offers courses on both the graduate and undergraduate level in many subjects, including art, botany, chemistry, commercial subjects, conservation, dramatic art, economics, education, English, French, geography, German, history, home economics, mathematics, music (instrumental and vocal), philosophy, physical education, physics, political science, psychology, sociology, Spanish, speech and zoology.

The offerings are diversified to meet the needs of the following various groups of students: those with adequate preparation who desire courses leading to a Bachelor's degree; those with adequate preparation who wish to do graduate work for the Master's degree; principals and superintendents of schools who desire fundamental or specialized courses in the fields of educational administration and supervision; teachers in elementary or secondary schools who seek credit toward State teachers' certificates or who desire to broaden their knowledge of special subjects; persons who desire college level courses for self-improvement. Students must have sufficient maturity and background to profit from the courses in which they enroll.

Through work in the Summer Session it is possible to earn the degrees of Master of Arts, Master of Science, Master of Arts in Teaching, and Master of Education. A special bulletin giving a full description of courses will be sent upon application to the Director of the Summer Session.

Evening Division

Continuing education for adults in the State of Vermont is provided under the Evening Division Program offered by the University. Members of the faculty at the University and others working under temporary appointment offer evening or extension courses in arts and sciences and education. A variety of courses is presented in evening sessions on campus throughout the college year. Some of these may be taken for credit while others are non-credit and are designed for the adult who is interested in continuing his education for the pleasure of self-improvement.

Courses are given in towns and cities throughout the state wherever a group of ten or more individuals register for a course.

Arrangements for Evening Division courses are made through the Evening Division, 147 Waterman Building. Length of courses varies from five to eighteen weeks.

Any person taking a course for credit towards a degree at the University is advised to secure the approval of the appropriate dean. All persons desiring graduate credit must secure the approval of the Dean of the Graduate College.

The Government Clearing House

The purpose of the Government Clearing House is to promote a practical approach to the study of government by students in the University and also to provide information relative to problems of government, upon request, primarily to town and city officials in the State, but also to officials of other government units and to private citizens.

The Clearing House cooperates with such organizations as the New England Council in sponsoring such activities as the annual "Town Report Contest." It also cooperates with the Governor and other state officers in sponsoring the annual Town Officers' Educational Conferences. A Public Affairs Library is maintained as a memorial to the late James P. Taylor, whose effort to expand citizen interest in good government is well known throughout the State.

The World Affairs Information Center

The World Affairs Information Center, located in the Old Mill on the University campus, is the focus for programs and services to further greater understanding of world affairs and responsible citizens' participation in U. S. foreign policy. The Center is staffed jointly by the Political Science Department of the University and the Vermont Council on World Affairs. A library on world affairs, national foreign policy, and international organizations is maintained at the Center for the use of Vermont citizens and University members.

The Center cooperates with the United States Department of State, the United Nations, and many other national and local organizations in arranging speakers, programs, material for distribution, hospitality for visitors from abroad, and consultations with Vermont groups on various aspects of world affairs. The Center serves as a coordinating agent and occasionally sponsors activities such as specialized conferences, courses and contests throughout the State of Vermont.

Audio-Visual Services

The Vermont Film Library, operated by the Division of Audio-Visual Services, and jointly sponsored by the State Department of Education and the University, serves the schools, colleges, churches, societies, and individuals of the State by making materials for visual education programs available for their use on a rental or membership basis. The library owns over 1,500 sound 16mm films suited to age levels from grade one to adult, produced by companies who specialize in educational films; 1,200 $3\frac{1}{4}$ x 4 slides on Vermont history, United States history, biology and ethnology; a collection of 2 x 2 slides on contemporary American art; over 100 filmstrips on aviation and mechanical education, the United Nations organization and other subjects. The Services Department provides equipment and projectionists for college classroom use and rents to other nearby groups. The Photographic Department takes pictures at the request of administrative departments and faculty, makes lantern slides and transparencies and maintains a file of photographs and negatives, from which selections may be made for University publications.

Conferences

Conference activity is a rapidly increasing part of University life, both throughout the regular college year and during the summer, when many conference groups make use not only of University classroom and auditorium facilities but also of University dormitories and dining service. Groups interested in arranging for meetings or conferences at the University should contact the Conferences and Institutes Office, Waterman Building.

Courses of Instruction

The several departments or areas of instruction are arranged alphabetically, and the college in which each is located is indicated.

Courses numbered from 1 to 99 are elementary and intermediate courses. Those numbered from 100 to 199 are advanced undergraduate courses. Those numbered from 200 to 299 are advanced courses for undergraduates which also may be taken for graduate credit by duly qualified graduate students. Courses numbered above 300 are limited to graduate students.

A separate number is used for each semester course and for each semester of a year course.

The form 17, 18 indicates that the separate semesters may be taken independently for credit.

The form 17-18 indicates that they may not be taken independently for credit and, unless otherwise stated, must be taken in the sequence indicated.

Odd numbered courses are offered the first semester; even numbered courses the second semester, unless otherwise indicated by the Roman numeral I for the first semester or II for the second semester.

The letter "S" preceding the course number indicates the course is offered normally in the Summer Session.

The letter "A" preceding the course number indicates the course is offered normally in the Evening Division program.

The number of credit hours *per semester* is indicated in each course description.

The form (2-3) immediately following the course title indicates the number of class hours respectively of lecture and of laboratory.

Agricultural Biochemistry

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professors Johnstone (Chairman) and Little; Associate Professor Foote; Assistant Professor Racusen

172 ELEMENTARY BIOCHEMISTRY (3-4) Introductory treatment of the chemistry of carbohydrates, proteins, lipids, enzymes, vitamins, and hormones and their relation to processes of biological significance. Basic principles of analytical procedures involved in biochemical methods. *Prerequisite:* Chemistry 131-132 or 35. Five hours. Dr. Foote.

197, 198 **SENIOR RESEARCH** Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

252 **PLANT BIOCHEMISTRY** The composition, energy utilization, and metabolism of plant cells with emphasis on the leaf. Special topics include the chemistry and action of growth substances and herbicides, the origin of life, and comparative biochemistry of plant and animal cells. *Prerequisite:* 172 or Med. Biochem. 201 and departmental permission. Three hours. Dr. Racusen. Alternate years, 1961-62.

253 **MICROBIAL BIOCHEMISTRY (2-3)** The chemical composition, energy utilization and metabolism of microbial cells. *Prerequisite:* 172 or Medical Biochemistry 201, Botany 116; and departmental permission. Three hours. Dr. Johnstone. Alternate years, 1961-62.

254 **MODERN BIOCHEMICAL TECHNIQUES (1-4)** Laboratory work and supplementary lectures on radioisotopic tracer techniques, paper chromatography, radioautography and biochemical preparation. *Prerequisite:* 172 or Medical Biochemistry 201 and departmental permission. Three hours. Dr. Racusen. Alternate years, 1960-61.

381, 382 **GRADUATE SEMINAR** Topical seminar with discussion of assigned and collateral reading. Required of departmental graduate students. One hour. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

491 through 499 **DOCTOR'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Agricultural Economics

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professor T. M. Adams (Chairman); Associate Professor Tremblay; Assistant Professors Sinclair and Webster; Mr. Bevins

2 **WORLD AGRICULTURE (2-2)** Historical development and pattern of agriculture to the present. Emphasis on the adjustment of agriculture to natural and economic phenomena. Present pattern of crop and livestock production, trade, and consumption in Vermont, the United States, and the world. Three hours. Dr. Tremblay.

21 **AGRICULTURE COOPERATION** Nature and development of cooperative business enterprises, their organization, financing, and business management. *Prerequisite:* sophomore standing. Two hours. Dr. Adams.

22 **AGRICULTURAL BUSINESS (2-2)** Management problems of rural business firms, especially those handling farm produce and supplies. Theoretical and practical considerations in the organization and operation of agricultural businesses with emphasis on financial and legal organization, accounting and budgeting procedures, and tax policies. *Prerequisite:* sophomore standing. Three hours. Mr. Bevins.

103 RURAL SOCIOLOGY The origin, characteristics, forms of organization, levels of living, mobility, and geographic distribution of rural people, and their relationship to urban society. *Prerequisite:* junior standing or permission of the department. Three hours.

107 FARM CREDIT (2-2) Types and sources of credit used by farmers. Lending practices and problems of credit agencies. Appraisal of farm real estate and personal property. *Prerequisite:* junior standing. Three hours. Mr. Sinclair.

197, 198 SENIOR RESEARCH Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

201-202 FARM MANAGEMENT (2-2) Organization and operation of a successful farm business. *Prerequisite:* Economics 11-12 and senior standing. (Agricultural Education option, junior year.) Three hours. Dr. Tremblay.

204 MARKETING FARM PRODUCTS (2-2) Distribution of farm products and the problems involved. Emphasis on the Vermont situation. *Prerequisite:* Economics 11-12. Three hours. Dr. Webster.

206 PUBLIC PROBLEMS OF AGRICULTURE Price fluctuations as they affect farming, agricultural legislation, land use, costs of local government, and other problems of contemporary interest to farmers. *Prerequisite:* Economics 11-12. Three hours. Dr. Adams.

251 RESEARCH METHODS Philosophy of scientific research, research project organization and procedures, analysis and reporting of research results. *Prerequisite:* Senior standing and permission of the department. Three hours. I or II. Dr. Webster.

254 THEORY OF AGRICULTURAL PRODUCTION ECONOMICS Application of the theory of the firm to agricultural production units. Emphasis on resource allocation and production efficiency. Principles of marginal analysis applied to production problems in a static and dynamic economy. *Prerequisite:* twelve hours in agricultural economics and/or economics, senior standing, and permission of the department. Three hours. Mr. Sinclair.

256 SPECIAL TOPICS IN AGRICULTURAL ECONOMICS Readings and discussion of specific topics in agricultural economics at advanced level. *Prerequisite:* Permission of the department. Three hours. I or II. The staff.

281, 282 AGRICULTURAL ECONOMICS SEMINAR Discussion of problems and research in agricultural economics and other social sciences. *Prerequisite:* senior or graduate standing, or permission of the department. One hour. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Agricultural Education

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Associate Professor Gaylord (Chairman); Mr. Davison

✓ 100 RURAL EDUCATION (2-2) Study of background, aims, organization, curricula, facilities, management, teaching and evaluation of rural high schools. Individual study of a rural Vermont high school. *Prerequisite:* junior standing. Three hours. Dr. Gaylord.

102 EXTENSION METHODS (1-2) Methods and techniques of extension teaching. *Prerequisite:* junior standing. Two hours. Mr. Davison. Alternate years, 1961-62.

150 METHODS OF TEACHING VOCATIONAL AGRICULTURE I (1-2) Making farm surveys; determining needs, problems, and objectives in vocational agriculture for the individual student and the community; planning the course of study and teaching calendars; selecting, planning and supervising farming programs of all-day students; recruiting and enrolling students; orientation to the work of a vocational agriculture teacher. *Prerequisite:* junior standing, or permission of the department. Two hours. Dr. Gaylord.

155 DIRECTED PRACTICE TEACHING IN VOCATIONAL AGRICULTURE Ten weeks of practice teaching in high school departments of vocational agriculture under guidance of experienced teachers and the teacher trainer. One week for home visits to supervised farming programs during the summer, and the first week of high school. *Prerequisite:* 251 and 253 or permission of the department. Eight hours. Dr. Gaylord.

251 METHODS OF TEACHING VOCATIONAL AGRICULTURE II (2-2) Selecting teaching positions, analyzing content and method; teaching plans; techniques and instructional aids; advising FFA chapter; supervising farming programs; teaching farm mechanics, evaluating student progress; supervised study, guidance, counseling and maintenance of discipline. *Prerequisite:* senior standing; 100 and 150 or permission of the department. Three hours. Dr. Gaylord.

253 METHODS OF TEACHING YOUNG AND ADULT FARMER CLASSES IN VOCATIONAL AGRICULTURE (2-2) Determining needs, problems and objectives for education of young and adult farmers; selecting positions, planning courses, and developing teaching plans; use of on-farm instructions; demonstrations and other suitable methods, techniques and instructional materials; use of advisory groups; progress evaluation; role of young farmer associations. *Prerequisite:* 100 and 150 or permission of the department. Three hours. Dr. Gaylord.

282 SEMINAR Evaluation of student teaching experiences; in-school and out-of-school public relations; placement and follow-up of students; department management; planning and maintaining facilities; overall program; summer program and professional responsibilities. Required of Agricultural Education majors. *Prerequisite:* senior standing; 155 or permission of the department. One hour. Dr. Gaylord.

301, 302, 303, 304 RESEARCH IN AGRICULTURAL EDUCATION Investigation of a research topic under the direction of an assigned staff member. Credit as arranged.

Agronomy

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professor Midgley (Chairman); Associate Professor Wood; Assistant Professors Bartlett and Flanagan

1 GENERAL FARM CROPS Field, forage and pasture crops common in Vermont and the United States, including production, management and uses. *Prerequisite:* Botany 1 or permission of department. Three hours. Dr. Wood.

2 GENERAL SOILS Origin, formation, and classification of soils; elementary principles of fertility and management. Three hours. Dr. Flanagan.

21 FIELD CROPS (2-2) Theory and practice of producing, improving and managing field crops. *Prerequisite:* Botany 1 or permission of department. Three hours. Dr. Flanagan. Alternate years, 1961-62.

22 FORAGE AND PASTURE CROPS (2-2) Theory and practice of producing, improving and managing forage and pasture crops including study of silage and hay making. *Prerequisite:* Botany 1 or permission of department. Three hours. Dr. Wood.

103 SOIL CHEMISTRY AND FERTILITY (2-2) Chemistry of soils and fertilizers in relation to nutrient uptake, plant growth, and the management of soil fertility. Colloidal properties of clays and humus and their effects on soil acidity and ion availability; soil and plant analysis and its application. *Prerequisite:* 2; Chem. 1-2 or 11-12. Three hours. Dr. Bartlett. Alternate years, 1960-61.

105 SOIL PHYSICS (2-2) Physical properties of soils and their influence on plant growth. Retention and movement of heat, gas, water and ions in soils are studied together with management operations such as plowing, tillage, drainage, and irrigation. *Prerequisite:* 2; Physics 1-2 or 5-6, or Chem. 1-2 or 11-12. Three hours. Dr. Bartlett. Alternate years, 1961-62.

153 CONSERVATION OF NATURAL RESOURCES A study of natural resources including soils, water, atmosphere, wild life, and minerals. Interrelationships, management, and the social and economic aspects of depletion and conservation are emphasized. *Prerequisite:* Junior standing. Three hours. Dr. Flanagan. Alternate years 1961-62.

197, 198 SENIOR RESEARCH (0-3) Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

226 SPECIAL TOPICS IN SOILS AND CROPS Correlation of advanced information in soils with that of crops. Soil chemistry, physics, microbiology and soil management are related to crop production, other topics suited to the needs of the students. *Prerequisite:* 103 or 105; Chem. 21 or 35, and permission of department. Three hours. Dr. Midgley. Alternate years 1960-61.

281, 282 AGRONOMY SEMINAR Discussion of agronomic topics. Students present papers on selected subjects. *Prerequisite:* senior or graduate standing or permission of the department. One hour. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Air Science

AIR FORCE ROTC

Lt. Col. Fishburne (Chairman); Major McGauhey; Captains Hayton, Cahill, and Kehoe; 1st. Lt. Roseen

11-12 **FOUNDATIONS OF AIR POWER—2** A year-long survey of the development of aerial warfare, with emphasis on principles of war, concepts of employment of forces, and changing weapon systems. Treatment of aerial warfare covers targets, weapon systems, delivery vehicles, bases, and operations. Two hours.

111-112 **GLOBAL RELATIONS** A study of global relations of special concern to the Air Force officer with attention to such aspects as weather, navigation, geography, and international relations. Three hours.

Animal and Dairy Husbandry

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Director Dowe (Acting Chairman); Professor Bradfield; Associate Professor Atherton; Assistant Professors Balch, Fitzsimmons, and Smith; Mr. Klein

1, 2 **GENERAL DAIRYING (2-2)** First semester; dairy cattle management and judging. Second semester; principles of producing, processing and testing milk and milk products. Three hours. Messrs. Fitzsimmons and Bradfield.

4 **LIVESTOCK OTHER THAN DAIRY (1-3)** Types, breeds, and market classes. Two hours. Mr. Balch.

44 **ADVANCED STOCK JUDGING (0-6)** Judging, fitting and showing, with emphasis on dairy cattle. *Prerequisite:* 1. Two hours. Messrs. Fitzsimmons and Balch.

93 **LIVESTOCK PRODUCTION (2-3)** Production and management of horses, sheep, swine and beef cattle. *Prerequisite:* 4. Three hours. Mr. Balch.

104 **CHEMISTRY AND TESTING OF DAIRY PRODUCTS (2-3)** Chemical and physical properties of milk and milk products. Standard methods of analysis. *Prerequisite:* Chem. 1-2. Three hours. Dr. Atherton.

105 **FEEDS AND FEEDING (3-2)** Fundamentals of livestock feeding and evaluation of livestock rations with emphasis on ingredients and nutritive value. *Prerequisite:* junior standing. Four hours. Dr. Smith.

109 **DAIRY BACTERIOLOGY (1-4)** Relation of microorganisms to milk and milk products, methods of examination and control. Three hours. Dr. Atherton.

114 **MANUFACTURED MILK PRODUCTS (2-3)** Methods and technical problems in manufacture of products made from milk. *Prerequisite:* 104, junior standing. Three hours. Dr. Atherton. Alternate years, 1960-61.

116 **DAIRY PLANT ENGINEERING (2-2)** Theory and practical problems in selection and use of dairy processing equipment. *Prerequisite:* Physics 5; junior standing. Three hours. Mr. Bradfield, and Agricultural Engineering Department. Alternate years, 1960-61.

153 **MILK PROCESSING (2-2)** Technical aspects of producing and processing milk and cream; sanitary regulations and laboratory tests. *Prerequisite:* permission of the department. Three hours. Mr. Bradfield.

197, 198 **SENIOR RESEARCH** Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

206 **ANIMAL NUTRITION** Nutrients, their function and utilization, and requirements for growth, reproduction and lactation. *Prerequisite:* 105; Chem. 131-132 or 35. Three hours. Dr. Smith.

211 **ICE CREAM AND FROZEN DAIRY PRODUCTS (2-3)** Fundamentals of ice cream manufacturing, the physico-chemical and biological factors involved; calculation of formulas; sherbets and specialties; merchandising, soda fountain management and sanitary control. *Prerequisite:* 104; credit or concurrent enrollment in 109; junior standing. Three hours. Mr. Bradfield. Alternate years, 1961-62.

251 **DAIRY CATTLE AND MILK PRODUCTION (2-2)** Physiology of milk secretion; practical application of feeding and management principles. *Prerequisite:* 105; senior standing or permission of department. Three hours. Mr. Fitzsimmons.

256 **DAIRY PLANT MANAGEMENT** Organization and operation of milk processing and manufactured milk products plants. *Prerequisite:* 153; Economics 11-12; junior standing. Two Hours. Mr. Bradfield. Alternate years, 1960-61.

260 **ANIMAL BREEDING** Physiology of reproduction; theory and practical application of genetic principles to breeding of livestock. *Prerequisite:* Zoology 115; senior standing or permission of department. Three hours. Mr. Fitzsimmons.

281, 282 **ANIMAL AND DAIRY HUSBANDRY SEMINAR** Reports and discussions of problems and special investigations in selected fields. One-two hours. Maximum credit 1 hour senior, 3 hours graduate. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Animal Pathology

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professor Bolton (Chairman); Associate Professor Durrell

55 **ANATOMY AND PHYSIOLOGY** Anatomical structures and their physiological functions. *Prerequisite:* sophomore standing. Three hours. Dr. Durrell.

56 DISEASES OF FARM ANIMALS Causes, symptoms, and prevention of diseases of farm animals. *Prerequisite:* sophomore standing. Two hours. Dr. Durrell.

116 POULTRY SANITATION AND DISEASE CONTROL (3-2) Causes, symptoms, and prevention of parasitic, infectious, and nutritional diseases of poultry. Hygienic and sanitary measures used in incubation, brooding and rearing poultry. Demonstrations and necropsies. *Prerequisite:* Botany 116. Four hours. Dr. Durrell.

197, 198 SENIOR RESEARCH Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Art

COLLEGE OF ARTS AND SCIENCES

Professor Colburn (Chairman); Assistant Professors Janson and Mills; Mr. Aschenbach

1 CLASSICAL AND MEDIEVAL ART Comparative studies in classical and medieval architecture, painting and sculpture, and their contribution to Western art and civilization. *Prerequisite:* sophomore standing or permission of instructor. Three hours. Dr. Janson. Alternate years, 1960-61.

2 RENAISSANCE ART Formation and development of the Renaissance in painting, sculpture, and architecture in Italy and Northern Europe, ca. 1400-1600. The major masters and monuments of the period. Studies of original material in the museum collection. *Prerequisite:* sophomore standing or permission of instructor. Three hours. Dr. Janson. Alternate years, 1960-61.

4 MODERN ART Contemporary trends in painting and sculpture from the period of French Impressionism; emphasis on European influences. *Prerequisite:* junior standing. Three hours. Mrs. Mills.

5 BAROQUE, ROCOCO, AND ROMANTIC ART Formation and development of the Baroque in the 17th and the Rococo in the 18th Century. The emergence of Romanticism in the late 18th and early 19th Century. Studies of original materials in the museum collection. *Prerequisite:* sophomore standing or permission of instructor. Three hours. Dr. Janson. Alternate years, 1961-62.

6 MODERN ARCHITECTURE Varied movements in European and American architecture in the 19th and 20th Century as seen in the work of major architects of the period, and as reflected in the changing character of local architecture. *Prerequisite:* sophomore standing or permission of instructor. Three hours. Dr. Janson. Alternate years, 1961-62.

7 PAINTING IN AMERICA Development of painting in America from colonial times to the present. Social and economic forces which at times channelled American artistic expression. *Prerequisite:* sophomore standing. Two hours. Mr. Colburn.

11, 12 ARTS AND CRAFTS Experiences in functional design using various media to develop good taste and creative ability. Lectures relate the history and appreciation of arts and crafts to students' work. *Prerequisite:* sophomore standing. Three hours. Mrs. Mills.

21, 22 DRAWING AND PAINTING Composition and painting techniques. Emphasis on a clearer understanding of modern schools of painting and on individual development. By permission, the course may be taken a second time for credit. *Prerequisite:* sophomore standing. Three hours. Mr. Colburn.

41, 42 SCULPTURE An introductory course in sculpture, dealing with both formal and technical problems. *Prerequisite:* sophomore standing. Three hours. Mr. Aschenbach.

For courses in Art Education, see Elementary Education 170.

Botany

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professors Marvin (Chairman), Gershoy, Johnstone, Sproston, and Taylor; Associate Professor Raynor; Assistant Professor Vogelmann

1 INTRODUCTORY BOTANY (2-4) Fundamental principles of biology illustrated by the morphology, physiology, and reproduction of vascular plants. Study of forms and functions, leading to an understanding of the plant as a dynamic unit. Four hours. I, II. Drs. Taylor, Marvin, Vogelmann and Raynor. (An equivalent course is offered in Summer Session.)

2 GENERAL BOTANY (2-4) Plant groups, their relationships to each other. Plant distribution, geographical and historical. The role of plants in the world today. *Prerequisite:* 1. Four hours. Dr. Raynor.

S10 FIELD BOTANY (2-4) Native plants and their habitats. Field identification and laboratory study. A projected series of courses encompassing the plant kingdom. Four hours. The staff. Summer Session only.

101 ECONOMIC BOTANY (2-2) Relation of plants to human history and contemporary life. Botanical and economic aspects of plants as sources of foods, drugs, and other products of importance in everyday living. Library study, periodic reports and visits to plant utilizing industries replace formal laboratory. *Prerequisite:* 1; junior standing or permission of the department. Three hours. Dr. Taylor. Alternate years, 1961-62.

103 PLANT PHYSIOLOGY (2-6) Mechanisms of absorption, translocation, synthesis, and utilization of materials. The role of internal and external factors in

growth. *Prerequisite*: 1; credit or concurrent enrollment in Chem. 35 or 131. Five hours. Dr. Marvin.

110 TAXONOMY (1-4) Principles of classification; phylogeny of vascular plants, the evolution of the angiosperms; the species concept; variation; development and migration of floras; modern techniques and biosystematics. *Prerequisite*: 1; junior standing. Three hours. Dr. Vogelmann. Alternate years, 1961-62.

112 ECOLOGY (2-2) Structure and organization of plant communities; succession, climax formations; effect of environmental factors; quadrating and other field techniques. *Prerequisite*: 103 or permission of the department; junior standing. Three hours. Dr. Vogelmann. Alternate years, 1960-61.

116 GENERAL BACTERIOLOGY (1-4) Principles and techniques employed in the study of micro-organisms, their isolation and culture with reference to human disease and public health; their importance to agriculture, industry and foods. *Prerequisite*: 1 or Zool. 1; Chem. 1-2. Three hours. Dr. Johnstone.

117 PLANT PATHOLOGY (2-0) or (2-4) Diagnosis, life history, and control of plant diseases caused by fungi, viruses, bacteria, nematodes. *Prerequisite*: 1. Two hours, lectures only. Four hours, lectures and laboratory. Dr. Sproston.

197, 198 SENIOR RESEARCH Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by department. *Prerequisite*: senior standing. Three hours. The staff.

251 PLANT ANATOMY AND HISTOLOGY (2-4) Development of the organism and accompanying integration of cellular tissues. Ontogeny of vegetative tissues; modifications of the cell wall. *Prerequisite*: 2; senior standing or permission of the department. Four hours. Dr. Taylor. Alternate years, 1960-61.

253 FUNGI (2-4) The reproductive processes of the common molds, yeasts, and actinomycetes and their classification. Physiological studies; antibiotics. *Prerequisite*: 103 or permission of the department. Four hours. Dr. Sproston. Alternate years, 1961-62.

255 GENETICS AND CYTOGENETICS (3-2) Fundamental principles of genetics. Analysis of concepts of variation, mendelian inheritance, cytoplasmic inheritance, gene action, population genetics, and biometry; meiotic chromosome behavior in diploids, polyploids and species hybrids. *Prerequisite*: 1; Zool. 1; Bot. 2 and a second course in Zoology, 31 or 41, are strongly recommended; senior standing. Four hours. Dr. Gershoy.

256 CYTOLOGY (2-4) Dynamics of the protoplast; nuclear division, gamete formation, syngamy and substitute methods of reproduction. Interrelation of chromosomal and genetic phenomena. *Prerequisite*: 255 or Zool. 115; Chem. 131-132 or 35 or permission of the department. Four hours. Dr. Gershoy. Alternate years, 1961-62.

258 PLANT GROWTH (2-4) The nutrition of plant cells, growth hormones, cyclic variation of environmental factors, morphogenesis. *Prerequisite*: 103; Chem. 131-132 or 35 or permission of the department. Four hours. Dr. Marvin. Alternate years, 1961-62.

259 MORPHOLOGY AND EMBRYOLOGY (2-4) Comparative study of body form, ontogeny of reproductive structures and phylogenetic relationships in the embryophytes; emphasis on seed plants. *Prerequisite:* 2; senior standing or permission of the department. Four hours. Dr. Raynor. Alternate years, 1960-61.

381, 382 BOTANY SEMINAR A topical seminar with discussion of assigned and collateral reading. Required of botany graduate students. One hour. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Chemistry

COLLEGE OF TECHNOLOGY

Professors Braun (Chairman), Cook and Gregg; Associate Professors Crooks, Inskip, Linnell and Whitcher; Assistant Professors Brown and Lucarini

Note: Credit cannot be granted for 1-2 and also 11-12; nor for 35 and also 131-132.

↓ 1-2 INTRODUCTORY CHEMISTRY (3-3) General inorganic chemistry. Lectures, recitations and laboratory. Acceptable prerequisite to advanced courses. *Prerequisite:* at least one year of high school mathematics. Four hours. Dr. Gregg, Dr. Crooks and Miss Brown.

11-12 GENERAL CHEMISTRY (3-6) Lectures, recitations and laboratory, including general experiments in elementary qualitative analysis. Recommended for those concentrating in physical science. *Prerequisite:* at least one year of high school mathematics. Five hours. Dr. Inskip and staff.

13, 14 THE CHEMICAL BOND Nature of interatomic and intermolecular forces. Stereochemistry, bond energies, and crystal structures are considered. *Prerequisite:* 1-2 or 11-12. One hour. Dr. Gregg and Dr. Cook.

21-22 ELEMENTARY QUANTITATIVE ANALYSIS (2-6) Theory and practice of quantitative methods, gravimetric and volumetric. Theoretical discussion of indicators, buffers and pH. *Prerequisite:* 1-2 or 11-12. Four hours.† Dr. Whitcher and Dr. Lucarini.

35 OUTLINE OF ORGANIC CHEMISTRY (3-4) Organic chemistry primarily for students in agriculture, home economics and nursing. *Prerequisite:* 1-2 or 11-12. Five hours. Dr. Crooks and staff.

131-132 ORGANIC CHEMISTRY (3-6) Organic chemistry for chemistry majors, premedical students and those concentrating in the biological and physical sciences. *Prerequisite:* 1-2 or 11-12; 21-22 recommended. Five hours.‡ Dr. Braun, Dr. Cook and staff.

141-142 PHYSICAL CHEMISTRY (3-6)§ The kinetic theory and its application to gases; thermodynamics and the application to liquids and solutions; chemical

†May be taken by certain students for three hours credit, with only one three-hour laboratory period.

‡May be taken by certain students for four hours credit, with only one three-hour laboratory period.

§May be taken without the laboratory work for three hours credit by permission of the department.

equilibria; fundamentals of electrochemistry and atomic structure. *Prerequisite:* Physics 21-22; Math. 12, 21; Chem. 1-2 or 11-12; Chem. 21-22 recommended. Five hours. † Dr. Cook and Dr. Linnell.

Advanced Inorganic Chemistry

108 INORGANIC PREPARATIONS Laboratory preparations of inorganic compounds. *Prerequisite:* 1-2. Two hours. Dr. Crooks.

212 ADVANCED INORGANIC CHEMISTRY Chemistry of the elements; relation of structure to properties and to coordination compounds, complex ions, radioactivity, and stereoisomerism. *Prerequisite:* credit or concurrent enrollment in 141-142. Three hours. Dr. Inskeep.

Advanced Analytical Chemistry

221 ADVANCED THEORETICAL CHEMISTRY Selected topics in theoretical chemistry with reference to analytical applications. *Prerequisite:* credit or concurrent enrollment in 141-142. Three hours. Dr. Whitcher.

Advanced Organic Chemistry

230 CHEMISTRY OF THE CARBOHYDRATES Detailed description of the chemistry of the more common carbohydrates, including proofs of structure. *Prerequisite:* 131-132; credit or concurrent enrollment in 141-142. Three hours. Dr. Braun. Not offered every year.

231-232 SPECIAL TOPICS IN ORGANIC CHEMISTRY An elaboration of structural and configurational isomerism, modern acid-base theory, molecular rearrangement and organic free radicals. *Prerequisite:* 131-132; credit or concurrent enrollment in 141-142. Three hours. Dr. Gregg. Alternate years, 1960-61.

233-234 PHYSICAL ORGANIC Physical organic chemistry, emphasis on structural aspects and reaction mechanisms. *Prerequisite:* 131-132; credit or concurrent enrollment in 141-142. Three hours. Dr. Cook. Alternate years, 1959-60.

236 CHEMISTRY OF CYCLIC COMPOUNDS Chemistry of alicyclic and of the more common heterocyclic compounds. *Prerequisite:* 131-132; credit or concurrent enrollment in 141-142. Three hours. Dr. Braun. Alternate years, 1960-61.

237 IDENTIFICATION OF ORGANIC COMPOUNDS (3-8) Methods, both chemical and physical, of identifying organic compounds, their separation, and the determination of their functional groups. *Prerequisite:* 131-132; credit or concurrent enrollment in 141-142. Five hours. Dr. Braun and staff.

238 ORGANIC REACTIONS Discussion, from the preparative viewpoint, of applications, limitations, and experimental conditions of the more important reactions of organic chemistry. *Prerequisite:* 131-132; credit or concurrent enrollment in 141-142. Three hours. Dr. Braun. Not offered every year.

†May be taken by certain students for four hours credit, with only one three-hour laboratory period.

Advanced Physical Chemistry

247-248 **ADVANCED PHYSICAL CHEMISTRY** Higher level consideration of the topics discussed in 141-142. Emphasis on thermodynamics, kinetics and spectra. Statistical mechanics and quantum theory introduced. *Prerequisite:* 141-142; concurrent enrollment in Math. 22. Three hours. Dr. Linnell.

246, 249 **SPECIAL TOPICS IN PHYSICAL CHEMISTRY** Advanced level discussion of specific topics in physical chemistry; molecular and atomic spectra, theory of solutions, quantum theory or statistical mechanics. *Prerequisite:* 247-248 or its equivalent. Three hours. The staff.

341 **CHEMICAL THERMODYNAMICS** Systematic study of the application of thermodynamics in the solution of chemical problems. *Prerequisite:* 247-248. Three hours. Dr. Inskeep.

342 **CHEMICAL KINETICS** Velocity of chemical reactions in homogeneous and heterogeneous systems. *Prerequisite:* 247-248. Three hours. Dr. Cook.

Seminars and Research

Seminars are required of graduate students and juniors and seniors concentrating in chemistry.

181-182 **JUNIOR SEMINAR (2-0)** One hour. Drs. Inskeep, Linnell and Mr. Lucarini.

183-184 **SENIOR SEMINAR (2-0)** One hour. The staff.

197-198 **SENIOR RESEARCH (0-6, 0-12)** The student elects a field for special study in inorganic, analytical, physical or organic chemistry and works under the direction of a staff member. Findings submitted in written form and suitably bound. Required of seniors in the Chemistry Curriculum. Two hours. I. Four hours. II. The staff.

381, 382, 383, 384 **GRADUATE SEMINAR (2-0)** One hour. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Classical Languages

COLLEGE OF ARTS AND SCIENCES

Professor Kent (Chairman); Associate Professors Pooley and Gilleland; Assistant Professor Davison

Greek

1-2 **ELEMENTARY GREEK** Essentials of Attic Greek. Prose compositions and selected readings from Greek authors. No prerequisite. Four hours. Mr. Pooley.

11-12 **INTERMEDIATE GREEK** Plato's *Euthyphro* and *Apology*; selections from the *Iliad* and the *Odyssey*. *Prerequisite:* 1-2 or its equivalent. Three hours. Dr. Davison.

201 GREEK ORATORS Selected speeches of Lysias and Demosthenes. *Prerequisite:* 11-12. Three hours. Dr. Kent. Alternate years, 1960-61.

202 GREEK COMEDY Two plays of Aristophanes. *Prerequisite:* 11-12. Three hours. Dr. Davison. Alternate years, 1961-62.

203 GREEK HISTORIANS Thucydides, Books I and II; selections from Herodotus and Xenophon's *Hellenica*. *Prerequisite:* 11-12. Three hours. Dr. Davison. Alternate years, 1961-62.

204 GREEK TRAGEDY Sophocles' *Antigone* and Euripides' *Medea*, or two equivalent plays. *Prerequisite:* 11-12. Three hours. Dr. Gilleland. Alternate years, 1961-62.

381, 382 SEMINAR Graduate level study of Greek authors not read in the candidate's undergraduate program. Credit as arranged. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

For Greek Literature in Translation, see General Literature 51; for Greek Philosophy, see Philosophy 107.

Latin

1-2 ELEMENTARY LATIN Essentials of Ciceronian Latin. For students who present less than two years of high school Latin.* *Credit is allowed only if Latin 11-12 is also completed.* Four hours. Dr. Gilleland.

11-12 INTERMEDIATE LATIN Extensive review of Latin syntax. Cicero, *In Catilinam I, II; Pro Archia*. Vergil, *Aeneid*, Books I and II. *Prerequisite:* 1-2, or two years of high school Latin. Three hours. Dr. Davison.

32 ENGLISH WORDS Derivation of English words from Greek and Latin bases. Training in analysis of unfamiliar words, special attention to scientific vocabulary. No knowledge of Greek or Latin required. Three hours. Dr. Gilleland.

101-102 LIVY AND HORACE Passages from Livy XXI and XXII; lectures on Roman historiography. Selections from Horace's *Odes*, with attention to metre and diction. *Prerequisite:* 11-12, or three years of high school Latin. Three hours. Dr. Gilleland.

111-112 LATIN PROSE COMPOSITION May be taken concurrently with Latin 101-102. Required of students who major in Latin and of those who wish to be recommended to teach Latin. *Prerequisite:* 11-12 or three years of high school Latin. One hour. Dr. Kent.

203 REPUBLICAN PROSE Reading in Caesar and Sallust, and in the speeches of Cicero. *Prerequisite:* 101-102. Three hours. Dr. Gilleland.

204 EPIC POETS Reading in Lucretius, Vergil, Ovid, and others. *Prerequisite:* 101-102. Three hours. Mr. Pooley.

*Students who have completed two years of high school Latin more than two years prior to their entrance into the University may be permitted by action of the department to enroll in Latin 1-2 for credit.

251 ROMAN LETTERS Selected letters of Cicero, Pliny, and Fronto. *Prerequisite:* 203, 204. Three hours. Mr. Pooley. Alternate years, 1960-61.

252 COMEDY Two plays of Plautus and Terence. Development as a literary form. *Prerequisite:* 203, 204. Three hours. Mr. Pooley. Alternate years, 1961-62.

255 HISTORIANS OF THE EMPIRE Augustus, *Res Gestae*; Tacitus, *Annals*, I-IV; selections from Suetonius and Ammianus Marcellinus. *Prerequisite:* 203, 204. Three hours. Dr. Gilleland. Alternate years, 1961-62.

256 SATIRE Selections from Horace and Persius; Juvenal, *Satires*, I, III, X. Development as a literary form. *Prerequisite:* 203, 204. Three hours. Dr. Gilleland. Alternate years, 1960-61.

381, 382 SEMINAR Graduate level study of Latin authors not read in the candidate's undergraduate program. Credit as arranged. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

For Latin Literature in Translation, see General Literature 52; for The Teaching of Latin, see Secondary Education 252.

Commerce and Economics

COLLEGE OF TECHNOLOGY

Professors Lohman (Chairman), Greif and Woodard; Associate Professors Maybury, Nadworny, Nyquist; Assistant Professors Dellin, Hug, LeSourd, Pratt, Severance, and Wolotkin; Messrs. Karatzas, Wick, and Widicus.

1-2 WORLD ECONOMIC GEOGRAPHY Geography as a basis for economic development; importance of resources to production, exchange, consumption, population, and national economies. Three hours. Dr. Woodard and Dr. Dellin.

VI-12 PRINCIPLES OF ECONOMICS Fundamental economic principles as an aid to the understanding of modern economic society. *Prerequisite:* sophomore standing. Three hours. The staff.

13-14 PRINCIPLES OF ACCOUNTING (2-4) Problems of financial control of business, with laboratory practice. *Prerequisite:* sophomore standing. Four hours. Messrs. Nyquist and Wolotkin.

15, 16 ECONOMIC HISTORY OF THE UNITED STATES Analysis of capitalism as first developed in Western Europe and later in the United States as a basis for understanding our modern economic systems. *Prerequisite:* sophomore standing. Concurrent enrollment in 11-12 recommended. Three hours. Dr. Woodward and Mr. Widicus.

49 GENERAL TYPING Typing techniques and mastery of the keyboard to develop accuracy in typing skill for personal use. Open to all students except secretarial studies majors and business education teacher trainees. Two hours. I and II. Dr. Maybury.

136 **ALPHABETIC SHORTHAND AND TRANSCRIPTION** Principles of writing shorthand using letters rather than the traditional shorthand symbols. Writing combined with typing skill through instruction in transcribing on the typewriter. For students who wish skill competency for general or vocational use in a short time. *Prerequisite:* senior standing or consent of instructor. Four hours. Dr. Maybury.

165, 166 **BUSINESS COMMUNICATIONS** Principles involved in solving business problems through written communication. Format and composition are considered. Practice in writing letters and reports required. *Prerequisite:* junior standing. Three hours. Dr. Maybury.

169 **OFFICE MANAGEMENT** Organization and supervision of office activities from the standpoint of the office manager; principles and procedures of office job analysis; selection and training of personnel; office structure with regard to production standards, office forms, systems, equipment and supplies, flow of work, physical layout; cost control. *Prerequisite:* senior standing. Three hours. Dr. Maybury.

Banking, Finance, and Insurance

109-110 **BUSINESS LAW I** First semester: fundamental legal concepts of the American system of law as related to business, as the law of contracts, sales, bailments, and negotiable instruments. Second semester: the legal aspects of business with reference to the law of agency, partnerships, and corporations. *Prerequisite:* 11-12. Three hours. Mr. Wick.

111 **ECONOMICS OF LIFE INSURANCE** Types of life insurance contracts and their application; premium and reserve computation, social security and other forms of life insurance. *Prerequisite:* 11-12 and 13-14. Three hours. Dr. Lohman.

112 **PROPERTY AND CASUALTY INSURANCE** Principles underlying property and casualty insurance. *Prerequisite:* 11-12 and 13-14. Three hours. Dr. Lohman.

120 **BUSINESS LAW II** Law in relation to financial instruments; documents of title for collateral security, chattel mortgages, real estate mortgages, and suretyship and guaranty. *Prerequisite:* 109. Two hours. Mr. Wick.

201-202 **MONEY AND BANKING** Functions of money, credit, and banking in modern economic society. The theory of the internal and external value of money; control of the money market; interrelationship of monetary and fiscal policies and their effects upon national and international price movements. *Prerequisite:* 11-12. Three hours. Dr. Lohman and Mr. Karatzas.

203 **ECONOMICS OF TAXATION** Revenues and expenditures of federal, state, and local governments and their effects upon individuals, business institutions, and the national economy. *Prerequisite:* 11-12. Three hours. Dr. LeSourd.

204 **STATE AND LOCAL FINANCE** Revenues, expenditures and debt management problems of state and local governments; analysis of state and local fiscal relationships. Problems, policies and practices in Vermont and neighboring states. *Prerequisite:* 11-12. Three hours. Dr. LeSourd.

205 **INTERNATIONAL TRADE AND FINANCE** Theory of international values, mechanism of adjustment of international balances, foreign exchange theory, inter-

national aspects of monetary and banking theory, and tariff theory. *Prerequisite:* 11-12, and a year of history. Three hours. Dr. Huq.

206 **SECURITIES MARKETS** Organization and operation of organized and over-the-counter securities markets; types of securities; primary and secondary markets in the process of capital formation; securities price behavior; government and self-regulation of securities markets. *Prerequisite:* 11-12 and 13-14. Three hours. I. Dr. Lohman.

207 **FINANCIAL MANAGEMENT** The finance function in business: funds procurement and their effective utilization. Case analyses. *Prerequisite:* 11-12 and 13-14 or equivalent. Three hours. II. Dr. Lohman.

208 **INVESTMENTS** Various media of investments. Operation of financial institutions. Investment analyses of industrials, financial institutions, public utilities, and railroads. Practical application of available statistical and accounting tools. *Prerequisite:* 206. Three hours. Dr. Lohman.

Marketing and Merchandising

121 **PRINCIPLES OF MARKETING** The place of marketing in our economy. Analysis of the marketing structure by functions, institutions, and commodities. *Prerequisite:* 11-12. Three hours. Mr. Greif.

122 **PROBLEMS IN MARKETING** Application of the case method to discover solutions to problems which challenge producers and middlemen in marketing goods and services. *Prerequisite:* 121. Three hours. Mr. Greif.

123 **PERSONAL SALESMANSHIP** A practical approach to modern salesmanship through class participation and individual demonstration, emphasizing the approach to, presentation and close of the sale. *Prerequisite:* 121. Three hours. Mr. Greif.

131 **SALES MANAGEMENT** New and established trends of the sales manager's job. Method of selection, training, testing, compensation and control, including marketing policies and the coordination of related departmental functions. *Prerequisite:* 121. Three hours. Mr. Greif.

132 **FUNDAMENTALS OF ADVERTISING** Advertising as an economic and social influence. Principles and techniques of copy preparation, media of selection and advertising activities. Practice in preparation of advertising copy and layout. *Prerequisite:* 121. Three hours. Mr. Greif.

228 **ANALYSIS OF CURRENT MARKETING DEVELOPMENTS** Exploration of current marketing developments to gauge their force, direction and consequences. Topics include: the nature of changes and concentrations in population; income levels; decentralization of shopping centers; government regulation of business and the maintenance of competition. Individual projects required. *Prerequisite:* 121. Three hours. Mr. Greif.

329 **MARKETING MANAGEMENT** Integration and coordination of the marketing function: planning and developing the product; testing, branding, packaging, and labeling; sales program and campaign; sales organization and management; and, control of sales functions. Case analyses. *Prerequisite:* 121 and 228. Three hours. Mr. Greif.

Industrial and Personnel Management

141 **LABOR ECONOMICS** Labor as an economic factor: the labor force, wages, productivity, and income. Wage and hour legislation, social security, and unemployment insurance. History of the American labor movement. *Prerequisite:* 11-12. Three hours. Dr. Nadworny.

143 **INDUSTRIAL MANAGEMENT** Principles and practices employed in the direction and operation of industrial organizations. Techniques of organization and control of operations. Personnel function in an industrial structure. *Prerequisite:* 11-12. Three hours. Dr. Nadworny.

242 **COLLECTIVE BARGAINING** Subject matter, problems, and issues of union-management relationships. Structure and functions of collective bargaining in the economy. The grievance process and arbitration. Laws of collective bargaining. *Prerequisite:* 141. Three hours. Dr. Nadworny.

251 **PERSONNEL ADMINISTRATION** The field and organization of the personnel function; selecting and training employees; job analysis and evaluation; evaluating employees; wages and wage administration; problems of morale; human relations in the supervision of personnel. *Prerequisite:* 141. Three hours. Dr. Nadworny.

252 **EXECUTIVE DECISION-MAKING** Synthesis of the management and operation of a firm in terms of production, marketing, personnel, and finance. The process of decision-making, planning and execution of policies. *Prerequisite:* 121, 143 and a course in finance, or consent of instructor. Three hours. Dr. Nadworny.

254 **SCIENTIFIC MANAGEMENT AND LABOR** Development of scientific management; reactions and relationship of organized labor to it. Long-range effects of scientific management on the structure and policies of industry and organized labor. *Prerequisite:* 143. Three hours. Dr. Nadworny.

For Motion and Time Study and Plant Organization, required of students in this option, see Engineering, Mechanical (M.E. 175, 176).

Accounting

161 **INTERMEDIATE ACCOUNTING** Accounting records, end-of-year procedures, statements, analysis of working capital, profit and loss analysis, corporations, current and fixed assets, investments, liabilities, reserves, determination of net income, and the statement of application of funds. *Prerequisite:* 13-14. Three hours. Mr. Nyquist.

162 **ADVANCED ACCOUNTING** Accounting for partnerships, ventures, consignments, installment sales, insurance, statement of affairs, receivers, realization and liquidation, estates, trusts, home offices and branches, and parent and subsidiary accounting. *Prerequisite:* 161. Three hours. Mr. Nyquist.

163 **FINANCIAL STATEMENT ANALYSIS** Analytical study of the balance sheet and income statement. Trend percentages, common-size statements, working capital analysis, ratios, and other methods of analysis. *Prerequisite:* 13-14. Three hours. Mr. Wolotkin.

164 **BASIC FEDERAL TAXES** The federal income tax law; regulations covering taxable income, exclusions and inclusions, allowable deductions, exemptions, gains and losses, accounting methods, and computation of tax for all classes of taxpayers.

Federal payroll taxes. Assigned research problems and preparation of tax returns. *Prerequisite:* 13-14. Three hours. Mr. Nyquist.

271 **AUDITING** Theory and practice of auditing applicable to the work of the internal and external auditor; auditor's responsibility, types of audits, and audit programs. Illustrative audit working papers, financial statements, and audit reports prepared and discussed. *Prerequisite:* 162. Three hours. Mr. Nyquist.

272 **COST ACCOUNTING** Manufacturing costs; nature and uses of cost accounting; job-lot cost plan; cost accounting for materials; labor; factory burdens; process manufacturing costs; operational cost accounting; cost standards; residual and by-products; joint products. *Prerequisite:* 13-14. Three hours. Mr. Wolotkin.

276 **C.P.A. PROBLEMS** Review of questions and problems from past C.P.A. examinations. Including: partnerships, corporations, financial statements, auditing, cost accounting, insolvencies, receiverships, liquidations, consolidations, estates, trusts, governmental and institutional accounting methods. *Prerequisite:* 162. Three hours. Mr. Nyquist.

353 **BUDGET PROCEDURE AND CONTROL** Principles and procedures of preparing budgets and analyzing performance under a budgetary program. Development of sales, production, materials, purchases, labor, capital additions, and cash budgets is demonstrated by coordinated problems assignment. *Prerequisite:* 161 or equivalent and 272. Three hours. Mr. Nyquist.

Economics

181 **TRANSPORTATION** Social and economic aspects of transportation problems as revealed by analysis of the nature, history, and problems of transportation agencies of the United States. *Prerequisite:* 11-12; Pol. Sci. 1, 2. Three hours. Dr. LeSourd.

183 **ECONOMIC LIFE AND GOVERNMENT CONTROL** Economic causes and consequences of government regulation and control of business activities. *Prerequisite:* 11-12; Pol. Sci. 1, 2. Three hours. Dr. Severance.

187, 188 **ELEMENTARY STATISTICS (2-2)** Theory and interpretation of statistics. First semester: data collection, graphical presentation, frequency distribution, measures of central tendency and dispersion, tests of significance and analyses of variance. Second semester: index number theory and construction, time series, the fitting of linear and non-linear trend lines and two-variable, multiple and partial correlation. *Prerequisite:* 11-12; Math. 7, 8 or 11. Three hours. Dr. Severance.

286 **ECONOMIC ANALYSIS** Analysis of consumer demand, supply, market price under competitive conditions and monopolistic influences, and the theory of income distribution. *Prerequisite:* 11-12 and one other semester course. Dr. Severance.

288 **QUALITY CONTROL (2-2)** Application of statistical tools to industrial problems. Control charts, sampling plans, index numbers and measurement of trends. *Prerequisite:* 187. Three hours. Dr. Severance.

290 **THE SOVIET ECONOMY** Economic development of the USSR, resource planning and sector growth, geonomic foundation and foreign economic policies.

Seminar. *Prerequisite:* six hours of advanced courses in economics, and six hours of political science or European history; senior standing. Three hours. Dr. Dellin.

291 ECONOMIC PATTERNS AND POLICIES OF EASTERN EUROPE An area approach to the resources, organization, and domestic and foreign economic policies of the Communist countries of Eastern Europe, with special emphasis on recent changes. *Prerequisite:* Six hours of economics in advanced courses and six hours of political science or European history; senior standing. Three hours. Dr. Dellin.

292 INTERNATIONAL ECONOMIC PROBLEMS AND POLICIES Important aspects of international cooperation and conflict in the economic sphere; quest for foreign markets, raw materials, investment opportunities, and population outlets. *Prerequisite:* 11-12. Three hours. Dr. Huq.

293-294 MONEY, INCOME AND PRICES Analysis and description of cyclical fluctuations. Second semester: problems of cyclical control, employment, price levels, overall planning. *Prerequisite:* 201-202 or concurrent enrollment. Dr. Severance.

295 HISTORY OF ECONOMIC THOUGHT Development of economic ideas from classical antiquity to modern times. The Classical, Historical, Socialist, Optimist, Marginalist, and Neoclassical Schools. *Prerequisite:* 286 or 201-202 and consent of instructor. Three hours. Dr. Huq.

296 MODERN ECONOMIC THOUGHT Survey of the leading 20th Century economists and their doctrines including: J. B. Clark, Thorstein Veblen, Alfred Marshall, W. C. Mitchell, J. A. Hobson, J. M. Keynes and J. R. Hicks. *Prerequisite:* 295. Three hours. Dr. Huq.

297, 298 SEMINAR For students concentrating in the department. Review of recent books and periodical literature; discussions of topics of contemporary interest; student reports based upon personal investigation. *Prerequisite:* senior standing; consent of chairman. Three hours. The staff.

300, 301 INDEPENDENT READING AND RESEARCH Designed to meet the special research problems of graduate students. Consent of the department required. Hours to be arranged. The staff.

341 MANAGERIAL ECONOMICS Techniques used in management decision-making and forward planning. Demand and cost analysis, forecasting methods, capital management and budgetary planning. *Prerequisite:* 187-188 or its equivalent and 286. Three hours. Dr. Severance.

342 OPERATIONS RESEARCH FOR MANAGERIAL ECONOMICS Application of advanced quantitative methods to operating problems in business. Operations research techniques including programming, both linear and curvilinear, and queuing theory are presented. *Prerequisite:* 341 and mathematics 7, 8 or 11, 12. Three hours. Dr. Severance.

367 ADVANCED ECONOMIC STATISTICS Theories and techniques of statistical analysis; probability, sampling, design of experiments, tests of statistical hypotheses, statistical estimation, regression, correlation, statistical demand and cost functions, econometric methods and models as tools of structural analysis, economic projections and decision-making. *Prerequisite:* 187-188 or its equivalent and mathematics 7, 8 or 11, 12. Three hours. Dr. Huq.

377 **ADVANCED ECONOMIC THEORY** Macro- and micro-economic models presented and analyzed. Advanced market structure theories; theory of games, general equilibrium, and dynamic models. *Prerequisite:* 286. Three hours. Dr. Huq.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Secretarial Studies

Students who have had instruction in typing and shorthand in high school will be enrolled in the proper level typing and shorthand courses on the basis of qualifying tests administered by the department.

133 **ELEMENTARY TYPING** Typing technique for beginners. Emphasis on speed and accuracy. Experience with business material, letters and reports, tabulation, typing from rough draft. *Prerequisite:* junior standing or the consent of the instructor. Three hours. Miss Pratt.

134 **INTERMEDIATE TYPING** Further development in typing business forms, statistical matter, and documents. *Prerequisite:* 133 or the consent of the instructor. Three hours. Miss Pratt.

135 **ADVANCED TYPING** Development of typing skills in the production of advanced business projects. Speed and accuracy in production emphasized. *Prerequisite:* 134 or the consent of the instructor. Three hours. Miss Pratt.

137 **ELEMENTARY SHORTHAND** Gregg shorthand writing for the beginner. Shorthand fundamentals and a basic shorthand vocabulary. Application to business material. *Prerequisite:* junior standing or consent of the instructor. Four hours. Miss Pratt.

138 **INTERMEDIATE SHORTHAND** Development of the principles of Gregg shorthand writing. Writing speed and reading ability through dictation and transcription of business material. *Prerequisite:* 137 or the consent of the instructor. Four hours. Miss Pratt.

139 **ADVANCED SHORTHAND** Advanced Gregg shorthand writing; development of word construction in an extensive vocabulary, dictation and transcription practice with a variety of more difficult business and professional material. *Prerequisite:* 138 or the consent of the instructor. Four hours. Miss Pratt.

140 **TRANSCRIPTION** Correlating the skills of shorthand and typing, in transcription of a variety of business problems. *Prerequisite:* 135 and 139 or the consent of the instructor. Seven hours. Miss Pratt.

179 **SEMINAR** Study of basic principles governing secretarial activity on the executive level. A problem solving experience which relates office tasks in proper sequence as found in the functioning office. Development of judgment, initiative and responsibility for making decisions and executing them. Visits of specialists in business and field trips for observation of offices are arranged. *Prerequisite:* senior standing. Three hours. Dr. Maybury.

180 **EXECUTIVE SECRETARIAL PROCEDURES** Synthesis of skills and job knowledge obtained from professional courses efficiently applied to a variety of secretarial duties.

Experience in organizing and executing production jobs; delegating tasks to others and supervising them. *Prerequisite:* 179. Three hours. Dr. Maybury.

Dental Hygiene

SCHOOL OF DENTAL HYGIENE

Dr. Sawabini (Chairman); Assistant Professor Quinby; Drs. Conklin, Faigel, Heininger, Howe, Reiman, and Slack, Mrs. Heininger and Miss Paquette.

1 **ORIENTATION TO DENTAL HYGIENE (1-0)** The dental hygiene movement; history, growth, status of dental hygienist, scope of operations, standards and ethics, personal qualifications and personality traits. One hour. Miss Quinby.

2 **INSTRUMENTATION (0-6)** Principles and technics of instrumentation for scaling and polishing teeth with use of manikins. Examination and charting of mouth and general clinical procedures. Three hours. Miss Quinby.

11 **DENTAL ANATOMY (2-4)** Anatomy of head and neck; form and structure of teeth, nomenclature and relationship; calcification and eruption of teeth; drawing, carving, and identification of individual teeth. Four hours. Dr. Heininger.

21 **GENERAL AND DENTAL HISTOLOGY AND EMBRYOLOGY (1-2)** Microscopic structure and development of the basic tissues of the body with emphasis on dental and oral material. Use of microscope, colored slide projections and drawings. Two hours. Dr. Reiman.

32 **FIRST AID (1-0)** Basic principles of first aid taught to prevent and cope with emergencies that arise in the dental office. One hour. Mrs. Heininger.

53-54 **ORAL PATHOLOGY (2-0) (1-0)** General pathology of the more common diseases affecting the human body. Pathology of the teeth and their supporting structures. Two hours, first semester; one hour, second semester. Dr. Sawabini.

52 **PHARMACOLOGY AND ANESTHESIOLOGY (2-0)** The reactions and uses of drugs. Anesthesia, general and local, as used in dental practice. Two hours. Dr. Faigel.

61 **RADIOLOGY (1-1)** Study, demonstration, and practice of the fundamentals of intra-oral radiographic technic including electrophysics; angulation of machine; placing of films and complete processing of films. One hour. Dr. Slack.

72 **DENTAL HEALTH EDUCATION (2-0)** Demonstrations and practical applications of modern methods of dental health education. Teaching methods; visual aids; surveys and statistics; materials; campaigns; school dental programs. Two hours. Miss Quinby and Miss Paquette.

74 **PUBLIC HEALTH (2-0)** Public health as it applies to community sanitation; communicable disease control; organization, powers and function of health departments and voluntary health agencies; relation of dentistry to public health. Two hours. Dr. Howe.

81-82 **DENTAL HYGIENE CLINIC PRACTICE (0-15)** Clinical practice on patients from simple to more difficult cases with children and adults. Field practice at local dental clinics, hospitals and in Children's Homes. Five hours. Miss Quinby and staff.

91-92 **DENTAL ASSISTING, DENTAL MATERIALS, ETHICS AND OFFICE MANAGEMENT (1-0)** Principles of professional ethics and economics; office management and essentials of practice building; dental assistant and materials used in dental practice. One hour. Dr. Conklin.

94 **BACTERIOLOGY (2-4)** Infectious agents; modes of transmission of infectious disease; manner of disease production and methods by which the body combats infection. Infectious diseases of the oral cavity. Four hours. Bacteriology staff.

Education

COLLEGE OF EDUCATION AND NURSING

Professors King (Chairman), Bennett, Kent, Pappoutsakis, and Pearl; Associate Professors Gilleland and Steeves; Assistant Professors Adams, Christensen, Keach, Keppel, McNeil, Mehorter, Mills, Phillips, Schultz, Start, and Weinrich; Mr. Goffi and Mr. McDonald

1-2 **ORIENTATION TO EDUCATION** Orientation to education as a career; consideration of courses and experiences in education curricula, introduction to education as a profession. One hour. The staff.

116 **HEALTH EDUCATION** Role of the classroom teacher in the program of school and community health. Physical development and well-being of the human body. Two hours or three hours. Mr. Christensen.

145-146 **LEARNING AND HUMAN DEVELOPMENT** The developing individual; psychology of learning with particular application to human development; measurement and evaluation of learning and development. *Prerequisite:* Junior standing. Three hours. Mr. Mehorter.

152 **METHODS OF TEACHING SPORTS** Fundamental skills, techniques, and teaching methods in team, dual, and individual sports. One hour. The staff.

153 **METHODS OF TEACHING DANCE** Methods, procedures, and devices in teaching creative rhythm activities and all forms of dance; folk, square, ballroom and modern, for men and women. One hour. The staff.

154 **RECREATIONAL LEADERSHIP** Recreation and recreation education; theory and practice of recreational activities for youth and adults. Two hours. Mr. Christensen.

155 **PHYSICAL EDUCATION IN SECONDARY SCHOOLS** Practice in activity and activity-teaching skills in team, individual, dual, recreational sports and other media of physical education suitable for secondary grades. Two hours. Mr. Christensen.

156 **HISTORY AND PRINCIPLES OF PHYSICAL EDUCATION** The development of physical education; functions of physical education in society; underlying principles and concepts. Three hours. The staff.

158 **ORGANIZATION AND ADMINISTRATION OF HEALTH AND PHYSICAL EDUCATION** Organization and administration of instructional programs, intramurals, interscholastic athletics, school recreational programs, schedules, personnel, budgets, equipment, records, tests, and public relations. Three hours. The staff.

202 **PHILOSOPHY OF EDUCATION** Educational theory and philosophy past and present; contributions of leading educational philosophers; the interrelationships of education, society, and philosophy. *Prerequisite:* 12 semester hours in education and psychology. Three hours. Miss Keppel.

211 **EDUCATIONAL MEASUREMENTS** Essential principles of measurement in education; introductory educational statistics; test construction, application, and analysis. *Prerequisite:* 12 semester hours in education and psychology. Mr. Mosher. (Generally offered only in the Evening Division and Summer Session.)

222 **READING PROBLEMS—UPPER GRADES AND JUNIOR HIGH SCHOOL** Principles of remedial teaching, causes of reading difficulties, and materials for remedial work in reading. *Prerequisite:* 12 hours in education and psychology, including an introductory course in the teaching of reading. Three hours. Mr. Goffi.

Elementary Education

3, 4 **CHILD AND COMMUNITY** Supervised experiences with children's groups in the community. One hour. Mr. Keach and Miss McNeil.

100 **PHYSICAL EDUCATION IN THE ELEMENTARY SCHOOL** Development of a program of physical education for the elementary school. Principles, methods and materials appropriate for the several age and grade groups. Two hours. Miss Phillips.

111-112 **MUSIC** Ear training, music reading and writing, elementary theory, history and appreciation. Three hours. Mr. Pappoutsakis.

113 **SCHOOL MUSIC** Basic principles in elementary school music teaching. *Prerequisite:* 111-112 or Music 1, 2 and 5-6. Three hours. Mr. Schultz.

121 **TEACHING READING** Principles underlying teaching reading; materials of instruction; reading readiness; vocabulary development; development of correct study skills; observation in elementary schools. Three hours. Mrs. Adams.

134 **CHILDREN'S LITERATURE** Traditional and modern children's literature in prose and poetry; appreciation and evaluation of literature for children of all age levels; techniques of story telling. Three hours. Mrs. Adams.

144 **METHODS AND MATERIALS I** Curriculum, teaching methods, materials in language arts, social studies, science, and arithmetic in the elementary school. Observations and participation in elementary schools. Three hours. Mr. Keach and Miss McNeil.

160 **METHODS AND MATERIALS II** Classroom management, instructional planning, and methods of teaching in all core subjects in the elementary school. Three hours. Mr. Keach and Miss McNeil.

161 **STUDENT TEACHING** Seven full weeks of teaching in the elementary schools of Burlington and vicinity under the guidance of cooperating teachers and college supervisors. *Prerequisite:* senior standing; approval of the director of student teaching. Mr. Keach and Miss McNeil.

170 **ART FOR THE ELEMENTARY SCHOOL** Purposes and methods of contemporary art education in the development of the child. Lectures, discussions, and direct experience in creative art for classroom teachers. Three hours. Mrs. Mills.

Secondary Education

15 **PARTICIPATION** Observation and participation in classroom work in junior and senior high schools. Two hours. Dr. Steeves.

102 **PRINCIPLES OF EDUCATION** Aims and principles of American education; organization and development of the public school system. *Prerequisite:* junior standing. Three hours. Miss Keppel.

180 **SECONDARY METHODS AND PROCEDURES** General methods of secondary school instruction; problems of classroom management; pupil diagnosis and guidance. *Prerequisite:* satisfactory completion of an introductory course in education; senior standing. Three hours. Mr. Pearl and Dr. Steeves.

181 **STUDENT TEACHING IN SECONDARY SCHOOLS** Six or seven weeks of teaching in the public schools of Vermont under the guidance of cooperating teachers, principals, and college supervisors. *Prerequisite:* 180, high achievement in professional courses and in appropriate teaching fields; approval by the director of student teaching. Candidates must make written application at least one full semester in advance of the teaching assignment. Six hours. Mr. Pearl and Dr. Steeves.

250 **GUIDANCE** Principles of guidance; organization for guidance; use of tests and records in guidance; introduction to personal, educational, and occupational guidance; role of the teacher. *Prerequisite:* 12 semester hours in education and psychology. Three hours. Mr. Pearl.

252 **TEACHING LATIN** Seminar on problems of language, literary interpretation and criticism, Roman civilization, bibliography, with allied studies helpful to prospective teachers. *Prerequisite:* Latin 102 and 112. Three hours. Dr. Gilleland.

297, 298 **PROBLEMS IN EDUCATION** Individual research problem to be selected by the student in consultation with a staff member. Enrollment by permission of the Dean and the staff member who will direct the study. Seniors and graduate students who have at least 12 hours in education and psychology. Credit to be arranged. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Business Education

104 **PRINCIPLES OF BUSINESS EDUCATION** Basic principles, practices, problems and trends in business education. *Prerequisite:* Psychology 1. Two hours. Mr. McDonald.

105 **TEACHING BUSINESS SUBJECTS** Principles and techniques in the organization and the teaching of business subjects in the high school. *Prerequisite:* 104. Two hours. Mr. McDonald.

Music Education

For violin, string, clarinet, woodwind, percussion, trumpet, and brass classes see offerings in Applied Music of the Music Department.

131-132 **ELEMENTARY SCHOOL METHODS AND PRACTICE TEACHING** Teaching music in the primary and grammar grades; observation and practice teaching in the schools of Burlington or vicinity. *Prerequisite:* Music 1, 2; credit or enrollment in Music 5-6; permission of instructor. Two hours. Mr. Schultz.

151-152 **SECONDARY SCHOOL METHODS AND PRACTICE TEACHING** Administration and content of required and elective high school music courses. Observation and practice teaching in the schools of Burlington or vicinity. First semester: junior high school music; second semester: senior high school music. *Prerequisite:* credit or enrollment in Music 1, 2 and Music 5-6; permission of instructor. Four hours. Mr. Schultz.

Other Courses in Education

In addition to the courses offered during the academic year, the following courses are offered in summer sessions and in the evening division program.

<i>Number</i>	<i>Title</i>	<i>Credit Hours</i>
S5	Junior High School Mathematics	3
S7	Educational Psychology	3
S75	Driver Education Workshop, Basic	2
S109	Science Methods	3
S110	Teaching Social Studies (elementary)	3
S114	Music for the Junior High School	3
S115	Guidance of Music Activities—Grades III-VI	3
S117	Alcohol Education	3
S118	Guiding Elementary School Pupils in Music Experiences	3
S119	Elementary School Music (Music for grades I-III)	3
S122	Developmental Reading	3
S127	Science for Teachers	3
S132	Teaching Arithmetic	3
S142	Audio-Visual Materials and Methods	3
S150	Intensive Teacher Training	3
S172	The Creative Process Through Art	3
S175	Driver Education, Advanced	2
S200	The History of Arithmetic	3
S201	Administration of the Athletic Program	3
S203	Principles of Physical Education	3
S204	History of European Education	3
S205	History of American Education	3
S206	Comparative Education	3
S209	Workshop in the Education of Teachers of the Mentally Retarded	6
S210	Workshop in the Education of Teachers of the Mentally Retarded II	6
S211	Educational Measurements	3
S212	Child Development (Adolescent Development)	3
S213	Statistical Methods in Education and Guidance	3
S214	The Slow Learner (Education of the Exceptional Child)	3
S215	The Gifted Child	3
S216	Health Education	6
S217	Seminar in Secondary School Curriculum	3

S218	Workshop in Curriculum	4
S219	Workshop in Economic Education	4
S220	Personality Development and Mental Hygiene	3
S223	Reading Clinic	2-4
S225	Teaching Social Studies in the Secondary School	3
S226	Conservation	6
S227	Teaching Science in the Secondary School	3
S228	Literature in the Junior-Senior High School Curriculum (Literary Criticism for Teachers)	3
S229	Communicative Arts in Secondary Schools (Teaching English in Secondary Schools)	3
S230	The Elementary School Principalship	3
S231	The Secondary School Principalship	3
S232	School Administration	3
S233	Elementary School Supervision	3
S234	Secondary School Supervision	3
S241	Science Methods (Science for Elementary Schools)	3
S242	Modern Trends in Elementary Education	3
S243	Reading and Study in the Secondary School	3
S244	Social Studies in the Elementary School	3
S255	School and Society (The School as a Social Institution)	3
S256	Basic Concepts of Mathematics	3
S257	Teaching Mathematics in the Secondary Schools	3
S260	Improvement in Teaching Bookkeeping and Basic Business Subjects	3
S261	Seminar in Business Education	3
S262	Principles, Problems, and Trends in Business Education	3
S263	Improvement in Teaching Secretarial Subjects	3
S264	Business Education Curriculum	3
S270	Kindergarten Methods and Organization	4
S271	Laboratory Experiences in Kindergarten Education	4
S277	Seminar in Educational Psychology	3
S280	Professional Problems in Education	3
S301	Research in Education	3
S307	Counseling (Techniques and Group Procedures in Guidance)	3
S308	Group Testing in Guidance	3
S309	Administration of the Guidance Program	3
S310	Occupational Information	3
S312	Individual Testing	3
S330	Seminar in Educational Administration (Supervision)	3
S331	Seminar in Administration for Secondary Principals	3

Engineering, Agricultural

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Associate Professors Schneider (Chairman) and Arnold

101 FARM SHOP (0-6) Instruction in wood and metal working by hand and machine methods, sheet metal work, welding, rope work and tool fitting demon-

strations and methods of teaching. Problems in safety, shop care, layout, and selection of equipment. *Prerequisite:* sophomore standing. Three hours. Mr. Schneider.

103 FARM POWER, MACHINERY AND ELECTRICITY (2-2) Operation and maintenance of internal combustion engines and farm tractors; operation and the maintenance of farm machinery; electricity and the utilization of electricity and electrical equipment on the farm. *Prerequisite:* sophomore standing. Not for credit for B.S.A.E. degree candidates. Three hours. Mr. Schneider.

104 FARM STRUCTURES AND UTILITIES AND SOIL AND WATER ENGINEERING (2-2) Construction on the farm; planning and selection of materials. Operation, selection and maintenance of farm water systems and sewage disposal systems. Operation of refrigeration units used on the farm. Soil conservation practices and surveying. *Prerequisite:* sophomore standing. Not for credit for B.S.A.E. degree candidates. Three hours. Mr. Schneider.

151 FARM STRUCTURES (2-2) Design of farm structures, materials, structural requirements, functional requirements, insulating, heating, and ventilating. *Prerequisite:* C.E. 131 or concurrent enrollment. Three hours. Dr. Arnold. Alternate years, 1960-61.

152 FARM UTILITIES (2-2) Water systems; plumbing; sewage disposal; refrigeration. *Prerequisite:* M.E. 142 or C.E. 162 or concurrent enrollment; Physics 21-22. Three hours. Dr. Arnold. Alternate years, 1960-61.

154 AGRICULTURAL MACHINERY AND EQUIPMENT (2-2) Theory, design, operation and maintenance of agricultural machinery and equipment. *Prerequisite:* C.E. 130 and C.E. 131. Three hours. Dr. Arnold. Alternate years, 1961-62.

155 SOIL AND WATER ENGINEERING (2-2) Engineering problems involved in the application of hydrologic and agronomic data to the design, location, and construction of farm ponds, drainage, irrigation systems, and erosion control facilities. *Prerequisite:* C.E. 53 or permission of the department; Agronomy 2. Three hours. Dr. Arnold. Alternate years, 1961-62.

156 ELECTRICITY IN AGRICULTURE (2-2) Theory and engineering practices in the application of electricity to agriculture. *Prerequisite:* E.E. 101. Three hours. Dr. Arnold. Alternate years, 1960-61.

158 FARM POWER MACHINERY (2-2) Theory, design, operation, and maintenance of tractors and their engines. *Prerequisite:* M.E. 113, C.E. 131 or concurrent enrollment. Three hours. Dr. Arnold. Alternate years, 1961-62.

181, 182 JUNIOR SEMINAR (1-0) Review and discussion of current agricultural engineering research, student reports and studies of agricultural engineering problems. *Prerequisite:* junior standing and permission of the department. One hour. The staff.

183, 184 SENIOR SEMINAR (1-0) Review and discussion of current agricultural engineering research, student reports and studies of agricultural engineering problems. *Prerequisite:* 181, 182 or permission of the department. One hour. The staff.

Engineering, Civil

COLLEGE OF TECHNOLOGY

Professor Milbank (Chairman); Associate Professors Knight, Root and Fay; Assistant Professor Ragan; Mr. Eldred

24 STATICS (3-0) Fundamentals of statics; composition and resolution of forces; the analysis of force systems in two and three dimensions, centroids and moments of inertia. *Prerequisite:* Math. 21 or concurrent enrollment. Three hours. I, II.

51, 52 SURVEYING (3-4) First semester: fundamental surveying methods; measurement of lines, angles, and difference in elevation; land surveying, areas, and plotting. Second semester: city and mine surveying; elements of practical astronomy; theory of curves, earthwork calculations; elements of photographic surveying; topographic surveying; elements of geodetic surveying. *Prerequisite:* Math. 11; 51 for 52. Four hours.

53 PLANE SURVEYING (3-4) Use of the steel tape, level, and transit; elements of topographic surveying; special problems as presented and solved in fields affected. For those not enrolled in civil engineering. *Prerequisite:* Math. 11 or Math. 1, 2. Four hours.

54 ENGINEERING CAMP Four weeks summer field practice between the sophomore and junior years. Topographic, hydrographic and route surveys; triangulation, precise leveling, and base line measurements; solar observations. *Prerequisite:* 51-52. Four hours.

113 CONCRETE AND BITUMINOUS LABORATORY (0-3) Testing materials used in concrete and bituminous mixtures; design of mixes to obtain specified compressive and flexural strengths; investigations of durability, yield, economy, and effect of admixtures. *Prerequisite:* 131. One hour.

114 MECHANICS OF MATERIALS LABORATORY (0-3) Experimental stress analysis methods; fundamental properties of metals, plastics, and wood; the effects of size, shape, method and speed of loading, and strain history on these properties. *Prerequisite:* 131. One hour.

130 DYNAMICS (3-0) Fundamentals of kinematics covering rectilinear and curvilinear motion, relative motion, Coriolis acceleration, translation, rotation, and plane motion. Fundamentals of kinetics covering translation, rotation, and plane motion of particles and rigid bodies; work, energy, power; impulse and momentum; simple harmonic motion. *Prerequisite:* 24, also Math. 21. Three hours. I, II.

131 MECHANICS OF MATERIALS I (3-0) The elastic and plastic behavior of materials; normal and shearing stresses from axial, torsional, and flexural loading combinations; deflections due to torsion and bending; applications to statically indeterminate members; analysis of plane stress and strain, failure theories, and design criteria. *Prerequisite:* 24; also Math. 21. Three hours. I, II.

140 STATICALLY DETERMINATE STRUCTURES (3-3) Analysis and design of statically determinate structures; prefaced by consideration of function, expected loads, reactions, material choice, and layout of members. Influence lines; criteria

for positioning moving loads; design of steel and timber members under combined bending and axial load; base plates; eccentric connections. Laboratory practice in graphic statics and design computations. *Prerequisite:* 131. Four hours.

151 ENGINEERING CONTRACTS (2-0) Contract law and engineering specifications, ethics and professional conduct. *Prerequisite:* senior standing. Two hours. I, II.

155 REINFORCED CONCRETE (3-0) Analysis of stresses in plain and reinforced concrete members. Design of reinforced concrete structures. Theory of prestressed concrete. *Prerequisite:* concurrent enrollment in 175. Three hours.

158 SUBSTRUCTURE ANALYSIS AND DESIGN (3-3) Evaluation of subsoil conditions and earth pressures; design of retaining walls, substructures for buildings and bridges, and cofferdams. *Prerequisite:* 155 and 173. Four hours.

157 BUILDING CONSTRUCTION (3-0) Practical building construction in building materials. Construction processes and estimating. *Prerequisite:* senior standing. Three hours.

162 HYDRAULICS (3-0) Mechanics of liquids; flow meters; flow in pipe systems; flow in open channels; elements of fluid mechanics; elements of hydraulic machinery. *Prerequisite:* 130 and M.E. 113. Three hours.

165 WATER SUPPLY ENGINEERING (2-3) Sources of water supply, quantity available, uses and rates of demand; quality, examination, and treatment; collection, storage, and distribution. Laboratory field trips to and reports on existing water supply systems, design problems, and cost estimates. *Prerequisites:* 162. Three hours.

166 SEWERAGE AND SEWAGE TREATMENT (2-3) Design of sanitary and storm sewers; methods of treatment of sewage. Laboratory field trips to and reports on existing sewage treatment plants; design problems of sewer systems and sewage treatment plants. *Prerequisite:* 162, 165; Chem. 1-2. Three hours.

168 HYDRAULICS LABORATORY (0-3) To be taken in conjunction with 162. Laboratory studies for illustration of theory and behavior of metering devices; pipe line flow and hydraulic machinery. One hour.

173 SOIL MECHANICS I (2-3) Identification, description, and physical properties of soils; subsurface exploration; engineering characteristics of natural deposits of soil. Stress distribution, consolidation of soil masses, shear strength evaluation, and stability of slopes. Laboratory practice in sampling, classification, and testing for index properties. Introduction to experimental methods in permeability, consolidation, and shear testing. *Prerequisite:* 140. Three hours.

174 TRANSPORTATION ENGINEERING (3-0) Relation of highway, waterway, railway, pipeline, and airway transportation. Consideration of economic and planning studies, soils, drainage, highway and airport surfaces, geometric design of modern highways. Design of municipal airports with access roads. *Prerequisite:* 173. Three hours.

175 INDETERMINATE STRUCTURES I (3-0) Analysis of statically indeterminate structures by consistent deformation, least work, slope deflection, and moment distribution; prefaced by determinations of deflections by virtual work, moment area,

conjugate beam, and Williot-Mohr diagram. Continuous structures and rigid frames considered. *Prerequisite:* 140. Three hours.

176 **ADVANCED STRUCTURAL DESIGN (3-3)** Advanced theory and design of structures with emphasis on continuous frames and trusses. Consideration of wind stress analysis, space frames, moment connections, and camber diagrams. Comparative studies of specifications for design in steel; aluminum design. Laboratory problems in design of steel building frames and continuous highway girder and truss bridges. *Prerequisite:* 175. Four hours.

231 **MECHANICS OF MATERIALS II (3-0)** Study of stresses and strains at a point under plane and three-dimensional loading using Mohr's circle; failure theories; energy methods; plastic design; buckling of plates and shells. *Prerequisite:* 130, 131. Three hours.

232 **ADVANCED DYNAMICS (3-0)** Study of Coriolis acceleration; gyroscopic forces; dynamic measurements; vibrations, earthquakes, and blast shocks on structures. *Prerequisite:* 130, Math. 211. Three hours.

234 **ADVANCED MECHANICS OF MATERIALS (3-0)** The theory of elasticity with applications to curved beams, combined stresses, torsion of non-circular sections; relaxation procedures. *Prerequisite:* 131, Math. 212. Three hours.

235 **PHOTOELASTICITY (2-3)** Development of the theories of photoelastic stress analysis; model similitude; correlation with other stress analysis techniques. Laboratory work on two-dimensional applications such as stress concentrations around holes, notches, and fillets. *Prerequisite:* 131, Math. 211. Three hours.

261 **HYDROLOGY (3-0)** Basic theory of precipitation, run-off infiltration and ground water; precipitation and run-off data; application of the data for use in development of natural water resources. *Prerequisite:* 162 or M.E. 142. Three hours.

262 **WATER POWER ENGINEERING (3-0)** Hydrologic, hydraulic, and geologic studies of water power sites; selection of turbines and equipment; economic considerations. *Prerequisite:* 162 or M.E. 142. Three hours.

273 **SOIL MECHANICS II (3-0)** Index and engineering properties of soils with emphasis on current research problems. Critical evaluation of the theories of ground water movement, frost action, consolidation, shearing strength, and stress distribution. Case histories and comparison of failure conditions with predictions based on laboratory tests. *Prerequisite:* 173. Three hours.

274 **SOIL ENGINEERING (3-0)** Applications of Soil Mechanics to special problems of earth structures and foundations. Topics considered include bearing capacity evaluation, earth pressures, stabilization, effects of vibratory loading, earth dam and roadway construction. *Prerequisite:* 273. Three hours.

275 **INDETERMINATE STRUCTURES II (3-0)** Continuation of 175 with applications to analysis of statically indeterminate structures starting with a brief review and proceeding to the analysis of indeterminate trusses, arches and frames. *Prerequisite:* 175. Three hours. II.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Engineering, Electrical

COLLEGE OF TECHNOLOGY

Professors Eckels (Chairman), and Smith†; Visiting Professor Stibitz; Associate Professors Hoilman and Shorey; Assistant Professor Chen; Messrs. Dudevair, Palmer and Snowman*

25-26 **ELECTRIC AND MAGNETIC CIRCUITS I (3-3)** Basic electric circuit elements and their behavior in d-c and a-c circuits with lumped constants. Magnetic circuits and electromagnetic interactions. *Prerequisite:* concurrent enrollment in Math. 21 and Physics 21 for 25, Math. 22 and Physics 22 for 26. Four hours.

101, 102 **ELECTRICAL ENGINEERING PRINCIPLES (3-3)** Principles of electric and magnetic circuits; application of these principles to the theory and performance of selected power, control and communication equipment. *Prerequisite:* Math. 22 and Physics 22, 101 for 102. Four hours.

109 **PHYSICAL ELECTRONICS (3-0)** Electron ballistics. Characteristics of vacuum tubes, gas tubes, phototubes, and solid state elements. Equivalent circuit of the class A amplifier. *Prerequisite:* 26 or 102 or Physics 242 and permission of instructor. Three hours.

110 **ELECTRONIC CIRCUITS (3-3)** Untuned voltage amplifiers, low and high frequency compensation, voltage and current feedback; untuned power amplifiers, single stage and push pull; tuned amplifiers class A and class C; oscillators-tuned circuit, phase shift, negative resistance, and crystal. *Prerequisite:* 109 and 125 or Physics 171, 241 and permission of instructor, and Math. 211. Four hours.

116, 117 **ELECTRIC MACHINES (3-3)** A study of the principal types of rotating machinery from the physical and mathematical standpoint. *Prerequisite:* E.E. 125. Four hours.

125 **ELECTRIC AND MAGNETIC CIRCUITS II (3-3)** Polyphase electric circuits, non-sinusoidal waves, iron core reactors and transformers, and applications. *Prerequisite:* 26 or Physics 242 and permission of instructor; concurrent enrollment in Math. 211. Four hours.

126 **ELECTRIC AND MAGNETIC CIRCUITS III** Electric circuits with distributed constants and of the transient behavior of electric and magnetic circuits. *Prerequisite:* 125 or Physics 242 and permission of instructor; Math. 211. Three hours.

203 **ADVANCED ELECTRONICS (4-0)** Modulation and detection of amplitude and angular modulated waves and their application to the transmission and reception of audio and video information. Square law and linear methods of amplitude modulation and detection, the heterodyne principle. Reactance tube, Armstrong and phasitron methods of angular modulation. Limiter and discriminator circuits. Analysis of special circuits for wave shaping and for computing operations. *Prerequisite:* 110. Three hours.

204 **ELECTROMAGNETIC WAVE THEORY** Maxwell's equations, the Poynting vector, guided waves and radiation. High frequency oscillators, the klystron, magnetron, and traveling wave tubes. *Prerequisite:* 110 and Math. 212. Three hours.

*On leave second semester.

†Acting Chairman second semester.

206 U.H.F. CIRCUITS (3-3) Circuits and techniques for use at ultra-high frequencies. *Prerequisite:* 203 and 225. Four hours.

207, 208 SPECIAL TOPICS (2-3) Formulation and solution of theoretical and practical problems dealing with electrical circuits, apparatus, machines or systems. *Prerequisite:* 125. Three hours.

209 TRANSIENT PHENOMENA (3-3) Mathematical investigation of transient phenomena in electrical and electromechanical circuits. *Prerequisite:* 126. Three hours.

210, 311 SERVOMECHANISMS First semester: A study of the theory, performance and stability of servomechanism systems of control. Second semester: Multiple loop systems; position control systems with load disturbances; synthesis of servo systems. *Prerequisite:* 101 or 116, 126 or Physics 242, Math 211 and permission of instructor; 210 for 311. Three hours.

211 ELECTRIC UTILITIES (3-0) Organization of the electrical utility; elementary corporate finance; economics of location, conductor size, station and line costs; rate structures; regulatory bodies. *Prerequisite:* senior standing in electrical engineering and permission of the instructor. Three hours.

212 POWER SYSTEMS (3-0) Machine and line transients; steady state and transient stability of power systems; relay systems; circuit breakers; lightning; fault studies; coordination of power and telephone systems. *Prerequisite:* senior standing in electrical engineering and permission of the instructor. Three hours.

214 INDUSTRIAL POWER APPLICATION (3-0) Design and application of d.c. and a.c. motor drives for industrial plants; magnetic and electronic controls; duty cycles; acceleration, retardation and braking; power supplies and distribution systems. *Prerequisite:* 102 or 117, and permission of instructor. Three hours.

225, 226 FILTERS, LINES AND FIELDS (3-3), (3-0) Behavior of electric filters, lines and fields with applications to power, communication and control systems. *Prerequisite:* 125 and 126, 225 for 226. Four hours, 225; three hours, 226.

230 CREATIVE ENGINEERING (4-0) Creative techniques and problem approach to applications of these methods to current industrial problems. *Prerequisite:* Math. 211, at least four hours in Electricity and Magnetism or Electrical Engineering in courses numbered above 100, and permission of instructor. Three hours.

231 TRANSISTORS (2-0) Fundamental principles of semi-conductor operation. P and N type conductivity; the PN junction; construction of the junction transistor. Circuit analysis of transistor operation in terms of hybrid parameters. Biasing methods for stabilization in multistage amplifiers. Equivalent circuits for high frequency operation; oscillators and pulse switching circuits. *Prerequisite:* 110. Two hours.

241 DIGITAL COMPUTER LOGIC, CIRCUITS, AND SYSTEMS The logical design of automatic digital computers treats computers as tools of applied mathematics. Brief review of the arithmetic and numerical analysis the designer needs; Boolean algebra as an aid to circuit design. Circuits and components for the transmission, storage and modification of information are discussed, and their combination into arithmetic units, memory devices, program controls and other major mechanisms is studied. Reference is made to the existing computer art as it appears in patents and

in commercially available computers for business and scientific computation. *Prerequisites:* 110 or Physics 171 and Math. 121. Three hours.

275 **SOLID STATE PHYSICAL ELECTRONICS** Electrical conduction phenomena in semi-conductors, junction transistors and thermionic emitters. The ideas developed are applied to various solid state devices. *Prerequisites:* 102 or 109 or Physics 172. Three hours. Dr. Chen.

281, 282 **SEMINAR** Discussion of advanced electrical engineering problems and current developments. *Prerequisite:* senior or graduate engineering enrollment. One hour.

301 **NONLINEAR SYSTEM ANALYSIS** Principal methods of solving nonlinear problems. Topological, analytical, graphical, and numerical methods; the general theory of nonlinear oscillation and stability; application of theory to numerous oscillatory problems. *Prerequisites:* Math 211 and degree in Physical Sciences or Engineering. Three hours. Dr. Chen.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of research topic under the direction of an assigned staff member culminating in an acceptable thesis. Credit as arranged.

Engineering, Mechanical

COLLEGE OF TECHNOLOGY

Professor Outwater (Chairman); Associate Professors Duchacek, Marshall, and Tuthill;
Assistant Professor Carpenter; Mr. West*

3, 4 **ENGINEERING PROBLEMS** Nature of engineering principles and the kinds of work done in the fields of engineering. Development of skill and systematic methods in the solution of problems related to engineering. Enrollment restricted to freshman engineering students. *Prerequisite:* 3 for 4. One hour.

51, 52 **MANUFACTURING PROCESSES (1-3)** Metal machining, casting, welding forming and inspection methods including economic factors and choice of methods. Laboratory involves further study of variables, applications and limitations of some of the more common processes. *Prerequisite:* E.G. 2; 51 for 52. Two hours.

84 **MECHANICAL INSTRUMENTATION (1-0)** Engineering measurement, laboratory instruments, their use, limitation and calibration. *Prerequisite:* concurrent enrollment in 92. One hour.

92 **THERMODYNAMICS I (2-0)** Engineering thermodynamics with particular emphasis on energy forms, the development of thermodynamics laws, equilibrium, fixed and variable mass systems, reversibility, and entropy. *Prerequisite:* Math. 21, Physics 21. Two hours.

102 **INDUSTRIAL MATERIALS (2-3)** Fundamentals of ferrous and non-ferrous physical metallurgy, and non-metallic materials. The correlation of the microscopic structure and physical properties of metals, alloys and plastics with their heat treatments and uses. *Prerequisite:* Chem. 2; Physics 22. Three hours.

*On leave 1959-60

111 THERMODYNAMICS II (3-3) Properties and processes of fluids; the perfect gas, and approximate relationships for real gases; application of thermodynamics principles to areas such as combustion, mixtures, power cycles, gas compression, and refrigeration. Laboratory on problems and analysis. *Prerequisite:* 92. Four hours.

113 THERMODYNAMICS AND HEAT TRANSFER (3-0) Fundamental principles of engineering thermodynamics; application of these principles to thermodynamic cycles, prime movers, compressors, heat transfer. *Prerequisite:* Physics 21; Math. 21. Three hours.

117 MECHANICAL ENGINEERING LABORATORY (0-3) Coordinated with ME 111 to verify and demonstrate thermodynamic principles and applications. Steam calorimetry, the first law with both fixed and variable flow, combustion, air compression, refrigeration. *Prerequisite:* concurrent enrollment in 111. One hour.

131 MECHANISMS (3-3) Analysis and synthesis of displacements, velocities, and acceleration in machines; application of analyses to cams, gears, and other mechanisms, with emphasis on graphical methods. Study of rolling contact, cam and gear design, flexible connectors, computing mechanisms, and miscellaneous mechanisms. *Prerequisite:* E.G. 2; C.E. 130. Four hours.

134 MACHINE DESIGN I (3-0) Statically indeterminate members, deflection of beams, columns, connections, energy methods; theories of failure, continuous beams, thick-walled cylinders. *Prerequisite:* 131, C.E. 131. Three hours.

142 FLUID MECHANICS (3-0) Fluid statics. Kinematics of fluid flow; thermodynamics of steady flow of any fluid; dynamics of an ideal fluid; viscosity; dimensional analysis and dynamic similarity; pipe and channel flow for incompressible fluids; momentum and propulsion; resistance and lift of immersed bodies; compressible fluid flow in nozzles; mathematical study of fluid motion. *Prerequisite:* 111 or 113; C.E. 130. Three hours.

151 MACHINE DESIGN II (3-3) A continuation of 134 with emphasis on the dynamics and vibration of machines. Design problems correlating various engineering fundamentals and considering practical limitations. *Prerequisite:* 52, 134. Four hours.

164 AIR CONDITIONING (3-3) Application of the fundamental principles of thermodynamics, heat transfer and fluid mechanics to the design and performance of air conditioning systems and equipment. *Prerequisite:* 111 or 113; 142. Four hours.

174 INDUSTRIAL ENGINEERING (3-0) Principles of industrial organization, plant facilities and layout, production and quality control, motion and time study, wage incentives and job evaluation. *Prerequisite:* Inspection trip. Three hours.

175 MOTION AND TIME STUDY (3-0) Principles and methods of analyzing work; job improvement; stop watch studies; elemental and predetermined time standards and miscellaneous related topics. *Prerequisite:* junior or senior standing. Three hours.

176 PLANT ORGANIZATION (2-6) Analysis of plant requirements as to location, layout and materials handling; plant services and maintenance. *Prerequisite:* junior or senior standing. Four hours.

181 SEMINAR (2-0) Discussions of the mechanical engineering profession, the ethics, responsibilities, and status of members of the profession and timely activities of present day practice. Current issues of pertinent publications are used as collateral reading and as guides in the study and discussion of contemporary progress in the field. *Prerequisite:* senior standing. Two hours.

192 THESIS (0-9) Investigation of a research or design project under the supervision of an assigned staff member culminating in an acceptable thesis. *Prerequisite:* senior standing and the approval of the Department. Three hours. I or II.

243 ADVANCED FLUID MECHANICS AND FLUID MACHINERY (3-3) Steady compressible flow; compressible flow in pipes and channels with heat and friction; boundary layer effects; general features and factors influencing design of fluid machinery; performance features of pumps, compressors, fluid couplings, torque converters, turbines; fluid vibrations; mathematics of two dimensional flow, vorticity and circulation, stream functions. *Prerequisite:* 142 and Math. 211. Four hours.

246 AERODYNAMICS (3-0) Application of the principles of fluid mechanics to the design and performance of aircraft; fluid dynamics; experimental facilities; airfoil characteristics; aspect ratio and plan-form influences; viscosity phenomena as applied to boundary layer; transition and separation on various shapes; compressibility phenomena; the optimum airfoil; performance. *Prerequisite:* 142. Three hours.

262 ADVANCED HEAT POWER ENGINEERING (4-3) Application of theoretical power cycles to actual plant cycles and equipment, including turbines, internal combustion engines, gas turbines, boilers, accessories, etc. Performance characteristics; analysis and selection of equipment; development of station energy balances; economic factors. *Prerequisite:* 111 or 113, concurrent enrollment in 266. Five hours.

266 HEAT TRANSFER (3-0) Fundamental principles of heat transfer; conduction, convection, radiation; steady and unsteady state; the electric analogy; applications to heat transfer equipment. *Prerequisite:* 111 or 113 and Math. 211. Three hours.

267, 268 ADVANCED HEAT ENGINES (3-0) Advanced theoretical thermodynamics with applications in specific types of heat engines according to the interests of the students. *Prerequisite:* 111 and permission of department. Three hours.

294 ENGINEERING ANALYSIS (0-3) Application of scientific principles to the analysis of comprehensive engineering problems. Emphasis given to the development of a well ordered logical approach to the statement and solution of problems and to the conclusions and decisions involved. *Prerequisite:* senior standing. One hour.

301 ADVANCED MACHINE DESIGN (3-0) Advanced mechanics of materials and applications to mechanical design according to the interests of the student. *Prerequisite:* 151. Three hours. I or II.

302 ADVANCED MECHANICS Development of the foundations of mechanics leading to Hamilton's principle and LaGrange's equations; vibration and stability of systems with many degrees of freedom; gyroscopic effects in mechanical systems; systems with variable coefficients and non-linear systems. *Prerequisite:* 151. Three hours.

311 ADVANCED MECHANICAL STRUCTURES I The torsion problem and mem-

brane analogy; thick cylinders and rotating discs; beams on elastic foundation and the bending of plates and shells. Molecular engineering. *Prerequisite:* 151, Math. 211. Three hours.

322 **ADVANCED MECHANICAL STRUCTURES II** Stress and strain at a point in three dimensions; the theory of elasticity with two-dimensional examples; development of strain energy method with applications to beams, curved bars and plates; elastic bodies in contact. Advanced properties of materials. *Prerequisite:* 311. Three hours.

332 **COMPRESSIBLE FLOW** One-dimensional compressible flow; unsteady fluid motions; two-dimensional flow at subsonic and supersonic speeds. *Prerequisite:* 243. Three hours.

334 **TURBINES** Application of engineering science to the design of turbines. Review of thermodynamics and fluid mechanics of flow phenomena; fundamentals of the design of turbines, compressors, heat exchangers. *Prerequisite:* 332. Three hours.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Engineering, Division of Graphics

COLLEGE OF TECHNOLOGY

Assistant Professor Paquet

1 **MECHANICAL DRAWING (0-6)** Fundamentals of drafting; use of instruments, freehand lettering, orthographic projection, sections, auxiliary views, dimensioning, screw threads and elementary pictorials. Two hours.

1A **GRAPHICS (0-9)** Use of drafting methods in solving engineering, scientific and mathematical problems in addition to the conventional representational uses. Topics covered include those of course 1 plus projective constructions, periodic curves, graphical scales and nomography, empirical equations and graphical calculus. This course, a more comprehensive and modern treatment, may be elected in place of 1 by permission of the instructor. Three hours.

2 **DESCRIPTIVE GEOMETRY (0-6)** The fundamentals of descriptive geometry; point, line and plane problems, revolution, single curved, warped and double curved surfaces, intersection and development of surfaces. Two hours.

2A **DESCRIPTIVE GEOMETRY (0-9)** This course may be elected in place of 2 by permission of the instructor. A more comprehensive coverage with emphasis on practical applications; new methods in the field of pictorials. Three hours.

6 **NOMOGRAPHY (0-4)** Theory and construction of graphical computing charts. *Prerequisite:* 1 or 1A and 2 or 2A. Two hours.

English

COLLEGE OF ARTS AND SCIENCES

Professors Pope (Chairman), Bogorad, Hughes, Marston, and Trevithick; Associate Professors Bandel, Long, McArthur, and Wainwright; Assistant Professors Cochran, Jones, and Philbrick; Miss Brooks, Mrs. Burr, Messrs. Arnold, Holder, Jameson, O'Hara, Orth, and Weaver

1-2 **FRESHMAN ENGLISH** Study and discussion of selected literary works and writing compositions related to them, to encourage reading with understanding and

enjoyment and to develop clear and effective expression. Required of all freshmen. Three hours. The staff.

13 PERIODICAL WRITING A study of newspaper and magazine journalism, including analysis of various types of news stories, features, and articles and emphasizing practice in journalistic writing. *Prerequisite:* 1-2. Three hours. I, II. Dr. Cochran.

16 EXPOSITORY WRITING Writing and analysis of expository essays. *Prerequisite:* 1-2. Three hours. I, II. The staff.

18 CREATIVE WRITING Writing short stories, novels, poetry, plays, and imaginative essays. Instruction is guided by the particular needs and talents of the students. *Prerequisite:* 1-2. Three hours. Dr. Bandel.

25, 26 WORLD LITERATURE A detailed study, in English translation, of ten masterpieces of world literature which have made significant contributions to the development of western culture. Lectures, discussions, and reports. *Prerequisite:* 1-2. Three hours. The staff.

27, 28 ENGLISH-AMERICAN LITERATURE Selected English and American authors from early to modern times. Required of students concentrating in English. Lectures, discussions, and reports. *Prerequisite:* 1-2. Three hours. The staff.

102 MEDIEVAL LITERATURE IN TRANSLATION Representative literature of the Middle Ages, excluding Chaucer. Lectures, discussion, and reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Hughes. Alternate years, 1961-62.

201 CHAUCER The principal works of Chaucer, with emphasis on Chaucer's literary scope, talents, and position in medieval literature. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Hughes.

206 RENAISSANCE DRAMA Drama in England from its beginning to 1642, exclusive of Shakespeare. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Long. Alternate years, 1960-61.

207-208 SHAKESPEARE Literary study and textual interpretation of most of Shakespeare's works. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Pope.

211 RENAISSANCE POETRY Major poets of Tudor and Stuart England, from Wyatt and Surrey to Donne and his followers, with emphasis on Spenser and the development of Elizabethan lyric poetry. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Long. Alternate years, 1960-61.

212 MILTON The works of Milton including *Paradise Lost*, *Paradise Regained*, *Samson Agonistes*, some of the minor poems, and selections from the prose works. Lectures, discussions, and reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Bogorad. Alternate years, 1961-62.

217 RESTORATION AND EIGHTEENTH-CENTURY DRAMA Development of English drama from Dryden to Sheridan. The lectures, discussions, and reports consider the literary and theatrical qualities of representative plays. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Bogorad. Alternate years, 1960-61.

218 RESTORATION AND EIGHTEENTH-CENTURY PROSE AND POETRY The works,

including selected novels, of significant writers from Dryden to Johnson. Particular emphasis on the development of the essay, the satires of Pope and Swift, and the works of the Johnson-Boswell circle. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Bogorad. Alternate years, 1960-61.

221, 222 **THE ROMANTIC PERIOD** First semester: development of the Romantic Movement through Wordsworth and Coleridge; second semester: Byron, Shelley, Keats, and other Romantic poets and prose-writers. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Pope. Alternate years, 1961-62.

227, 228 **ENGLISH NOVEL** English fiction from its origins through the nineteenth century. Masterpieces are stressed and read critically. *Prerequisite:* 25, 26 or 27, 28. Three hours. Mr. Wainwright. Alternate years, 1961-62.

231, 232 **VICTORIAN LITERATURE (1832-1900)** Lives and works (except novels) of the significant writers of the era by lectures, discussion, and reports. Outstanding poets and prose writers are studied as spokesmen of their own age and harbingers of the present one. *Prerequisite:* 25, 26 or 27, 28. Three hours. Mr. Wainwright. Alternate years, 1960-61.

237 **MODERN NOVEL** Representative British and American novelists since 1915. *Prerequisite:* 25, 26 or 27, 28. Three hours. I, II. Dr. Marston.

238 **MODERN DRAMA** European and American plays which represent the principal trends in the dramatic renaissance of the late nineteenth and the twentieth centuries. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Bandel.

239 **MODERN POETRY** *Prerequisite:* 25, 26 or 27, 28. Three hours. Mr. Wainwright.

240 **MODERN SHORT STORY** Short stories of outstanding modern writers; recent techniques and trends in this type of literature. Limited to seniors, except with permission of the instructor. *Prerequisite:* 25, 26 or 27, 28. Three hours. Mr. Wainwright.

251, 252 **AMERICAN NOVEL** Masterpieces of nineteenth-century American fiction selected on the basis of literary merit. Lectures, class discussions, oral and written reports. First semester: Hawthorne, Melville, and others; second semester: Mark Twain, Howells, James and others. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Trevithick. Alternate years, 1960-61.

253 **AMERICAN COLONIAL LITERATURE** Intellectual and literary origins, in the seventeenth and eighteenth centuries, of American culture. Works of Edwards, Taylor, Franklin, Woolman, Hamilton and Jefferson. Lectures, discussions, oral and written reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Trevithick. Alternate years, 1961-62.

254 **EMERSON, THOREAU AND THEIR CIRCLE** The essays, journals, and poetry of Emerson, and Thoreau's *Walden*. Minor writers in the group will receive briefer treatment. Lectures, discussions, oral and written reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Trevithick. Alternate years, 1961-62.

256 **LITERATURE OF THE AMERICAN FRONTIER** Frontier, local-color and regional writing in America from the eighteenth century to the First World War, including Parkman, Harte, Mark Twain, Garland and others. Lectures, discussions and reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Marston. Alternate years, 1961-62.

258 **AMERICAN POETRY** Major American poets from the 18th century to the First World War, including Poe, Whitman, Emily Dickinson, Robinson, Frost, and others. Lectures, discussions and reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Marston. Alternate years, 1960-61.

260 **MODERN ENGLISH** Development of Modern English; Modern English usage, with readings of illustrative selections. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. McArthur. Alternate years, 1961-62.

262 **OLD ENGLISH** The sounds, words and structure of Old English; simple prose texts and selected passages from *Beowulf*. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. McArthur. Alternate years, 1960-61.

271 **BIBLIOGRAPHY** Methods of literary study, research, and scholarship. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Pope. Alternate years, 1960-61.

272 **HISTORY OF CRITICISM** Principles and theories of criticism from Aristotle to the twentieth century. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Jones. Alternate years, 1961-62.

273 **TECHNIQUE AND CRITICISM OF POETRY** Poetic theory with close analysis of selected poems, past and present, designed to show their organic structure, the relation between poetic intention and sense, mood, tone, imagery, stanzaic form, and meter. Lectures, discussions, reports. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. Bogorad. Alternate years, 1961-62.

275-276 **CREATIVE CRITICISM** A seminar in modern critical techniques, with creative application of these techniques through the writing of critical papers on poetry, drama, and fiction both contemporary and traditional. *Prerequisite:* 25, 26 or 27, 28. Three hours. Dr. McArthur.

277-278 **ADVANCED CREATIVE WRITING** Development of extended projects in creative writing such as a novel, a group of short stories or plays, or a sequence of poems. *Prerequisite:* 25, 26 or 27, 28, and one of the following: 13, 16 or 18. Three hours. Dr. McArthur.

282 **SEMINAR FOR PROSPECTIVE TEACHERS OF ENGLISH** Grammar and language; literary interpretation and criticism; allied problems useful to teachers of English. Open to seniors and graduate students. *Prerequisite:* 25, 26 or 27, 28 and Secondary Education 180. Three hours. Dr. Hughes.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Forestry

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professors W. R. Adams (Chairman); Associate Professor Whitmore; Assistant Professor Thompson

2 **ELEMENTS OF FORESTRY** Specialization in forestry and conservation. Open to preforestry students only. Three hours. Mr. Thompson.

3 DENDROLOGY (0-3) Field identification and characteristics of the more important forest trees and formation of forest types. One hour. Dr. Adams.

4 DENDROLOGY OF ANGIOSPERMS (2-3) Classification and silvical characteristics of the more important broad leaf forest trees of North America. Twig identification. *Prerequisite:* 3. Three hours. Mr. Thompson.

5 DENDROLOGY OF GYMNOSPERMS Classification and silvical characteristics of the more important native and exotic coniferous forest trees of North America. *Prerequisite:* 3. Two hours. Mr. Thompson.

20 FOREST FIRE CONTROL Forest fire behavior as influenced by fuels, weather, topography; causes and effects of fire; fire danger measurement; methods of preventing and controlling fires; Use of fire in forest management. Two hours. Mr. Whitmore.

22 ELEMENTS OF WOODS PRACTICE Use and care of forestry instruments and woodsman's tools; elementary map making; silvicultural techniques; harvesting and wood utilization. Required of all preforestry freshmen. Forty-four hours a week for two weeks preceding enrollment for the first semester of the sophomore year. Two hours. The staff.

25 FOREST MENSURATION (1-3) Timberland surveying, timber estimating, log scaling, and growth determinations of trees and stands. Graphical presentation of forestry data. *Prerequisite:* 4 or permission of the department. Two hours. Messrs. Whitmore and Thompson.

26 FOREST PRODUCTS (2-3) Forest products other than lumber. Wood products manufacture including veneer and plywood, pulp and paper. Wood preservation; naval stores; maple products. Forest products marketing practices. *Prerequisite:* 5 or permission of the department. Three hours. Mr. Whitmore.

103-104 WOODLAND MANAGEMENT (2-3) Establishment, protection, and management of farm woodlands and small forest areas. *Prerequisite:* junior standing. Three hours. Dr. Adams and Mr. Whitmore.

197, 198 SENIOR RESEARCH Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

208 BIOLOGICAL STATISTICS Application of statistics to the analysis of biological data; interpretation of statistical analysis. *Prerequisite:* Math. 9; senior standing. Three hours. Mr. Adams.

381, 382 SPECIAL TOPICS Advanced readings and discussion of forestry research literature. 3 hours. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

General Literature

COLLEGE OF ARTS AND SCIENCES

51 **GREEK LITERATURE IN TRANSLATION** Lectures on the development of various branches of Greek literature and on its chief authors, with emphasis on Homer and the drama. Readings in standard translations from the major authors. No knowledge of Greek required. *Prerequisite:* junior standing and one survey course in any literature. Three hours. Dr. Gilleland.

52 **LATIN LITERATURE IN TRANSLATION** Lectures on the development of Latin literature and on the principal Latin authors. The relation of Latin literature to Greek and English literature. Readings in standard translations from the major authors. No knowledge of Latin required. *Prerequisite:* junior standing and one survey course in any literature. Three hours. Dr. Gilleland.

62 **GERMAN LITERATURE IN TRANSLATION** Lectures on the development of German literature; reading and discussion of representative works. No knowledge of German required. *Prerequisite:* junior standing and one survey course in any literature. Three hours. Mr. Kahn.

72 **ROMANCE LITERATURE IN TRANSLATION** Comparative study of various literary movements in France, Spain, and Italy. *Prerequisite:* junior standing and one survey course in any literature. Three hours.

Geology

COLLEGE OF ARTS AND SCIENCES

Professor Doll (Chairman); Associate Professor Doten

1-2 **INTRODUCTORY GEOLOGY (3-2)** Composition, structure, and surface forms of the earth, and the agencies active in their production; general survey of the earth's history as recorded in the rocks. Field trips. Four hours.

11 **MINERALOGY (2-3)** Crystallographic, chemical and physical properties of minerals, and their identification by means of the blowpipe technique. *Prerequisite:* 1-2. Three hours.

14 **PETROLOGY (2-2)** Origin and characteristics of igneous, sedimentary, and metamorphic rocks and related ore deposits. *Prerequisite:* 11. Three hours.

21 **ENGINEERING GEOLOGY (2-2)** The recognition of common minerals and rocks; rock structures and their effects on engineering problems. Required of students in civil engineering, not open to others. Three hours.

101 **OPTICAL MINERALOGY (1-4)** Optical properties of non-opaque minerals and their determination by means of the polarizing microscope. *Prerequisite:* 14. Three hours.

102 **PETROGRAPHY (1-4)** Classification, origin and composition of the more important igneous, sedimentary and metamorphic rocks, by means of the polarizing microscope and thin sections. *Prerequisite:* 101. Three hours.

111 **STRUCTURAL GEOLOGY (2-2)** Structural features of the earth's crust produced by earth movements. Mechanics of folding, fracturing, faulting, and rock flowage, and the relation of such structures to mountain building. *Prerequisite:* 14. Three hours.

112 **FIELD GEOLOGY (1-6)** Field methods in the geologic mapping of an assigned area. Conference weekly on the problems and progress of the field work; written report and a field map of the area. *Prerequisite:* 111. Three hours.

121 **PALEONTOLOGY (2-2)** Invertebrate fossils; their evolution, morphology and classification; their importance in the interpretation of earth history. *Prerequisite:* 1-2. Three hours. Alternate years, 1960-61.

151-152 **ECONOMIC GEOLOGY (2-2)** Characteristics, occurrence, distribution, production, and uses of the more important mineral resources. First semester: non-metallics; second semester: metallics. Trips to localities of economic interest. *Prerequisite:* 111. Three hours.

207 **IGNEOUS GEOLOGY (2-2)** Paragenesis of igneous rocks; laboratory work on selected suites of specimens. *Prerequisite:* 102. Three hours. Alternate years, 1961-62.

208 **METAMORPHIC GEOLOGY (2-2)** Metamorphic processes and types of metamorphic rocks, with appropriate laboratory study of metamorphic suites. *Prerequisite:* 102. Three hours. Alternate years, 1961-62.

215 **GEOMORPHOLOGY (2-2)** The land forms of the surface of the earth and their origins; external and internal forces modifying the earth. The physiographic provinces of North America. *Prerequisite:* 14. Three hours. Alternate years, 1961-62.

216 **GLACIAL GEOLOGY (2-3)** The origin, mechanics and effects of past and present glaciations. *Prerequisite:* 215. Three hours. Alternate years, 1961-62.

223 **SEDIMENTATION (2-2)** Processes active in the erosion, transportation and deposition of sediments, their consolidation into sedimentary rocks, and methods of sedimentary petrology. *Prerequisite:* 14. Three hours. Alternate years, 1960-61.

224 **STRATIGRAPHY (2-2)** Sequential development and distribution of the sedimentary rocks. *Prerequisite:* 223. Three hours. Alternate years, 1960-61.

281-282 **SEMINAR** Review and discussion of current geological literature. Open to graduate students and seniors by permission. One hour. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

German

COLLEGE OF ARTS AND SCIENCES

Professor White (Chairman); Assistant Professors Kahn, Webster, and Wurthmann

1-2 **ELEMENTARY GERMAN** Emphasis on the spoken language of everyday use. Oral and written practice in speaking, reading, and comprehension, based on the memorization of texts in the form of dialogues. Tape recordings of all materials are

available in the language laboratory as an aid to speaking and comprehension. *Credit is allowed only if German 11-12 is also completed.* Four hours. The staff.

11-12 **INTERMEDIATE GERMAN** Reading and discussion, as far as possible in German, of selected prose with review of grammar and practice in translating technical expository prose. Emphasis on development of facility in reading; knowledge of idioms; auditory comprehension. *Prerequisite:* 1-2 or equivalent. Three hours. The staff.

101-102 **INTRODUCTION TO GERMAN LITERATURE** Selected works of Lessing, Goethe, and Schiller. Survey of the development of German literature from the beginnings to the twentieth century with practice in hearing, writing, and speaking German. *Prerequisite:* 11-12. Three hours. Dr. Webster.

121-122 **COMPOSITION AND CONVERSATION** Guided conversation, discussion, and oral and written drill in German with emphasis on increasing oral and written command of the language. Free composition, oral reports, and translation into German are required. *Prerequisite:* 11-12 or equivalent and permission of the instructor. Three hours. Mr. Wurthmann.

131-132 **SCIENTIFIC GERMAN** Development of ability to read accurately and efficiently original German in the field of each student's scientific interest. *Prerequisite:* 11-12 or equivalent. Three hours. Mr. Wurthmann.

205 **GOETHE'S FAUST** Reading, analysis, and interpretation of Parts I and II of *Faust*. Readings in other works by Goethe and on the Faust theme in German and other literatures. *Prerequisite:* 101-102. Three hours. Dr. White. Alternate years 1961-62.

206 **GERMAN LITERATURE: 1800-1850** Reading and interpretation of works representative of the main literary trends of this period. Lectures and reports on selected poetry, prose works and dramas by Kleist, the Romantics, Grillparzer, Heine, and others. *Prerequisite:* 101-102. Three hours. Dr. White. Alternate years, 1961-62.

207 **GERMAN LITERATURE: 1850-1900** Reading and interpretation of works of the period in poetry, prose and drama. Lectures and reports on selected works by such representative authors as Hebbel, Keller, C. F. Meyer, Nietzsche, Stifter, and Wagner. *Prerequisite:* 101-102. Three hours. Dr. White. Alternate years, 1960-61.

208 **GERMAN LITERATURE: THE 20TH CENTURY** Readings, reports, lectures on authors of the period in poetry, prose and drama. Representative works of Brecht, George, Hauptmann, Hofmannsthal, Kafka, Thomas Mann, Rilke, and others will be read. *Prerequisite:* 101-102. Three hours. Dr. White. Alternate years, 1960-61.

221-222 **ADVANCED COMPOSITION AND CONVERSATION** Three hours. Mr. Kahn. Not offered 1960-61.

232 **SEMINAR FOR PROSPECTIVE TEACHERS OF GERMAN** Problems in the linguistic structure of German. Elementary introduction to the science of linguistics through an analysis of modern, colloquial German with reference to problems useful to teachers. Open to seniors and graduate students. *Prerequisite:* 121-122 or the equivalent. Three hours. Dr. White.

281-282 **SENIOR SEMINAR** Readings and research. Required of all senior concentrators. One hour.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Hebrew

COLLEGE OF ARTS AND SCIENCES

1-2 **ELEMENTARY HEBREW** The spoken language of everyday use with oral, aural and written practice in speaking, reading, and comprehension based on the memorization of texts in the form of dialogues. Three hours. Mr. Kahn. Alternate years, 1961-62.

11-12 **INTERMEDIATE HEBREW** Reading, translation, and discussion in Hebrew of texts selected to show the development of Hebrew culture from Biblical times to the present. Three hours. Mr. Kahn. Alternate years, 1960-61.

History

COLLEGE OF ARTS AND SCIENCES

Professor Schultz (Chairman); Associate Professors Pooley, Putnam and Bassett; Assistant Professors Daniels and Davison; Messrs. Felt, Kirwin and Newhall

1, 2 **ANCIENT HISTORY** Ancient Greek and Roman worlds. Three hours. Dr. Davison.

5, 6 **MEDIEVAL EUROPE** Europe from the late Roman Empire to the Renaissance, with emphasis on political and cultural developments. *Prerequisite:* 5 for 6. Three hours. Mr. Pooley.

11, 12 **EUROPEAN CIVILIZATION** European ideas and institutions in world history. *Prerequisite:* 11 for 12. Three hours. Dr. Felt, Messrs. Pooley, Newhall and Kirwin.

21-22 **THE AMERICAN COLONIES** American history to 1783. *Prerequisite:* sophomore standing. Three hours. Dr. Bassett.

23, 24 **HISTORY OF THE UNITED STATES** American history since 1783. *Prerequisite:* sophomore standing; 23 for 24. Three hours. Dr. Schultz, Dr. Felt, and Miss Keppel.

26 **HISTORY OF VERMONT** Vermont since its foundation. *Prerequisite:* completion of or enrollment in 23. One hour. Dr. Bassett.

40 **BIOGRAPHY** The biographical approach to history. *Prerequisite:* Senior standing. Three hours. Dr. Schultz.

111 **THE RENAISSANCE** Fifteenth-Century Europe. *Prerequisite:* six semester hours in European history. Dr. Evans, in 1960-61.

112 **THE REFORMATION** Sixteenth-Century Europe. *Prerequisite:* six semester hours in European history. Three hours. Dr. Bassett.

123-124 **AMERICAN HISTORY SINCE 1900** *Prerequisite:* six semester hours in history including 12 or 24. Three hours. Dr. Putnam.

201, 202 **ENGLISH HISTORY** England in world history since Roman days. *Prerequisite:* twelve semester hours in history, including 12. Three hours. Dr. Schultz. Alternate years, 1960-1961.

213-214 **CANADIAN HISTORY** Canadian development from the French exploration and settlement to the present; evolution of self-government and relations with the United States. *Prerequisite:* twelve semester hours in history, including 12. Three hours. Dr. Putnam.

215, 216 **EUROPE IN THE MODERN AGE** European political, social, and intellectual history; emphasis on the eighteenth and the nineteenth centuries. *Prerequisite:* twelve semester hours in history, including History 12. Three hours. Dr. Evans in 1960-61.

227-228 **AMERICAN FRONTIERS** The westward movement to the end of the nineteenth century and its influence in shaping American ideals and institutions. *Prerequisite:* twelve semester hours in history. Three hours. Dr. Putnam.

243, 244 **RUSSIAN HISTORY** Czarist Russia in first semester; Soviet Russia in second semester. *Prerequisite:* twelve semester hours in history, including 12 for 243; 243 or permission of instructor for 244. Three hours. Dr. Daniels.

251-252 **CONTEMPORARY HISTORY** The world since 1918, stressing the background of current events. *Prerequisite:* twelve semester hours in history, including 12. Three hours. Dr. Evans, in 1960-61.

257, 258 **AMERICAN STATESMEN** Thought and practical politics of American statesmen. *Prerequisite:* twelve semester hours in history, including 23 for 257; 24 for 258. Three hours. Dr. Schultz. Alternate years, 1961-62.

261-262 **LATIN-AMERICAN HISTORY** Political, social and economic development since the Spanish Conquest. *Prerequisite:* twelve semester hours in history, including 12. Three hours. Dr. Putnam.

281, 282 **SEMINAR** Advanced study in American history. By permission. Three hours. Dr. Bassett.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Home Economics

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Associate Professor Trotter (Chairman); Emeritus Professor Bailey; Associate Professors Brown, Caldwell,* Knowles, Vernon and Williams; Assistant Professors Newton, Reid, and Wakefield; Instructors Hanline and Wilson; Mmes. Adams, Curley, and Lepeschkin

* On leave 1959-60.

Home Management

51 **HOUSE PLANNING** Urban and rural housing in the United States. Selection of shelter, including site location, problems of financing, utilization of space and materials. Three hours. Miss Knowles.

53-54 **HOUSEHOLD TECHNOLOGY (1-2)** Application of scientific principles to the selection, operation and care of household equipment. Two hours. Miss Knowles.

102 **HOME MANAGEMENT THEORY** The managerial process applied to problems of the home and family. Special consideration given to use of time and energy. Two hours. Miss Knowles.

103 **FAMILY ECONOMICS** Management of family income and capital. Concern for judging quality of textiles and clothing. Purchasing aspects of the food supply. *Prerequisite:* Economics 12. Three hours. Misses Bailey, Knowles, Newton.

153 **HOME MANAGEMENT RESIDENCE** Practical application of home management and group living in the Home Management Residence. A charge of \$82.50 is made to cover partial cost of board and operating expenses. Students not living on campus are also charged \$40.00 for room rent. *Prerequisite:* 102, 137. Three hours. I, II. Miss Hanline.

203 **HOME MANAGEMENT PROBLEMS** Application of economic and sociological principles to some problems of the home and family. *Prerequisite:* 102, 103, Psychology 1. Three hours. Misses Knowles and Hanline.

Home Economics Education

115 **INTRODUCTION TO HOME ECONOMICS EDUCATION** Homemaking education in relation to philosophy, professional contacts, and growth toward teacher competencies. Observation of secondary school programs, place of homemaking in general education. *Prerequisite:* junior standing. Two hours. Miss Hanline.

165 **METHODS OF TEACHING** Methods of teaching homemaking in junior and senior high schools, and of general administration of homemaking departments in secondary schools. *Prerequisite:* 115, Psychology 1. Three hours. Miss Brown.

166 **SPECIAL PROBLEMS IN HOME ECONOMICS EDUCATION** Individual investigation of a problem selected to meet special needs of students. *Prerequisite:* 165. Two or three hours. Misses Brown and Hanline.

168 **STUDENT TEACHING** Supervised observation and teaching in approved secondary schools in Vermont. *Prerequisite:* 165. Seven hours. Miss Brown.

169 **DEMONSTRATION TECHNIQUES (0-4)** Practice in the presentation of information and the teaching of skills by visual methods. *Prerequisite:* junior standing. Two hours. I, II. Miss Knowles.

216 **TEACHING ADULTS (1-2)** Problems of organization and of teaching classes in home economics to meet the needs of adults; supervised experience in techniques of teaching adults. *Prerequisite:* 165 and either Education 145, 146 or Agricultural Education 100. Two hours. Miss Brown.

Family Living

111 CHILD DEVELOPMENT (2-2) Growth and development of the child within the family group. Observation of children of pre-school age. *Prerequisite:* Psychology 1; junior standing. Three hours. I, II. Dr. Vernon, Miss Wilson.

161 FAMILY RELATIONSHIPS The changing structure and functions of the American family; effects of interpersonal family relationships on the behavior and personality of the developing individual; periods of courtships, engagement and marriage. *Prerequisite:* Psychology 1. Three hours. I, II. Dr. Vernon.

Clothing and Textiles

22 CLOTHING SELECTION AND CONSTRUCTION (1-4) Selection of clothing to meet individual needs in relation to design and appropriateness of dress. Development of clothing construction techniques. Three hours. Misses Newton and Caldwell.

73 PATTERN DESIGN AND ADVANCED CONSTRUCTION (0-6) Techniques of designing and altering flat patterns. Advanced construction techniques and original design. *Prerequisite:* 22. Three hours. I, II. Miss Reid.

83 SURVEY OF TEXTILES (2-2) Fibers, their properties and manufacturing processes. Identification, care and use of clothing and household fabrics. Three hours. Miss Newton.

123 TAILORING (0-6) Construction techniques with emphasis on tailoring problems. *Prerequisite:* 73. Three hours. Miss Newton.

182 ADVANCED TEXTILES (1-4) Historical and sociological background to textiles and textile design; testing techniques and recent developments in the field. *Prerequisite:* 83. Three hours. Misses Newton and Reid.

221 COSTUME DESIGN AND DRAPING (1-4) Analysis of current fashion. Development of original design by draping techniques. *Prerequisite:* 73, 120, or permission of department. Three hours. Miss Caldwell.

Related Art

21 DESIGN (1-4) Theory and application of the elements and principles of design. Three hours. Misses Caldwell and Reid.

71 COSTUME DESIGN (0-4) Application of design fundamentals and principles to fashion planning. Techniques of fashion illustration. *Prerequisite:* 21. Two hours. Miss Reid.

120 HISTORY OF COSTUME (2-2) History of costume stressing the background philosophy and events of each period as reflected in dress. Adaptation of historic design to modern fashion. *Prerequisite:* 71. Three hours. Miss Caldwell.

130 HOME FURNISHINGS I (1-4) Application of design fundamentals to the problems involved in furnishing the home. *Prerequisite:* 21. Three hours. Miss Reid.

230 HOME FURNISHING II (1-4) Interior design; period furnishing, its present use and influence upon modern furnishing. *Prerequisite:* 130. Three hours. Miss Caldwell.

Food and Nutrition

35 SURVEY OF FOOD PREPARATION (2-4) Basic principles of food preparation; laboratory applications. Four hours. I, II. Miss Williams.

43 BASIC CONCEPTS OF FOOD AND NUTRITION Food selection in relation to human growth and health. Three hours. I, II. Miss Williams.

48 ELEMENTARY NUTRITION AND FOOD PREPARATION (3-2) For pre-clinical nursing students only. Not for college credit. Mrs. Curley.

S88 NUTRITION AND FOOD PREPARATION (2-2) Fundamentals of normal nutrition; laboratory experience in calculating food values; planning adequate meals; basic food preparation techniques. For Nursing students in summer session. Three hours. Miss Williams.

89-90 DIET MODIFICATION IN DISEASE Diet modification in the treatment of disease. The role of diet in the nursing care. Laboratory work is integrated with hospital experience. For students in Nursing. Integrated with Nursing Education 19-20 Medical and Surgical Nursing. One hour. Miss Williams.

135 ADVANCED FOOD PREPARATION (1-6) Scientific principles and fundamental processes underlying food preparation and preservation with practical applications. *Prerequisite:* 35, Chemistry 2. Three hours. Miss Williams.

137 MEAL MANAGEMENT (1-5) Principles and practice in planning, preparing and serving family meals at different cost levels. *Prerequisite:* 35, 43, 103 (may be taken concurrently). Three hours. I, II. Miss Williams.

144 APPLIED NORMAL NUTRITION (2-2) Nutrition and the individual; food habits and the problems involved in food selection to promote good nutrition. *Prerequisite:* 43. Three hours. Miss Williams.

236 EXPERIMENTAL FOOD PREPARATION (1-4) Methods and techniques in experimental work in foods. Independent laboratory study of problems in food preparation. *Prerequisite:* 135; Agricultural Biochemistry 172. Three hours. Miss Williams.

243 NUTRITION AND DIET (3-2) Human nutrition; the nutritive value of foods with application in calculating food requirements; diets for children, adults and family groups. *Prerequisite:* 135; Agricultural Biochemistry 172; Zoology 52. Four hours. Miss Bailey.

244 DIET THERAPY (2-2) Adaptations of the normal diet in conditions affected by or affecting the utilization of food. *Prerequisite:* 243. Three hours. Miss Bailey.

246 READINGS IN FOODS Critical survey of the literature on the recent developments in food research. *Prerequisite:* senior standing; 135; Agricultural Biochemistry 172. Two or three hours. The staff.

248 READINGS IN NUTRITION Critical survey of the literature on recent developments in nutrition. *Prerequisite:* 243. Two or three hours. The staff.

Institutional Management

139 GENERAL INSTITUTIONAL MANAGEMENT (1-2) Survey of the field; organization and management of small units; Personnel problems; floor plans and equipment

layouts; Practical applications of quantity food production. *Prerequisite:* 137. (Not open to Dietetic majors.) Two hours. Miss Wakefield.

186 QUANTITY FOOD PRODUCTION (1-4) Practical applications of principles, methods, and techniques used in quantity food production. *Prerequisite:* 135. Three hours. Miss Wakefield.

187 INSTITUTIONAL ADMINISTRATION Survey of the field; organization, management and personnel problems; time and motion studies; sanitation; food cost control. *Prerequisite:* 186. (May be taken concurrently.) Three hours. Miss Wakefield.

288 INSTITUTIONAL MARKETING AND ACCOUNTING (3-2) Advanced institutional management, marketing, accounting, equipment, floor plans, layouts and related material on design and furnishing in the different types of food services. *Prerequisite:* 186, 187. Four hours. Miss Wakefield.

Home Economics Seminars and Research

1 ORIENTATION Problems of adjustment to college life; evaluation of professional opportunities in home economics. One hour. Mrs. Trotter.

151 SENIOR SEMINAR Home economics as a profession. Professional ethics and responsibilities of a home economist. Readings and discussion of research and progress in the field. One hour. Mrs. Trotter.

197, 198 SENIOR PROBLEMS Supervised study in a field of home economics. Findings submitted in a form prescribed by the department. One to three hours. The staff.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged. The staff.

Horticulture

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Professor Blasberg (Chairman); Associate Professor Hopp; Mr. Calahan

51, 52 GENERAL HORTICULTURE (3-0) (2-2) First semester: the requirements of horticultural crops for productive growth. Second semester: fundamentals supporting some of the horticultural practices. *Prerequisite:* Botany 1 or permission of the department, 51 for 52. Three hours. Dr. Blasberg and Mr. Hopp.

54 SMALL FRUIT CULTURE (2-2) Fundamental principles underlying plant growth and fruit production; relation of these principles to practice. *Prerequisite:* Botany 1. Three hours. Dr. Blasberg.

56 PLANT PROPAGATION (2-2) History, theory, and practice of multiplying plants by various methods. *Prerequisite:* Botany 1. Three hours. Mr. Hopp.

151 ADVANCED TREE FRUITS (2-2) Cultural practices and the principles involved in modern fruit production. *Prerequisite:* 52. Three hours. Mr. Calahan. Alternate years, 1960-61.

152 **PLANT BREEDING (2-2)** Application of the principles of genetics to practical plant breeding. *Prerequisite:* Zool. 115. Three hours. Mr. Hopp. Alternate years, 1960-61.

153 **ADVANCED VEGETABLE CULTURE (2-2)** A study of the culture of the more important vegetable crops and a review of some of the recent experimental work. *Prerequisite:* 52. Three hours. Mr. Hopp. Alternate years, 1961-62.

197, 198 **SENIOR RESEARCH** Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

201 **PLANT NUTRITION (2-4)** Effect of soil management, fertilizers, environmental factors and mineral deficiencies on the functioning and performance of plants. *Prerequisite:* Botany 103, or permission of the department. Four hours. Dr. Blasberg. Alternate years, 1961-62.

281, 282 **HORTICULTURE SEMINAR** Discussion of horticultural topics. Students are required to prepare and present papers on selected subjects. Open to graduate students and seniors by permission. One hour. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Mathematics

COLLEGE OF TECHNOLOGY

Professors Schoonmaker (Chairman) and Fraleigh; Associate Professors Dwork, Nicholson, and Riggs; Assistant Professors Izzo and Lighthall; Mr. Boothby, Miss Howard

†1 **ELEMENTARY COLLEGE ALGEBRA** For students who do not intend to concentrate in science or mathematics. Recommended minimum preparation: one year each of secondary school algebra and geometry. Three hours.

2 **PLANE TRIGONOMETRY** For students who do not intend to concentrate in science or mathematics. *Prerequisite:* 1 or 9. Three hours.

4 **MATHEMATICS OF FINANCE** Mathematical theory of finance applied to interest and investments, annuities, and life insurance. *Prerequisite:* 1 or 9. Three hours.

*5 **PLANE ANALYTIC GEOMETRY AND CALCULUS** Introductory course for students who intend to concentrate in science or mathematics. It prepares students for Mathematics 12. *Prerequisite:* 2, or sufficiently high scores on the algebra and trigonometry placement tests. Two hours.

7, 8 **FUNDAMENTALS OF MATHEMATICS** To provide an understanding of basic logical and mathematical ideas (both ancient and modern) and some of their ap-

†Students who present two units of high school Algebra for entrance will not receive credit for Mathematics 1.

*The enrollment of students who desire eventually to take Mathematics 12 will depend on their previous record and their score on a mathematics placement test. Students not qualified to enroll in Mathematics 5, 11, or 10 will be enrolled in Mathematics 9. (The order 5, 11, 10, and 9 represents various levels of preparatory achievement from highest to lowest.) A student who takes Mathematics 9 in the fall of his freshman year and who, because of his chosen curriculum, needs to have completed Mathematics 12 prior to the beginning of his sophomore year, will need to take Mathematics 12 during the summer between his freshman and sophomore years. Those who are deficient in high school mathematics are urged to attend summer school prior to their first semester in college.

plications to other fields of knowledge. Fundamental concepts and logical methods of reasoning rather than on the development of techniques. Many topics of algebra, trigonometry, and analytic geometry are considered in their relation to certain basic concepts pervading all mathematics. For students in the arts, social sciences, and others. *Prerequisite:* one year each of secondary school algebra and geometry, 7 for 8. Three hours.

*9 **COLLEGE ALGEBRA** For students who intend to concentrate in science or mathematics, but who are not sufficiently well prepared to take Mathematics 5, 10, or 11. *Prerequisite:* two years of secondary school algebra and one year of secondary school geometry. Three hours.

*10 **PLANE TRIGONOMETRY, ANALYTIC GEOMETRY AND CALCULUS** For students who intend to concentrate in science or mathematics. A full treatment of plane trigonometry followed by an introduction to plane analytic geometry and calculus. This course prepares students for Mathematics 12. *Prerequisite:* 9, or a sufficiently high score on the algebra placement test. Five hours.

*11 **ALGEBRA, TRIGONOMETRY, ANALYTIC GEOMETRY AND CALCULUS** For students who intend to concentrate in science or mathematics. A few topics from college algebra; review of plane trigonometry; introduction to plane analytic geometry and calculus. This course prepares students for Mathematics 12. *Prerequisite:* High school trigonometry, or equivalent, and a sufficiently high score on the algebra placement test. Five hours.

*12 **PLANE ANALYTIC GEOMETRY AND CALCULUS** For students who intend to concentrate in science or mathematics. Continuation study of analytic geometry, differential and integral calculus and their applications. *Prerequisite:* 5, 10 or 11. Five hours.

21, 22 **SOPHOMORE MATHEMATICS** For students who intend to concentrate in science or mathematics. Solid analytic geometry; partial differentiation; multiple integrals; infinite series and elementary differential equations. *Prerequisite:* 12; 21 for 22. Three hours.

32 **THEORY OF EQUATIONS** Properties of polynomials in a field; theory of partial fractions; equations in the rational, real and complex number fields; symmetric functions; discriminants; resultants; and the solution of systems of equations of higher degree. *Prerequisite:* 12. Three hours.

181-182 **SENIOR PROBLEM** Investigation of some area or problem, under the direction of an assigned staff member, culminating in a report. This course is available only to candidates for the Bachelor of Science degree in Mathematics. Three hours.

203 **THEORY OF DETERMINANTS AND MATRICES** Basic concepts, theorems, and applications of determinants and matrices, including the theory of vector spaces and quadratic forms. *Prerequisite:* 22. Three hours. Alternate years, 1960-61.

204 **THEORY OF MODERN COMPUTING MACHINES AND NUMERICAL ANALYSIS** Mathematical theory underlying modern electronic computing machines. Numerical analysis; programming; and coding. *Prerequisite:* 203 or permission of instructor. Three hours. Alternate years, 1960-61.

*See footnote page 136.

207, 208 **ADVANCED CALCULUS** The calculus beginning with limits, continuity, differentiation, and Riemann integrals; treatment of those topics not included in the earlier course as a foundation for more advanced courses in analysis and applied mathematics. *Prerequisite:* 22; 207 for 208. Three hours.

209 **PROJECTIVE GEOMETRY** Principle of duality, perspectivity, projectivity, harmonic sets, cross ratio, the theorems of Pascal and Brianchon, and poles and polars. *Prerequisite:* 22. Three hours. Alternate years 1960-61.

210 **FOUNDATIONS OF GEOMETRY** Geometry as an axiomatic science, various non-Euclidean geometries, and relationships existing between Euclidean plane geometry and other geometries. The development of geometry as a science based upon invariant properties. *Prerequisite:* 22. Three hours. Alternate years 1960-61.

211 **DIFFERENTIAL EQUATIONS** Solutions of linear ordinary differential equations, the Laplace transformation, and series solutions of differential equations. *Prerequisite:* 22. Three hours.

212 **APPLIED MATHEMATICS** Boundary-value problems, orthogonal functions, and vector analysis. *Prerequisite:* 211. Three hours.

213, 214 **APPLIED MATHEMATICS** First semester: partial differential equations, solutions of partial differential equations of mathematical physics, and functions of a complex variable. Second semester: calculus of variations, difference equations, and integral equations. *Prerequisite:* 212; 213 for 214. Three hours.

215, 216 **MODERN HIGHER ALGEBRA** Fundamental concepts of modern higher algebra: groups, rings, fields, integral domains, lattices, polynomials, matrices, and vector spaces. Emphasis on Boolean algebra and its applications. *Prerequisite:* 22, 32 is desirable; 215 for 216. Three hours. Alternate years, 1961-62.

220 **VECTOR ANALYSIS** Introduction to vector methods including the elements of vector algebra and vector calculus with applications to physics and mechanics. *Prerequisite:* 22. Three hours. Alternate years, 1960-61.

221 **MATHEMATICAL STATISTICS** Frequency distributions including: the calculation of moments, standard deviations and related quantities, the theory of least squares and its application to scientific problems, the Chi-square test and Student's t-test with a discussion of the validity of statistical results. *Prerequisite:* 22. Three hours. Alternate years 1961-62.

224 **THEORY OF PROBABILITY** Permutations and combinations, stochastic variables, moments, probability distribution functions, joint distribution functions, normal, binomial and Poisson distributions, Stirling's Theorem, The Central Limit Theorem and the laws of large numbers. *Prerequisite:* 221. Three hours. Alternate years, 1961-62.

225, 226 **TOPOLOGY** Introduction to the fundamental concepts of general topology: topological spaces, Moore-Smith convergence, product spaces, quotient spaces, embedding, metrization, and compact spaces. *Prerequisite:* 22, 225 for 226. Three hours. Alternate years, 1960-61.

227 **DIFFERENTIAL GEOMETRY** Analytic metric differential geometry of curves and surfaces in ordinary three dimensional space; curvature, torsion, Frenet formu-

las, involutes, evolutes, developable and ruled surfaces, and geodesic curves. *Prerequisite:* 22. Three hours. Alternate years, 1961-62.

228 **NUMBER THEORY** Divisibility, prime numbers, Diophantine equations, congruence of numbers, and methods of solving congruences. *Prerequisite:* 22. Three hours. Alternate years, 1961-62.

231, 232 **FUNCTIONS OF A COMPLEX VARIABLE** Differentiation and integration of a function of a complex variable, mapping of elementary functions, infinite series, properties of analytic functions, analytical continuation, calculus of residues, contour integration, integral functions, meromorphic functions, Riemann surfaces, and conformal representation. *Prerequisite:* 208; 231 for 232. Three hours. Alternate years, 1960-61.

233, 234 **THEORY OF FUNCTIONS OF REAL VARIABLES** Functions of real variables, including: point sets and measure, transfinite numbers, Riemann and Lebesgue integrals, and sequences of functions. Considerable outside reading is assigned. *Prerequisite:* 208; 233 for 234. Three hours. Alternate years, 1961-62.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Medical Technology

COLLEGE OF MEDICINE

INTRODUCTION TO MEDICAL TECHNOLOGY During the first semester of the freshman year, the students attend a series of weekly, one-hour sessions held in the medical technology laboratory, Medical Alumni Building.

101 **BASIC TECHNICS (3-6)** Principles, procedures, and sources of error in medical laboratory tests. Hematology, bacteriology, serology, parasitology, blood bank, urinalysis and basal metabolism. Fall semester. Six hours. Miss Maxson.

102 **BASIC TECHNICS (1-4)** Continuation of 101; histological technic, introduction to diagnostic exfoliative cytology. Spring semester. Three hours. Limited to students of medical technology except by permission of departmental chairman. Dr. Coon and staff.

101 **SEMINAR IN CLINICAL PATHOLOGY** Limited to students of medical technology. Spring semester. Two hours. Miss Maxson.

111-112 **BIOCHEMISTRY FOR MEDICAL TECHNOLOGISTS** Human physiological chemistry; structure, metabolism and regulatory mechanisms. Laboratory: biological reactions, preparation of reagents, instrumentation. Application of sound quantitative principles to analysis of body constituents. Lectures, conferences and laboratory. Limited to students of medical technology except by permission of departmental chairman. Four hours. Miss LaGrange.

HOSPITAL ASSIGNMENTS Rotating assignments in various departments of hospital, medical college, and public health diagnostic laboratories to give experience in medical laboratory procedures. Spring semester. Six hours. Dr. Coon.

Military Science and Tactics

ARMY ROTC

Lt. Col. White (Chairman); Majors Bailev, and Hassman; Captains Detherow and Jones

1-2 **OUR ARMY AND HISTORY** Organization of the Army and ROTC; individual weapons and marksmanship; American military history; school of the soldier and exercise of command. Two hours.

11-12 **FUNDAMENTALS FOR SMALL UNIT LEADERS** Military map and aerial photograph reading; role of the army; crew-served weapons and gunnery; school of the soldier and exercise of command. Two hours.

101-102 **THE ARMY LEADER** Leadership; military teaching methods; organization, functions, and missions of the arms and services; small unit tactics and communications; school of the soldier and exercise of command. Three hours.

111-112 **COMMAND** Operations; logistics; administration and personnel management; service orientation; school of the soldier and exercise of command. Three hours.

Music

COLLEGE OF ARTS AND SCIENCES

Professors Bennett (Chairman) and Pappoutsakis; Associate Professor Kinsey, Assistant Professors Schultz, Start, and Weinrich

History and Theory of Music

1, 2 **SURVEY OF MUSICAL LITERATURE** Orchestral, chamber, choral, and operatic music for concert and radio listeners. First semester: from Palestrina to Beethoven; second semester: from Schubert to Stravinsky. Three hours. Mr. Bennett.

4 **SURVEY OF OPERA** Metropolitan Opera repertory and early and recent operas: works by Monteverdi, Purcell, Gluck, Mozart, Wagner, Verdi, Debussy, Berg, and others. Sources of the texts, national and individual styles, various theories concerning the union of drama with music. Three hours. Mr. Bennett. Alternate years, 1960-61.

5-6 **ELEMENTARY SIGHT-SINGING, EAR-TRAINING, AND THEORY** Three hours. Mr. Pappoutsakis.

7-8 **ELEMENTARY HARMONY** Structure and use of chords; harmonization of melodies in various styles; simple original composition. *Prerequisite:* familiarity with scales and keys, and ability to read simple music at the piano. Three hours. Dr. Kinsey.

11-12 **ADVANCED SIGHT-SINGING, EAR-TRAINING, AND THEORY** *Prerequisite:* 5-6. Three hours. Mrs. Start.

201-202 **ADVANCED HARMONY AND HARMONIC ANALYSIS** *Prerequisite:* 7-8. Three hours. Dr. Kinsey.

203-204 **ORCHESTRATION** Characteristics of instruments; arranging for orchestra. *Prerequisites:* 7-8; 201-202 is also desirable. Three hours. Mr. Pappoutsakis.

205-206 **COUNTERPOINT** *Prerequisite:* 7-8. Three hours. Mr. Bennett.

209-210 **ADVANCED ORCHESTRATION** Arranging for full orchestra, including a study of the less frequently used instruments. This course presupposes a knowledge of the range, transposition, and characteristics of the usual orchestral instruments, and the ability to arrange music of moderate difficulty for strings, woodwind and brass. *Prerequisite:* 207-208. Three hours. Mr. Pappoutsakis. Alternate years, 1961-62.

212 **CONDUCTING** Technique of the baton; score reading; laboratory practice. *Prerequisites:* 5-6 or 7-8. Four hours. Mr. Pappoutsakis.

221, 222 **HISTORY OF MUSIC** Changes in musical structure and style, and their relation to contemporaneous artistic, literary, religious, and social movements. First semester: the Renaissance, Bach, Mozart; second semester: Beethoven, Romanticism, Brahms, the Twentieth Century. *Prerequisite:* 1, 2 and 7-8. Three hours. Mr. Bennett.

For Music Education, see page 110.

For School Music, see Elementary Education 111-112 and 113.

Applied Music

For the fees for instruction and use of organ, see the Index under "Fees."

41, 42 **CHOIR** Study of works by Bach, Handel, Palestrina, modern Russian composers and others. Christmas, Lenten-Easter, and other concerts; annual opera; Baccalaureate service. Three hours of rehearsal weekly, if taken for credit. *One hour. Mr. Bennett, director; Mr. Weinrich, organist.

43, 44 **ORCHESTRA** Study of symphonic and other instrumental literature. The orchestra plays at concerts and the opera, alone and with the choir. Three hours of rehearsal weekly. *One hour. Mr. Pappoutsakis, conductor.

45, 46 **CHAMBER MUSIC** Study and performance of trios, string quartets, piano quartets and quintets of the great masters. One two-hour meeting weekly, or equivalent, for each group. Outside practice required. Students wishing to elect this course must satisfy the instructor as to their instrumental proficiency. One hour. Mrs. Start.

47, 48 **PIANO** Adapted to the students' purposes and needs; may include repertoire, technic, improvising accompaniments to melodies, and sight-reading. *One or two hours. Dr. Kinsey.

49, 50 **ORGAN** Preparation for recital and church service playing, including hymns and accompaniments. *One or two hours. Mr. Weinrich.

53, 54 **VOICE** Instruction in accepted natural vocal production; repertoire (in the course of four years) of old Italian songs, German lieder, modern French songs, oratorio and operatic arias. *One or two hours. Mr. Weinrich.

55, 56 **VIOLIN** Study of fundamental technic and tone production, preparing for orchestral, chamber music and solo performance. For those qualified, advanced study of artist repertoire. *One or two hours. Mrs. Start.

*All courses in applied music may be taken for several years, but no student may receive credit toward graduation totalling more than six semester hours in choir or orchestra or band or any combination of these. One hour of credit per semester will be given for one private lesson in piano, organ, voice, or violin under a member of the department, and five hours practice per week, on condition that the instruction be accompanied or preceded by either Music 1, 2 or 7-8; two hours credit will be given for two private lessons and ten hours practice per week, on the same condition.

APPLIED MUSIC—INSTRUMENTAL CLASSES The following courses (67–73) are required of music education students, elective to others; each course carries one hour credit, and meets twice a week. Courses 68, 70, 72, and 73 include a study of methods and materials for the instrumental program. Course 67 is prerequisite for 68, 69 for 70, 71 for 72.

- 67 VIOLIN CLASS Mrs. Start.
- 68 STRING CLASS Mrs. Start.
- 69 CLARINET CLASS Mr. Schultz.
- 70 WOODWIND CLASS Mr. Schultz.
- 71 TRUMPET CLASS Mr. Schultz.
- 72 BRASS CLASS Mr. Schultz.
- 73 PERCUSSION CLASS Mr. Schultz.

61, 62 TRUMPET Proper tone production, articulation, and embouchure, using both French and American methods. Solo and orchestral repertoire. One or two hours. Mr. Schultz.

63, 64 CLARINET Proper tone production, articulation, and embouchure. Solo and orchestral repertoire. One or two hours. Mr. Schultz.

65, 66 BAND Symphonic and other band literature. The band plays at concerts, Kake Walk, some athletic contests, military review, and other University functions. Three or more hours rehearsal weekly. One hour. Mr. Schultz.

75, 76 WIND INSTRUMENT Individual instruction in one of the wind instruments of the orchestra or band, other than clarinet or trumpet. One or two hours. Mr. Schultz.

Nursing

COLLEGE OF EDUCATION AND NURSING

Professor Crabbe (Chairman); Associate Professors Dustan, Gjessing, Ichter, Lamden, Milligan, Oakley, Schein, Williams, Woodruff; Assistant Professors Davis, Lombard, MacDonald, Palmer, Schwalb, Thompson; Instructors Emerson, and Williamson; Consultant Marshall.

1–2 INTRODUCTION TO NURSING First semester: the community health picture; including health accomplishments, problems and resources. The role of the nurse in nurse-patient relationships is developed. Second semester: introduction to the practice of nursing; meeting the patient's personal needs, application of principles and development of social, communicative, and manual skills. Beginning experience in the hospital situation. Two hours; four hours. Miss Milligan.

3 FUNDAMENTALS OF NURSING (Summer Session) Continued study of the practice of nursing; development of patient-centered care; acquisition of skills; experience in laboratory and hospital with patient contact. *Prerequisite:* 1–2. Three hours. Miss Milligan.

5 HISTORY OF NURSING Orientation to the philosophy of professional nursing. The heritage of modern nursing. Movements in the social structure which affect nursing in relation to their historical development. Two hours. Miss Crabbe.

7 HOME NURSING (0-2) Care of the family. *Prerequisite:* junior standing in home economics curriculum. One hour. Miss Milligan.

9-10 CHEMISTRY (3-2) To present chemistry in the culture of today; to provide a basic understanding of normal and abnormal human physiology. First semester: review of inorganic chemistry in which medical applications are stressed; survey of organic chemistry as a basis for physiologic chemistry. Second semester: biochemistry with a consideration of the structure of important compounds, digestion, absorption, metabolism and excretion. Four hours. Drs. Schein, Lamden, and Gjessing.

12 MICROBIOLOGY (Summer Session) The general principles of microbiology as a basis for understanding the role of microorganisms in health and disease. Microbial control, infection, and immunity; Applications to environmental sanitation. Three hours. Misses Woodruff and Ichter.

15-16 HUMAN ANATOMY AND PHYSIOLOGY Fundamentals of structure and function of the normal human body. Laboratory: anatomical and physiological principles through dissection, physiological experiments and examination of histological preparations. For students of nursing and dental hygiene. Three hours. Misses Ichter and Woodruff.

19-20 MEDICAL AND SURGICAL NURSING Medical and surgical nursing integrated with pharmacology, pathology, geriatrics, communicable diseases, diet therapy, emergency nursing, social and health aspects, rehabilitation and principles of health teaching. Clinical practice provides the opportunity for the student to apply theoretical learning. Nine hours. Misses Lombard, MacDonald, Thompson, Williams, Mrs. Ormsbee and Mrs. Palmer.

118 SURVEY OF CONTEMPORARY NURSING Nursing education and nursing service today. The problems confronting the professional nurse and steps being taken toward their solution. Two hours. Miss Oakley.

123 MATERNAL-CHILD NURSING Concepts and skills necessary for promotion of maternal and child health through a family centered approach. Instruction and clinical practice in the care of mothers and children. Ten hours. Misses Davis and Schwalb.

127 PSYCHIATRIC NURSING Psychiatric nursing in a hospital for the mentally ill and in allied community agencies. Interpersonal relationships are explored as they influence patient care. Students participate in varied treatment programs. Six hours. Given at Boston University. Mrs. Williamson.

129 TUBERCULOSIS NURSING Clinics, conferences, and individual instruction, serving to increase understanding of the patient with long-term illness and to gain skill in the nursing care. Prevention and rehabilitation are considered. Three hours. Given at Boston University. Misses Bridges and Nye, and Mr. Mahoney.

131 PRINCIPLES OF PUBLIC HEALTH NURSING The role of the public health nurse in the prevention and control of disease and the promotion of health through consideration of services for maintenance of family and community health. Two hours. Misses Dustan and Emerson.

132 **PRINCIPLES OF PUBLIC HEALTH** Development, organization, trends, and functions of public health programs. The responsibilities of specific agencies in disease prevention and promotion of health in the community. Two hours. Dr. Aiken.

133 **PUBLIC HEALTH NURSING IN THE COMMUNITY** Supervised field instruction in public health nursing agencies. Two hours. Misses Dustan and Emerson.

181 **ANALYSIS OF SELECTIVE NURSING SITUATIONS** Comprehensive nursing care; appreciation of the head nurse's role; concepts of guiding students' learning. Areas are planned on an individual basis to meet students' needs. Four hours. The staff.

Philosophy and Religion

COLLEGE OF ARTS AND SCIENCES

Professor Dykhuizen (Chairman); Assistant Professors Hall, Kahn and Sadler

Philosophy

1 **INTRODUCTION TO PHILOSOPHY** The chief problems of philosophy. *Prerequisite:* sophomore standing. Three hours. Drs. Dykhuizen and Hall.

2 **LOGIC** Principles and conditions of correct thinking with emphasis on the detection of fallacies of thought. *Prerequisite:* sophomore standing. Three hours. Dr. Hall.

4 **ETHICS** Examination of the ideas underlying man's moral behavior to develop an acceptable and coherent theory of conduct. *Prerequisite:* sophomore standing. Three hours. Dr. Dykhuizen.

107, 108 **HISTORY OF PHILOSOPHY** First semester: ancient and medieval philosophy; second semester: modern philosophy. *Prerequisite:* 1; junior standing. Three hours. Dr. Dykhuizen.

109 **HISTORY OF AMERICAN PHILOSOPHY** The thought of leading American philosophers from colonial times to the present. *Prerequisite:* 1; junior standing. Three hours. Dr. Dykhuizen.

113 **AESTHETICS** An analysis of some principal theories of art and the beautiful as exemplified in music, literature and painting. *Prerequisite:* Philosophy 1; junior standing or consent of instructor. Three hours. Dr. Hall.

201 **CONTEMPORARY PHILOSOPHIC THOUGHT** The philosophic ideas of such men as Russell, Dewey, and Whitehead, and of such movements as pragmatism, logical empiricism and existentialism. *Prerequisite:* 1; junior standing. Three hours. Dr. Hall.

206 **SOCIAL PHILOSOPHY** The meanings and values inherent in social life. *Prerequisite:* 1 or 4; junior standing. Three hours. Dr. Hall.

214 **INTELLECTUAL BACKGROUND OF MODERN LIFE** Intellectual movements which have influenced the thought and life of today. *Prerequisite:* senior standing or permission of the instructor. Three hours. Dr. Dykhuizen.

For Economic Philosophy, see Economics 295 and 296; and for Political Philosophy, see Political Science 211, 212.

Religion

1, 2 HISTORY OF RELIGION First semester: Confucianism, Taoism, Hinduism, Buddhism; second semester: Judaism, Christianity, Islam. *Prerequisite:* 1 for 2 and sophomore standing. Three hours. Dr. Sadler.

11 BIBLE The religious thought of selected writers of the Bible. *Prerequisite:* sophomore standing. Three hours. Mr. Kahn. Alternate years, 1960-61.

101 RELIGION AND SOCIETY The role of religion in society. From an analysis of religion in primitive society, this course traces the nature and function of religion in higher culture. *Prerequisite:* Religion 2 or Sociology 1 or Psychology 1, and junior standing. Three hours. Dr. Sadler.

102 PHILOSOPHY OF RELIGION A critical analysis of the basic concepts and values which have emerged from man's religious experience. *Prerequisite:* Religion 2 and junior standing. Three hours. Dr. Sadler. Alternate years, 1961-62.

112 PSYCHOLOGICAL ASPECTS OF RELIGION The expression of religious consciousness and the religious imagination in religious art and symbolism; mythology; in forms of religious observance; solitude; religious conceptions of the self. *Prerequisite:* 101, and junior standing. Three hours. Dr. Sadler. Alternate years, 1960-61.

152 TRENDS IN CONTEMPORARY RELIGION Evaluation of present-day religious thought and movements. *Prerequisite:* Religion 2 or one year of philosophy; junior standing. Three hours. Dr. Sadler. Alternate years, 1961-62.

154 READINGS IN ORIENTAL RELIGION Selected primary sources, representing major schools of thought in the religions of India, Japan, and China. *Prerequisite:* 1, junior standing, and permission of the instructor. Three hours. Dr. Sadler. Alternate years, 1961-62.

Physical Education

COLLEGE OF EDUCATION AND NURSING

For requirements in physical education see page 31.

MEN

Associate Professors Post (Chairman), Donnelly, and Evans; Assistant Professors Christensen, LaPointe and Strassburg.

The uniform required in this program consists of T-shirt, shorts, supporter, white socks, sweat clothes, basketball shoes or white tennis shoes. The T-shirts, shorts, and sweat clothes must be obtained at the University store.

FRESHMAN AND SOPHOMORE PHYSICAL EDUCATION A seasonal sports program with attention to: posture; body-building exercises; fundamentals and skills of various sports and physical activities. To develop and improve: skills; coordination and endurance; habits of exercise; an intelligent attitude toward and interest in sports activities. Fall-winter: football, touch football, cross country, tennis, calisthenics, basketball, volleyball, apparatus and tumbling, handball, swimming, skiing, badminton. Winter-spring: badminton, basketball, calisthenics, volleyball, handball, apparatus and tumbling, swimming, skiing, indoor and outdoor track, softball, tennis, baseball. Two hours weekly. One hour. The staff.

WOMEN

Assistant Professor Phillips (Chairman) and Peterson; Misses Byers, Davenport and Dimitroff.

The uniform required consists of a regulation short and shirt, white rubber soled tennis shoes, white ankle socks, a regulation black leotard and colored skirt. All uniforms must be of a regulation style and color.

1-2 **FRESHMAN PHYSICAL EDUCATION** Provides experience in team, individual and dual sports, modern dance, and body mechanics. To promote optimum fitness; to develop desirable attitudes and skills, and to develop competencies in terms of individual needs. Two hours weekly. One hour.

11-12 **SOPHOMORE PHYSICAL EDUCATION** Provides a variety of activities to develop competencies in: angling, archery, badminton, basketball, bowling, camp craft, field hockey, folk dancing, square dancing, modern dancing, social dancing, fencing, golf, lacrosse, recreational games, Red Cross Life Saving, Red Cross Water Safety Instructors' Course, riflery, sailing, softball, skiing, swimming, tennis, and volleyball. Two hours weekly. One hour.

22 **FIRST AID (1-1)** Standard and Advanced First Aid Courses of the American Red Cross. Red Cross certificate for successful completion. Open to men and women. One hour credit except in the college of Arts and Sciences.

26 **WATER SAFETY (2-2)** American National Red Cross Water Safety Instructors' Training Course. Red Cross certificate for successful completion. *Prerequisite:* at least 18 years of age; hold an active Red Cross Senior Life Saving Certificate. Open to men and women. Two hours credit except in the College of Arts and Sciences.

41-42 **HEALTH INSTRUCTION (HYGIENE)** Personal and community health. Required of all women students except those in the nursing curriculum. One hour weekly. One hour.

50 **DANCE TECHNIQUE AND ANALYSIS (1-4)** The history, technique, theory and composition elements of movement as found in dance and the related arts. Training through technique, improvisation, compositional problems and performance. *Prerequisite:* sophomore standing or consent of instructor. Open to men and women. Three hours.

For Physical Education Minor courses, see under Department of Education.

Physics

COLLEGE OF ARTS AND SCIENCES

Professors Walbridge (Chairman) and Skapsi; Associate Professors Crowell, Rooney, and Woodward; Assistant Professor Howard

Note: Eight semester hours of credit will be granted for Physics 21-22 without laboratory to students who have credit in Physics 1-2 or 5-6. Enrollment in Physics 5-6 will void credit in Physics 1-2.

1-2 **INTRODUCTORY PHYSICS (2-2)** For students not concentrating in a science. Mechanics, heat, sound, light, electricity, and magnetism. Demonstration lectures, presenting experimental facts and theoretical conclusions coordinated with laboratory work. *Prerequisite:* one year each of secondary school algebra and geometry. Three hours. The staff.

5-6 GENERAL PHYSICS (3-2) For students concentrating in a biological science. First semester: mechanics and heat. Second semester: sound, light, electricity, magnetism and atomic physics. *Prerequisite:* Math. 2 or 8 or Math. 11 which may be taken concurrently. Four hours. The staff.

21-22 GENERAL PHYSICS (4-2) For engineers and students concentrating in a physical science. First semester: mechanics and heat. Second semester: sound, light, electricity, magnetism, and atomic physics. *Prerequisite:* credit or concurrent enrollment in Math. 21. Five hours. The staff.

81, 82 THE CULTURAL BACKGROUND OF THE DEVELOPMENT OF SCIENCE (3-0) History of formation of the scientific method from the earliest beginning until the present time; rise and fall of different scientific concepts and theories; accumulation of information from observation and experiment and the evolution of the experimental method; relation between science, technology and their contemporary cultural and social environment. *Prerequisite:* a one year college course in mathematics, and either physics or chemistry. Three hours. Dr. Skapski.

115 ELECTRICITY AND MAGNETISM (3-2) Fundamental principles of electricity and magnetism with emphasis on electric circuits. Resistance and direct current circuits; capacitance and inductance with applications to transient phenomena and alternating current circuits. *Prerequisite:* 22*; Math. 22 concurrently, or Math. 21, concurrently with consent of the Department. Four hours. Dr. Crowell.

116 MECHANICS (3-0) Mechanics of a particle, including central forces, forced and coupled vibrations; introductory rigid body motion. *Prerequisite:* 22*; Math. 22 concurrently. Three hours. Dr. Walbridge.

171, 172 MODERN PHYSICS (2-2) First semester: behavior of electrons in electric and magnetic fields, photoelectricity, thermionic emission, simple vacuum tube circuits, particles and waves. Second semester: atomic structure, X rays and crystals, nuclear transformations, nuclear power and semi-conductors. *Prerequisite:* 22* and Math. 21 for 171; 171 or E.E. 109 for 172. Three hours. Mr. Rooney.

211 MECHANICS AND WAVE MOTION (3-0) Continuation and developments of the principles and methods of mechanics; integration of fundamental physical principles with mathematics and with the extension of these principles to wave motion. *Prerequisite:* 116; Math. 212 concurrently. Three hours. Mr. Woodward. Alternate years, 1960-61.

242 ELECTROMAGNETISM (3-0) Fundamental principles of electric and magnetic fields. Electrostatic theory and magnetic fields of steady currents. Electromagnetic energy relationships and introduction to electromagnetic theory. *Prerequisite:* 115; Math. 211. Three hours. Dr. Crowell. Alternate years, 1961-62.

261, 262 OPTICS (2-2) Geometrical theory of reflection and refraction, mirrors and lenses; wave properties of light, interference and diffraction, polarized light. First semester: centered optical system. Second semester: physical optics and spectroscopy. *Prerequisite:* 22* for 261; 22* and Math. 21 for 262. Three hours. Mr. Woodward. Alternate years, 1961-62.

*May be replaced by Physics 5-6 with the consent of the department.

271, 272 **ADVANCED MODERN PHYSICS (3-0)** Background and concepts of relativity, quantum theory, and nuclear physics. First semester: relativity, electron physics, atomic structure and spectra, wave mechanics. Second semester: molecular and solid state physics, X-rays, nuclear physics. *Prerequisite:* 115 and 116 or E.E. 110 or Chem. 142 and Math. 211. 271 for 272. Three hours. Dr. Howard.

273 **THERMODYNAMICS (3-0)** Basic concepts of thermodynamics including the characteristic functions, and their application to determination of equilibrium conditions in homogeneous and heterogeneous systems. *Prerequisite:* 22† and Math. 22. Three hours. Dr. Skapski. Alternate years, 1961-62.

281 **INTRODUCTION TO KINETIC THEORY AND STATISTICAL MECHANICS (3-0)** Fundamental concepts of statistical theories. Meaning of models and constructs. Partition functions and their application to problems. Classical and non-classical distributions. *Prerequisite:* 22† and Math. 211. Three hours. I, II. Dr. Crowell. Alternate years, 1961-62.

304 **QUANTUM MECHANICS (3-0)** Development of the Schroedinger theory from DeBroglie's approach, and application of wave mechanics to simple physical systems including hydrogen atom. Characteristic features of Heisenberg matrix mechanics. Relation between wave and matrix mechanics. *Prerequisite:* 271, and either Math. 220 or Math. 212. Three hours. Dr. Skapski. Alternate years, 1961-62.

311 **ADVANCED DYNAMICS (3-0)** Classical Mechanics presented as the basis of the concepts and methods of modern physics. Variational methods. Lagrangian and Hamiltonian formulations, canonical transformations. *Prerequisite:* Math. 211 and either 220 or 212. Three hours. Dr. Crowell. Alternate years, 1960-61.

312 **ELECTROMAGNETIC THEORY (3-0)** Mathematical theory of electricity and magnetism. Field equations, energy and radiation. *Prerequisite:* 242, Math. 211 and 212 or 220. Three hours. Dr. Crowell. Alternate years, 1960-61.

322 **SOLID STATE PHYSICS (3-0)** Characteristics of main types of solids, particularly the source of cohesion energies. Surface free energy of solids and related phenomena. *Prerequisite:* 272 and either Math. 220 or Math. 212. Three hours. Dr. Skapski. Alternate years, 1960-61.

381, 382 **SEMINAR** Members of the staff and graduate students meet weekly to study contemporary advances in physics and for reports on research being done in the department. One hour. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Political Science

COLLEGE OF ARTS AND SCIENCES

Professors Nuquist (Chairman), Haugen, Little and Shen;* *Associate Professor Babcock*;* *Assistant Professors Gould, Hilberg, Simon and Steele;* *Messrs. Eastman, Sickels, and Thompson*

1, 2 **AMERICAN GOVERNMENT** First semester: state and local governments; Second semester: national government. Three hours. The staff.

*Visiting professor.

*May be replaced by Physics 5-6 with the consent of the department.

- 11, 12 INTRODUCTION TO POLITICAL SCIENCE First semester: elements of political science. Second semester: comparative governmental institutions. Students should not elect both 1, 2 and 11, 12. Three hours. The staff.
- 51, 52 INTERNATIONAL RELATIONS First semester: development and principles of international politics. Second semester: international organization. *Prerequisite:* sophomore standing and 51 for 52. Three hours. Drs. Hilberg, Little and Nuquist.
- 54 GEOGRAPHIC BACKGROUNDS OF POLITICS. *Prerequisite:* 51. Three hours. Dr. Hilberg.
- 61, 62 LOCAL GOVERNMENT First semester: government of counties, towns, and other rural units. Second semester: municipal government. *Prerequisite:* sophomore standing. Three hours. Dr. Nuquist.
- 71 GOVERNMENT OF GREAT BRITAIN *Prerequisite:* sophomore standing. Three hours. Mr. Thompson.
- 72 GOVERNMENTS OF CONTINENTAL EUROPE *Prerequisite:* sophomore standing. Three hours. Mr. Thompson. Alternate years, 1960-61.
- 74 GOVERNMENTS OF THE BRITISH EMPIRE AND THE COMMONWEALTH *Prerequisite:* sophomore standing. Three hours. Dr. Haugen. Alternate years, 1961-62.
- 75 GOVERNMENTS OF THE FAR EAST *Prerequisite:* sophomore standing. Three hours. Dr. Shen. Alternate years, 1960-61.
- 76 GOVERNMENT OF LATIN AMERICA *Prerequisite:* sophomore standing. Three hours. Dr. Gould. Alternate years, 1960-61.
- 151 AMERICAN FOREIGN POLICY Development of foreign policy. *Prerequisite:* Any course except 1. Three hours. Dr. Hilberg.
- 191, 192 HONORS OR SPECIAL READINGS For undergraduates only. Three to six hours. The staff.
- 211, 212 POLITICAL THEORY First semester: development of political theory. Second semester: recent political theory. *Prerequisite:* two courses. Three hours. Messrs. Simon and Steele.
- 216 AMERICAN POLITICAL THOUGHT American political thought from the colonial period to recent times. *Prerequisite:* 1, 2 or 11, 12 and one other course or Economics 11-12 or History 23, 24. Mr. Simon. Three hours.
- 221, 222 CONSTITUTIONAL LAW First semester: historical and analytic study of judicial review, federalism, the taxing power, the commerce power, the suffrage. Second semester: historical and analytic study of the war power, the executive power, due process of law, citizenship, Bill of Rights, equal protection of the laws. *Prerequisite:* 1, 2 or 11, 12; one other course, or Economics 11-12, or History 23, 24; junior standing. Three hours. Dr. Gould.
- 226 ADMINISTRATIVE LAW *Prerequisite:* 241. Three hours. Dr. Nuquist. Alternate years, 1961-62.

227 **INTERNATIONAL LAW** Principles and applications of public international law. *Prerequisite:* 51, 52. Three hours. Dr. Little. Alternate years, 1960-61.

231 **THE LEGISLATIVE PROCESS** Congressional organization and procedure. *Prerequisite:* 11, 12 or 1, 2; one other course. Three hours. Dr. Haugen. Alternate years, 1961-62.

232 **LAWMAKING AND PUBLIC POLICY** Influence of the executive and problems of congressional control. *Prerequisite:* 1, 2, or 11, 12; one other course. Three hours. Dr. Haugen. Alternate years, 1961-62.

241 **ORGANIZATION AND FUNCTION OF PUBLIC ADMINISTRATION** *Prerequisite:* 1, 2 or 11, 12; one other course. Three hours. Dr. Haugen.

242 **ADMINISTRATIVE PROCEDURES** *Prerequisite:* 241. Three hours. Dr. Haugen. Alternate years, 1960-61.

252 **AMERICAN FOREIGN POLICY** Formation of foreign policy. *Prerequisite:* 151. Three hours. Dr. Hilberg.

253-254 **WORLD POLITICS** Analysis of the foreign policies of countries other than the United States; selected problems in Europe, Latin America, and the Pacific Area. *Prerequisite:* 51, 52. Three hours. Dr. Little and Dr. Shen. Alternate years, 1961-62.

256 **INTERNATIONAL ADMINISTRATION** Theory and practice in international agencies. *Prerequisite:* 51, 52. Three hours. Dr. Little. Alternate years, 1960-61.

263 **STATE GOVERNMENT** Organization and administration of state government. *Prerequisite:* 1, 2 or 11, 12; one other course. Three hours. Dr. Babcock.

265, 266 **INTERGOVERNMENTAL RELATIONS** First semester: problems of the federal system. Second semester: national-state-local cooperative administration of selected public functions. *Prerequisite:* 1, 2 or 11, 12; one other course or Econ. 11-12. Three hours. Dr. Haugen. Alternate years, 1960-61.

271, 272 **POLITICAL PARTIES AND PRESSURE GROUPS** First semester: political parties. Second semester: citizen participation and interest groups. *Prerequisite:* 1, 2 or 11, 12; one other course. Three hours. Messrs. Sickels and Steele.

281, 282 **POPULAR GOVERNMENT** Seminar for students who intend to pursue graduate study in political science, international relations, public administration, or to enter the public service. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Poultry Husbandry

COLLEGE OF AGRICULTURE AND HOME ECONOMICS

Associate Professor Henderson (Chairman); Mr. R. T. Smith

1 **GENERAL POULTRY HUSBANDRY (2-2)** Principles of poultry husbandry and their application to the poultry industry. Three hours. Messrs. Henderson and Smith.

56 **POULTRY JUDGING AND SELECTION (1-2)** Physiological and morphological characters correlated with egg production. Judging of standard bred poultry, laboratory practice in judging both utility and exhibition poultry. *Prerequisite:* 1. Two hours. Mr. Henderson.

101 **POULTRY FEEDING (3-2)** Feeding for egg production, growth and fattening; practice in compounding rations; experimental work and feeding problems. *Prerequisite:* junior standing and permission of department. Four hours. Mr. Henderson. Alternate years, 1961-62.

102 **INCUBATION AND BROODING (2-4)** General biology of incubation; fundamental principles underlying incubation practices; theory and practice of brooding chicks and other poultry. *Prerequisite:* 1; junior standing and permission of department. Four hours. Mr. Henderson.

103 **PROCESSING AND PACKAGING POULTRY PRODUCTS (2-2)** The principles of marketing of eggs and poultry meat; candling, grading, and packing eggs; preparation of poultry for market. A one-week inspection trip to the Boston market for which there is a charge of \$25.00. *Prerequisite:* 1; junior standing. Three hours. Mr. Henderson. Alternate years, 1960-61.

151 **POULTRY BREEDING (2-0)** Analysis of the procedure and techniques of practical application of genetic principles used in poultry breeding. Trap nesting, selection pressures, heritability, mating systems. *Prerequisite:* Poultry 1. Two hours. Mr. Smith. Alternate years, 1961-62.

181, 182 **POULTRY SEMINAR** A topical seminar designed for all students with an interest in current trends in the poultry industry. Required of poultry seniors. *Prerequisite:* Poultry 1. One hour. The staff.

197, 198 **SENIOR RESEARCH** Work on a research problem under the direction of a qualified staff member. Findings submitted in written form as prescribed by the department. *Prerequisite:* senior standing. Three hours. The staff.

Psychology

COLLEGE OF ARTS AND SCIENCES

Professors Chaplin (Chairman) and Ansbacher; Associate Professor Murdock; Assistant Professor Slamecka; Miss Kraeling

1 **GENERAL PSYCHOLOGY** Introduction to the entire field, emphasizing the normal adult human being. *Prerequisite:* sophomore standing. Three hours. The staff.

109-110 **STATISTICAL AND EXPERIMENTAL METHODS (2-4)** Standard descriptive and inferential statistics; general knowledge and appreciation of the scientific method as used in psychology. The student will design, conduct, and interpret the results of experiments in several different areas. *Prerequisite:* 1; junior standing; Math. 1 or the equivalent. Four hours. Dr. Murdock.

201 **SOCIAL PSYCHOLOGY** Principles, problems and research techniques of social psychology; beliefs and attitudes; groups, morale, leadership. *Prerequisite:* 1; junior standing. Three hours. Dr. Ansbacher.

205 **CHILD PSYCHOLOGY** Development of the individual from birth to adolescence. *Prerequisite:* 1; junior standing. Three hours. Miss Kraeling.

206 **PERSONALITY** Aimed at a better understanding of the individual, this course takes the field-theoretical and phenomenological approach, as exemplified by Alfred Adler. This viewpoint is compared with other theories of personality. Various life problems are considered. *Prerequisite:* 1; junior standing. Three hours. Dr. Ansbacher.

208 **ABNORMAL PSYCHOLOGY** The more unusual mental processes; methods of observing and interpreting them; their bearing on our understanding of the normal mind. *Prerequisite:* 1; junior standing. Three hours. Dr. Slamecka.

222 **PHYSIOLOGICAL PSYCHOLOGY (2-2)** Relationships between psychological processes and the functions of the nervous system and endocrine glands. *Prerequisite:* 1; junior standing. Three hours. Dr. Chaplin.

223 **SYSTEMATIC PSYCHOLOGY** A comparative study of the leading contemporary schools of psychological thought. *Prerequisite:* 1; junior standing. Three hours. Dr. Chaplin.

225-226 **PSYCHOLOGICAL TESTS (2-2)** Survey of important clinical tests of ability and personality; training in the administration of individual intelligence tests. *Prerequisite:* 110. Three hours. Mr. Ansbacher.

281-282 **SEMINAR** Review and discussion of current psychological research. Required of graduate students and seniors concentrating in psychology. *Prerequisite:* 110, 223. One hour. The staff.

381-382 **ADVANCED READINGS** Readings, with conferences, to provide those working for the M.A. degree with the background for, and specialized knowledge relating to, their research. Credit as arranged. The staff.

391, 392, 393, 394 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Romance Languages

COLLEGE OF ARTS AND SCIENCES

Professors Daggett (Chairman) and Johnston; Associate Professor R. Doane; Assistant Professors Hubbell, Julow, Parker, and Towne; Messrs. Long, Weiger, and Miss Souville.

French

1-2 **ELEMENTARY FRENCH** Grammar, pronunciation, composition, translation, dictations, and use of the spoken language, for those who present less than two years of preparatory French. *Credit is given only if Intermediate French is also completed.* Four hours. Dr. Julow and others.

11-12 **INTERMEDIATE FRENCH** Grammar, composition, translation, and conversation. Conducted chiefly in French. *Prerequisite:* 1-2 or two years of preparatory French. Three hours. Mr. Parker and others.

101-102 FRENCH LITERATURE: 19TH CENTURY Outstanding authors of the romantic, realistic, and naturalistic schools. This course is a prerequisite for all other courses in French literature. *Prerequisite:* 11-12. Three hours. Messrs. Daggett and R. Doane.

121-122 COMPOSITION AND CONVERSATION Composition, conversation, and phonetics. Required of those who wish to be recommended to teach French. *Prerequisite:* good standing in 11-12. Three hours. Dr. Julow and others.

203, 204 FRENCH LITERATURE: 20TH CENTURY Principal movements from 1900 to the present, with emphasis on outstanding works in the novel, drama, and poetry. *Prerequisite:* 101-102, 203 for 204. Alternate years, 1961-62. Three hours. Dr. Johnston.

211 FRENCH LITERATURE: 18TH CENTURY Main currents of the literature of the century with emphasis on Montesquieu, Diderot, Voltaire, and Rousseau. Lesage, Marivaux, and Beaumarchais will be studied in the drama. *Prerequisite:* 101-102. Alternate years 1961-62. Three hours. Dr. Johnston.

213 FRENCH LITERATURE: 17TH CENTURY Selected works of the century with emphasis on Corneille, Racine, and Molière. *Prerequisite:* 101-102. Alternate years, 1960-61. Three hours. Dr. Julow.

216 FRENCH LITERATURE: 16TH CENTURY Selected works of the period with emphasis on Rabelais and Montaigne. *Prerequisite:* 101-102. Alternate years 1960-61. Three hours. Dr. Daggett.

217 SPECIAL STUDIES ON FRENCH LITERATURE Selected authors representative of French thought and literary merit. Alternate years, 1960-61. Three hours.

223-224 ADVANCED COMPOSITION AND CONVERSATION Translation into French of difficult English prose, free composition and discussion of questions of style. Advanced conversation. Required of those who wish to be recommended to teach French. *Prerequisite:* 121-122. Three hours. Dr. Daggett.

281-282 SENIOR SEMINAR Special readings and research. Required of all senior concentrators. One hour.

381, 382 GRADUATE SEMINAR Offered for resident candidates for the Master of Arts degree; opportunities for independent work are provided. Three hours.

391, 392, 393, 394 MASTER'S THESIS RESEARCH Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

Italian

1-2 ELEMENTARY ITALIAN Grammar, composition, translation, and practice in the spoken language. *Prerequisite:* permission of the department. Three hours. Dr. Johnston.

11-12 INTERMEDIATE ITALIAN Grammar, composition, translation, and conversation. *Prerequisite:* 1-2 or its equivalent. Three hours. Dr. Johnston.

Spanish

1-2 **ELEMENTARY SPANISH** Grammar, composition, and translation, practice in pronunciation and use of the spoken language. For those who present less than two years of preparatory Spanish. *Credit is given only if Intermediate Spanish is also completed.* Four hours. Mr. Hubbell and others.

11-12 **INTERMEDIATE SPANISH** Readings from selected authors. Composition, grammar, and practice in conversation. Conducted chiefly in Spanish. *Prerequisite:* 1-2 or two years of preparatory Spanish. Three hours. Mr. Towne and others.

101-102 **INTRODUCTION TO SPANISH LITERATURE** Selections from the outstanding works of Spanish literature from the medieval period to the present. Outside reading, and reports. *Prerequisite:* 11-12. Three hours. Mr. Hubbell.

121-122 **CONVERSATION AND COMPOSITION** Composition, conversation, and phonetics. Required of those who wish to be recommended to teach Spanish. *Prerequisite:* good standing in 11-12. Three hours. Mr. Weiger.

205 **INTRODUCTION TO SPANISH-AMERICAN LITERATURE** Selections from outstanding authors from the colonial period to *modernismo*; Garcilaso de la Vega, Sor Juana, Juan Montalvo, Ricardo Palma, Sarmiento, and José Hernandez. Outside readings, and reports. *Prerequisite:* 101-102. Three hours. Mr. Hubbell. Alternate years, 1960-61.

206 **CONTEMPORARY SPANISH-AMERICAN LITERATURE** Selections from outstanding authors of the 20th century; Ruben Darfo, Gabriela Mistral, Pablo Neruda, Ricardo Guiraldes, and Eduardo Barrios. Outside readings and reports. *Prerequisite:* 101-102. Three hours. Mr. Hubbell. Alternate years, 1960-61.

207 **SPANISH LITERATURE: 19TH CENTURY** Principal literary currents of the 19th century, from Romanticism to the "Generation of 1898." Representative readings from the poetry, drama, and novel of the period. *Prerequisite:* 101-102. Three hours. Mr. Hubbell. Not offered, 1960-61.

208 **SPANISH LITERATURE: 20TH CENTURY** Origins and main aspects of the intellectual conflicts in modern Spain, as reflected in the literary works from the "Generation of 1898" to the present. *Prerequisite:* 207. Three hours. Mr. Hubbell. Not offered, 1960-61.

213, 214 **SPANISH LITERATURE: GOLDEN AGE** Selected readings from the novel, poetry, drama of the 16th and 17th centuries with special attention to Cervantes and the dramatists. *Prerequisite:* 101-102, 213 for 214. Three hours. Alternate years, 1961-62.

223-224 **ADVANCED COMPOSITION AND CONVERSATION** Translation into Spanish of difficult English prose, free composition and discussion of questions of style. Advanced conversation. Required of those who wish to be recommended to teach Spanish. *Prerequisite:* 121-122. Three hours. Messrs. Long and Weiger.

281-282 SENIOR SEMINAR Special readings and research. Required of all senior concentrators. One hour.

Russian

COLLEGE OF ARTS AND SCIENCES

1-2 ELEMENTARY RUSSIAN Spoken and written Russian; grammar, dictation and memorization of dialogues. Practice in pronunciation and aural comprehension through tape-recordings. Credit is given only if Intermediate Russian is also completed. Four hours. Dr. C. Doane.

11-12 INTERMEDIATE RUSSIAN Composition and extensive oral practice with grammar review. Readings from Pushkin, Lermontov, Turgenev, Chekhov and others. Conducted chiefly in Russian. *Prerequisite:* Russian 1-2. Three hours. Dr. C. Doane.

Sociology

COLLEGE OF ARTS AND SCIENCES

Associate Professor Oren (Acting Chairman); Messrs. Maher and Scheans

✓21 THE CULTURES OF MAN The culture concept; its use in perceiving and understanding behavioral regularity and the diversity of social systems. The life-ways of non-Western societies of varying social complexity. *Prerequisite:* sophomore standing. Three hours. I, II. Staff.

31 SOCIOLOGICAL ANALYSIS The major conceptual tools of sociology; approaches to their use in the analysis of contemporary social processes. *Prerequisite:* 21. Three hours. I, II. Staff.

41 SOCIAL PROBLEMS Conflicts and problems in modern industrial society. *Prerequisite:* Credit or concurrent enrollment in 31. Three hours. Mr. Scheans.

51 THE FAMILY Kinship and marital institutions in various societies, industrial and pre-industrial; recent trends and problems. *Prerequisite:* Credit or concurrent enrollment in 31. Three hours. Mr. Maher.

54 MINORITY GROUPS Patterns of dominance and submission among groups of differing "racial" and ethnic designation in modern societies and in "underdeveloped" areas. *Prerequisite:* Credit or concurrent enrollment in 31. Three hours. Dr. Oren.

72 INTRODUCTION TO SOCIAL WORK History, philosophy, fields, and objectives of social work; process of social case work through discussion of cases. *Prerequisite:* Credit or concurrent enrollment in 31; Psychology 1. Three hours. Staff.

205 SMALL-GROUP DYNAMICS Analysis of processes and problems of interaction at the level of the social microcosm; implications for the understanding of large-scale social organization. *Prerequisite:* 9 hours of sociology. Three hours. Dr. Oren.

210 POPULATION ANALYSIS The demographic and ecological analysis of so-

cieties; particular reference to contemporary world problems. *Prerequisite:* 9 hours of sociology. Three hours. Mr. Maher.

214 **PUBLIC OPINION** Analysis of attitude formation and the bases in social structure of differing tendencies toward collective behavior; implications for the analysis of political institutions. *Prerequisite:* 9 hours of sociology. Three hours. Mr. Maher.

221 **CULTURE AND PERSONALITY** Relationship of socialization to the socio-cultural milieu; the cross-cultural comparison of personality development; the problem of delineating model personality types; variations in child-rearing situations according to "social class" in contemporary Western Civilization. *Prerequisite:* 9 hours of sociology and Psychology 1. Three hours. Mr. Scheans.

225 **CULTURAL CHANGE** Internal and external conditions for modifications in group behavior; role of the individual innovator in these processes; concept of innovation as the basis for the study of cultural dynamics. *Prerequisite:* 9 hours of sociology. Three hours. Mr. Scheans.

228 **SOCIAL ANTHROPOLOGY** Evaluation of the comparative method in anthropology; its use in the formulation of generalizations concerning the nature of society. *Prerequisite:* 9 hours of sociology. Three hours. Mr. Scheans.

251 **SOCIAL RESEARCH METHODS** The logic and techniques of sociological inquiry. *Prerequisite:* 12 hours of sociology, and consent of instructor. Three hours. Mr. Maher.

282 **READINGS IN CURRENT SOCIOLOGICAL LITERATURE** Seminar to acquaint advanced students with contemporary issues in sociology and with the professional periodicals of sociology and related fields. *Prerequisite:* 12 hours of sociology, senior standing, and consent of instructor. Three hours. Dr. Oren.

Speech

COLLEGE OF ARTS AND SCIENCES

Professors Huber (Chairman) and Luse; Associate Professors Falls and Lewis; Assistant Professor Wamboldt; Messrs. Albrecht, Feidner and Travis

1 **BASIC SPEECH** Voice and articulation; the vocal mechanism; elements of speech, and phonetics; theory and practice. Three hours. I, II. The staff.

3 **PARLIAMENTARY PROCEDURE** Study and practice in the fundamentals of conducting a meeting. The class meets twice a week with one hour of outside preparation. *Prerequisite:* sophomore standing. One hour. Dr. Huber.

11 **PUBLIC SPEAKING** Preliminary analysis, gathering material, organization and delivery of speeches; use of visual aids and speech to inform. Two thirds of the time devoted to student performance. Three hours. I, II. The staff.

12 **ARGUMENTATION** Inductive, deductive, causal, and reasoning from analogy as applied to the speaking situation; designed to develop through performance skill in logical expression of thought. *Prerequisite:* 11. Three hours. I, II. Dr. Huber.

14 **GROUP DISCUSSION** Methods of procedure in committees, round table discussions, lecture forums, symposiums, panels, and other types of discussion; designed to develop through performance skill in the thought processes involved in discussion leadership. *Prerequisite:* 11. Three hours. Messrs. Albrecht and Travis.

31 **ORAL INTERPRETATION OF LITERATURE** Principles and techniques of oral interpretation of literature; analysis and appreciation of poetry, prose and drama through the development of ability in communicating the logical, emotional and aesthetic values of literature to an audience. Three hours. I, II. Drs. Falls, Luse, Wamboldt and Mr. Feidner.

41 **ACTING** Fundamentals of acting, including improvisation, character analysis, and styles of acting. Performance in short classroom acting projects required. *Prerequisite:* sophomore standing. Three hours. I, II. Dr. Falls.

71 **VOICE SCIENCE** The physical, anatomical, physiological, and phonetic factors of speech. *Prerequisite:* 1; sophomore standing. Three hours. I. Dr. Luse. Alternate years, 1960-61.

74 **INTRODUCTION TO SPEECH CORRECTION** The causes, symptoms and treatment of speech disorders. One third devoted to articulatory problems of children. Observation of children's therapy in the Speech Clinic. *Prerequisite:* 1; sophomore standing. Three hours. Dr. Luse.

111 **PERSUASION** Human motivation, attitudes and how to change them; emotion, stereotypes, attention, and audience psychology; training in their use through student performance. *Prerequisite:* six hours, including 11. Three hours. Dr. Huber. Alternate years, 1960-61.

116 **SPEECH COMPOSITION** Study of speech style and rhetorical criticism by analysis of great speeches and by writing longer speeches. *Prerequisite:* six hours, including 11. Three hours. Dr. Huber. Alternate years, 1960-61.

140 **PLAY PRODUCTION** Lecture and laboratory in the physical elements of play production; scene design, lighting, construction of sets and properties, and stage management. *Prerequisite:* six hours of speech or permission of the instructor. Three hours. I. Mr. Feidner. Alternate years, 1961-62.

142 **PLAY DIRECTING** Lecture-laboratory in the problems and techniques of directing plays: staging, script analysis, production techniques, and rehearsal techniques. *Prerequisite:* six hours including 41 or permission of the instructor. Three hours. Dr. Falls. Alternate years, 1961-62.

145, 146 **DEVELOPMENT OF WESTERN THEATRE** History of the theatre and drama in western civilizations from earliest rituals to the contemporary theatre. Plays from all major periods are read and discussed. *Prerequisite:* junior standing; English 25, 26 or 27, 28. Three hours. Dr. Falls. Alternate years, 1960-61.

161 **ELEMENTS OF RADIO AND TELEVISION BROADCASTING** The social, psychological, historical, educational, and technical aspects of radio and television with laboratory work in announcing, interviewing, and production of various types of programs. *Prerequisite:* six hours, including 1. Three hours. Dr. Lewis.

162 **WRITING FOR RADIO AND TELEVISION** Principles and techniques of writing for radio and television; adaptations, documentaries, and dramatic scripts. *Prerequisite:* 161 or permission of the instructor. Three hours. Dr. Lewis.

171, 172 **SPEECH CORRECTION** The etiology, symptoms and treatment of voice disorders; the problems of stuttering and organic disorders of speech. The etiology, symptoms and rehabilitation of various auditory disorders. *Prerequisite:* 74. Three hours. Dr. Luse.

World Problems

COLLEGE OF ARTS AND SCIENCES

101, 102 **WORLD PROBLEMS** A different major issue of particular importance to men and women in the modern world will be presented, each semester, by various instructors from the humanities, the sciences, and the applied arts. Language and communication, evolutionary thinking, and problems of education are examples of topics recently studied. Lectures, discussion, readings and reports. Not counted toward concentration requirements. *Prerequisite:* senior standing or permission of the director. Three hours. Dr. McArthur and others.

Zoology

COLLEGE OF ARTS AND SCIENCES

Professors Moody (Chairman) and Lochhead; Associate Professors Bond and Potash; Assistant Professors Bell, Glade, and Torch; Mrs. Sickels.

1 **INTRODUCTION TO ZOOLOGY (3-3)** Fundamental life processes of animals, particularly at the cellular level, to give the general student an appreciation of these processes, and the science student a background for further study in Zoology. *Prerequisite:* a course in high school chemistry is strongly recommended. Four hours. Dr. Torch and staff. I and II.

2 **PRINCIPLES OF EVOLUTION (3-2)** Biological principles connected with the development of life on the earth; evidences that evolution occurs. *Prerequisite:* 1. Four hours. Dr. Bell and staff.

21 **ORGANIC EVOLUTION** A non-laboratory course on the theory of evolution. For material covered see description of 2. A student may not receive credit for both 2 and 21. *Prerequisite:* sophomore standing. Three hours. Dr. Moody.

31 **GENERAL ENTOMOLOGY (2-4)** Study of insects; morphology, physiology, and evolution. *Prerequisite:* 1. Four hours. Dr. Potash.

41 **VERTEBRATE ZOOLOGY (2-4)** Survey of Phylum Chordata; structure and biology of vertebrate animals; dissection of typical submammalian vertebrates. *Prerequisite:* 1. Four hours. Dr. Bond.

52 **PHYSIOLOGY** Chemical and mechanical fundamentals of animal physiology, with special reference to man. *Prerequisite:* 1, junior standing; some knowledge of chemistry. Three hours. Dr. Lochhead.

102 COMPARATIVE ANATOMY (2-4) Evolution of the organ systems of vertebrates; dissection of a mammal. *Prerequisite:* 41. Four hours. Dr. Bond.

104 ANIMAL ECOLOGY (2-4) Relationships between animals and their environments; dynamics of animal populations; aspects of wildlife conservation. *Prerequisite:* one year of zoology; a course in inorganic chemistry. Four hours. Dr. Potash. Alternate years, 1961-62.

109 FIELD ZOOLOGY (2-4) Collection and identification of animals; study of local habitats, their nature, and the adaptations of animals to them; factors governing distribution of animals; methods of collecting and preparing study specimens. *Prerequisite:* One year of zoology, or of botany and zoology. Four hours. Dr. Bell.

111 EMBRYOLOGY (2-4) General principles of development exemplified by typical invertebrate and vertebrate embryos. *Prerequisite:* 41, junior standing. Four hours. Dr. Glade.

112 COMPARATIVE HISTOLOGY (2-4) Microscopic anatomy of invertebrate and vertebrate tissues. Basic tissue similarities and specializations in relation to function. *Prerequisite:* 111. Four hours. Dr. Glade. Alternate years, 1960-61.

115 HEREDITY Principles of inheritance and their physical basis. *Prerequisite:* junior standing and two semesters of courses selected from botany, psychology, and zoology. Three hours. Dr. Moody.

150 INVERTEBRATE ZOOLOGY (2-4) Anatomy, physiology, and life histories of representatives of the more important invertebrate phyla. Required of all students concentrating in zoology. *Prerequisite:* 1, and 41 or 31; junior standing. Four hours. Dr. Lochhead.

216 HUMAN GENETICS Principles of human inheritance; population genetics; interaction of heredity and environment; application of principles of heredity to human problems on both individual and social levels. *Prerequisite:* 115 or Botany 255. Three hours. Dr. Moody.

220 PROTOZOOLOGY (2-4) Recognition, morphology, reproduction and physiology of the more important taxonomic groups of the Protozoa. *Prerequisite:* 150, and at least one year of chemistry or consent of the instructor. Four hours. Dr. Torch.

222 EXPERIMENTAL EMBRYOLOGY (2-6) Theoretical approach to major problems of development based on modern research in embryology, genetics, physiology, bacteriology, and related fields. *Prerequisite:* 111 and consent of the instructor. Four hours. Dr. Glade. Alternate years, 1961-62.

236 FRESH-WATER BIOLOGY (2-4) Organisms of lakes, ponds and streams; their adaptations to varying physical, chemical and biotic conditions. *Prerequisite:* a course in field zoology, or invertebrate zoology, or entomology, or ecology, and a course in inorganic chemistry. Four hours. Dr. Potash. Alternate years, 1960-61.

255 COMPARATIVE ANIMAL PHYSIOLOGY (2-6) General principles of function mainly in invertebrate animals. *Prerequisite:* 104 or 150 or 236 and consent of the instructor; Chem. 131-132. Four hours. Dr. Lochhead.

270 **MODERN EVOLUTIONARY THEORY** Contributions of modern research in genetics, systematics, distribution, experimental embryology, serology, and related fields to problems of the means and methods of evolutionary change. *Prerequisite:* a course in evolution and one in heredity or genetics. Three hours. Dr. Moody.

281-282 **SEMINAR** Review and discussion of current zoological research. Required of graduate students and seniors concentrating in zoology; open to others by special permission only. One hour. The staff.

381, 382 **ADVANCED READINGS** Readings, with conferences, intended to contribute to the programs of graduate students' advanced study in phases of zoology in which formal courses are not available. *Prerequisite:* graduate standing; an undergraduate major in zoology. Credit as arranged.

391 through 399 **MASTER'S THESIS RESEARCH** Investigation of a research topic under the direction of an assigned staff member, culminating in an acceptable thesis. Credit as arranged.

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¹Deceased November 2, 1959.²On leave October 1–November 30, 1959.

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¹Deceased November 21, 1959.

²Deceased April 10, 1959.

³Deceased April 19, 1959.

⁴Deceased September 2, 1959.

ARTHUR BECKWITH MYRICK, Ph.D.	<i>Professor of Romance Languages and Literatures</i>
JOHN ALVIN NEWLANDER, Ph.D.	<i>Professor of Animal and Dairy Husbandry</i>
CATHERINE FRANCES NULTY, Ed.M.	<i>Associate Professor of Economics</i>
WALFORD TUPPER REES, M.D.	<i>Professor of Clinical Surgery</i>
VIOLA RUSSELL, M.D.	<i>Instructor in Public Health</i>
HELEN BARNES SHATTUCK, A.B.	<i>Librarian, Billings Library</i>
MARY JEAN SIMPSON, Ph.B.	<i>Dean of Women</i>
BERTHA MAY TERRILL, A.M., Sc.D.	<i>Professor of Home Economics</i>
EMMUS GEORGE TWITCHELL, M.D.	<i>Professor of Ophthalmology, Otolaryngology and Rhinology</i>
CHARLES FLAGG WHITNEY, M.D.	<i>Professor of Biochemistry and Toxicology</i>
MYRON ELLIS WITHAM, C.E.	<i>Assistant Professor of Mathematics</i>

Officers of Instruction

Dates after names represent the year of appointment, either original or following a lapse in service. Asterisk indicates member of Graduate Faculty.

JOHN ABAJIAN, JR., M.D. (1940-42; 1945)	<i>Professor of Anesthesia</i>
NELLE ALEXANDER ADAMS (MRS. W. R.), A.M. (1926)	<i>Assistant Professor of Education</i>
*THURSTON MADISON ADAMS, Ph.D. (1943)	<i>Professor of Agricultural Economics</i>
*WILLIAM RITCHIE ADAMS, Ph.D. (1926)	<i>Professor of Forestry</i>
ROBERT BASCOM AIKEN, M.D. (1941)	<i>Associate Professor of Preventive Medicine</i>
ALFRED JAMES ALBRECHT, M.S. (1957)	<i>Instructor in Speech</i>
SINCLAIR TOUSEY ALLEN, JR., M.D. (1948)	<i>Associate Professor of Medicine</i>
ELLSWORTH LYMAN AMIDON, M.D. (1933)	<i>Professor of Medicine</i>
RICHARD WALKER AMIDON, M.D. (1949)	<i>Assistant Professor of Clinical Medicine</i>
EDWARD CLINTON ANDREWS, JR., M.D. (1958)	<i>Associate Professor of Pathology</i>
*HEINZ LUDWIG ANSBACHER, Ph.D. (1946)	<i>Professor of Psychology</i>
EARL LEE ARNOLD, Ph.D. (1953)	<i>Associate Professor of Agricultural Engineering</i>
ROBERT ARNOLD, A.M. (1958)	<i>Instructor in English</i>
WALTER PAUL ASCHENBACH (1959)	<i>Instructor in Art</i>
*HENRY VERNON ATHERTON, Ph.D. (1949-51; 1953)	<i>Associate Professor of Dairy Manufacturing</i>
*ROBERT SHILLINGFORD BABCOCK, Ph.D. (1946-1958; 1959)	<i>Visiting Associate Professor of Political Science</i>
†ROBIN FRANCIS BADGLEY, Ph.D. (1958)	<i>Assistant Professor of Medical Sociology (Preventive Medicine)</i>
CHARLES TAFF BAILEY, B.B.A., Major U. S. Army (1958)	<i>Assistant Professor of Military Science and Tactics</i>
DONALD JAMES BALCH, M.S. (1952-56; 1957)	<i>Assistant Professor of Animal and Dairy Husbandry</i>
*BETTY BANDEL, Ph.D. (1947)	<i>Associate Professor of English</i>
RALPH JOHN BANNISTER (1950)	<i>Instructor in X-Ray Technique</i>
JAMES HENRY BANNON, M.D. (1955)	<i>Assistant Professor of Clinical Medicine</i>
BERNARD BENJAMIN BARNEY, M.D. (1955)	<i>Instructor in Clinical Surgery</i>
RICHMOND JAY BARTLETT, Ph.D. (1958)	<i>Assistant Professor in Agronomy</i>
THOMAS DAY SEYMOUR BASSETT, Ph.D. (1958)	<i>Associate Professor of History</i>
JOHN FRYE BELL, M.D. (1947)	<i>Associate Professor of Orthopedic Surgery</i>
JOYCE ROCKENBACH BELL (MRS. R. T.), M.S. (1958)	<i>Instructor in Nursing</i>
ROSS TAYLOR BELL, Ph.D. (1955)	<i>Assistant Professor of Zoology</i>
*HOWARD GORDON BENNETT, A.M. (1925)	<i>Professor of Music</i>
MALCOLM IRVING BEVINS, M.S. (1958)	<i>Instructor in Agricultural Economics</i>
JOHN HARDESTY BLAND, M.D. (1949)	<i>Associate Professor of Clinical Medicine</i>
*CHARLES HUGO BLASBERG, Ph.D. (1944)	<i>Professor of Horticulture</i>
DON HOUSTON BLOUNT, Ph.D. (1958)	<i>Instructor in Physiology</i>
JOHN DOUGLAS BOARDMAN, M.D. (1955)	<i>Assistant Professor of Clinical Obstetrics and Gynecology</i>
*SAMUEL NATHANIEL BOGORAD, Ph.D. (1946)	<i>Professor of English</i>
*WESSON DUDLEY BOLTON, D.V.M. (1950)	<i>Professor of Animal Pathology</i>
*CHARLES FARRINGTON BOND, Ph.D. (1950-55; 1957)	<i>Associate Professor of Zoology</i>
DAVID BRADFORD BOOTHBY, M.A. (1958)	<i>Instructor in Mathematics</i>

†Deceased June 25, 1959.

§1st Semester.

†Resigned August 31, 1959.

- DAVID MARSH BOSWORTH, M.D. (1922-25; 1942)
 RICHARD EMILE BOUCHARD, M.D. (1955)
 *ALEC BRADFIELD, M.S. (1947)
 *CHARLES ERNEST BRAUN, Ph.D. (1928)
 MARY EVELYN BREEN, B.S. (1957)
 GEORGE WILSON BROOKS, M.D. (1953)
 HELEN ELPHINSTONE BROOKS, M.S. (1959)
 CONSTANCE LORRAINE BROWN, M.S. (1928)
 MARION HUNTINGTON BROWN, M.E. (1942)
 CAROL TABER BURR (MRS. A. G.) M.A. (1958)
 ROY VEDDER BUTTLES, M.D. (1950)
 CORINNE WESTON BYERS, M.A. (1959)
 EUGENE MARTIN CAHILL, B.A., Captain U. S. Air Force (1958)
 ROBERT NOLAN CAIN, M.D. (Jan. 1953)
 CHARLES LYMAN CALAHAN, M.S. (1948)
 †MARTHA MARIE CALDWELL, M.S. (1954)
 THOMAS WRIGHT MOIR CAMERON, Ph.D., D.Sc. (1942)
 MARTIN JOHN CANNON, M.D. (1953)
 MAURICE RAYMOND CARON, M.D. (1953)
 HOWARD JULIAN CARPENTER, M.S. (1947)
 *ALFRED HAYES CHAMBERS, Ph.D. (1948)
 WILBERT FRANKLIN CHAMBERS, Ph.D. (1955)
 *JAMES PATRICK CHAPLIN, Ph.D. (1947)
 HSU CHEN, Ph.D. (Feb. 1, 1958)
 RUPERT ADDISON CHITTICK, M.D. (1944)
 CHARLES CHRISTENSEN, JR., M.Ed. (1959)
 BENJAMIN FRANKLIN CLARK, M.D. (1952)
 PAUL DENNISON CLARK, M.D. (1930)
 ROBERT WILLARD COCHRAN, Ph.D. (1954)
 JULIUS GEORGE COHEN, M.D. (1950)
 FRANCIS PEABODY COLBURN, Ph.B. (1942)
 RICHARD KISTLER CONKLIN, D.D.S. (1950)
 *CLINTON DANA COOK, Ph.D. (1952)
 *ROBERT WILLIAM COON, M.D. (1955)
 FAYE CRABBE, A.M. (1943)
 ALBERT JAMES CRANDALL, M.D. (1939)
 GEORGE CHAPMAN CROOKS, Ph.D. (1930)
 *ALBERT DARY CROWELL, Ph.D. (1955)
 LEONARD VINCENT CROWLEY, M.D. (1956)
 JAMES OWEN CULVER, M.D. (1959)
 JOHN CHARLES CUNNINGHAM, M.D. (1946)
 KATHLEEN O'MALLEY CURLEY, B.S. (1959)
 *MALCOLM DANIEL DAGGETT, Ph.D. (1945)
 JOHN FIDLAR DALY, M.D. (1949)
 ROBERT VINCENT DANIELS, Ph.D. (1958)
 JOANNA DAVENPORT, M.S. (1959)
 KATHERINE DAVIS, M.P.H. (1959)
 PHILIP HOVEY DAVIS, M.D. (1958)
 JEAN MARGARET DAVISON, Ph.D. (1955)
 LUBOMIR A. D. DELLIN, M.A., J.S.D. (1957)
 GINO ALDO DENTE, M.D. (1950)
 EUGENE JOSEPH DESAUTELS, M.D. (1958)
 RALPH HOYT DETHEROW, B.S., Captain U. S. Army (1957)
 MARILYN DIMITROFF, M.A. (1959)
- Consultant in Orthopedic Surgery*
Instructor in Medicine
Professor of Dairy Manufacturing
Pomeroy Professor of Chemistry
Instructor in Medical Technology (Pathology)
Assistant Professor of Clinical Psychiatry
Instructor in English
Assistant Professor of Chemistry
Associate Professor of Home Economics
Instructor in English
Assistant Professor of Pathology
Instructor in Physical Education for Women
Assistant Professor of Air Science
Instructor in Clinical Surgery
Lecturer in Horticulture
Associate Professor of Home Economics
Visiting Professor of Tropical Medicine
Instructor in Clinical Obstetrics and Gynecology
Instructor in Clinical Psychiatry
Assistant Professor of Mechanical Engineering
Associate Professor of Physiology and Biophysics
Assistant Professor of Anatomy
Professor of Psychology
Assistant Professor of Electrical Engineering
Professor of Psychiatry
Assistant Professor of Physical Education for Men
Assistant Professor of Clinical Obstetrics and Gynecology
Associate Professor of Clinical Pediatrics
Assistant Professor of English
Assistant Professor of Clinical Psychiatry
Professor of Art
Instructor in Dental Hygiene
Professor of Chemistry
Professor of Pathology
Professor of Nursing
Instructor in Clinical Surgery
Associate Professor of Chemistry
Associate Professor of Physics
Associate Professor of Pathology
Assistant Professor of Preventive Medicine
Shipman Professor of Ophthalmology
Instructor in Home Economics
Professor of Romance Languages
Professor of Dermatology
Assistant Professor of History
Instructor in Physical Education for Women
Assistant Professor of Pediatric Nursing
Instructor in Clinical Orthopedic Surgery
Assistant Professor of Classical Languages and History
Assistant Professor of Economics
Assistant Professor of Clinical Anesthesia
Assistant Professor of Clinical Medicine
Assistant Professor of Military Science and Tactics
Instructor in Physical Education for Women

†On leave 1959-60.

- CAROLINE VISSCHER DOANE (MRS. R. F.), D.U. (1958)
Assistant Professor of Romance Languages
- ROLAND FREEMAN DOANE, D.U. (1925)
Associate Professor of Romance Languages
- *CHARLES GEORGE DOLL, Ph.D. (1927)
Professor of Geology and Mineralogy
- RAYMOND MADIFORD PEARDON DONAGHY, M.D. (1946)
Professor of Neurosurgery
- JOHN EDWARD DONNELLY, M.A. (1952)
Associate Professor of Physical Education for Men
- *ROBERT KINGSLAND DOTEN, Ph.D. (1951)
Associate Professor of Geology
- HOWARD DUCHACEK, M.S.A.E. (1949)
Associate Professor of Mechanical Engineering
- WILFRID G. DUDEVOIR, M.S. (Feb., 1958)
Instructor in Electrical Engineering
- *†FRED WILLIAMS DUNIHUE, Ph.D. (1936)
Professor of Anatomy
- HERBERT ASHLEY DURFEE, JR., M.D. (1957)
Assistant Professor of Clinical Obstetrics and Gynecology
- *WINFIELD BOOTH DURRELL, D.V.M. (1949)
Associate Professor of Animal Pathology
- LAURA CORBIN DUSTAN, M.N. (1954)
Associate Professor of Nursing
- *JULIUS SOLOMON DWORK, Ph.D. (1954)
Associate Professor of Mathematics
- *GEORGE DYKHUIZEN, Ph.D. (1926)
Marsh Professor of Intellectual and Moral Philosophy
- OLIVER ROLFE EASTMAN, M.D. (1948)
Associate Professor of Clinical Obstetrics and Gynecology
- ROBERT WEBSTER EASTMAN, LL.B. (1953)
Instructor in Political Science
- *†ARTHUR RAYMOND ECKELS, D.Eng. (1956)
Professor of Electrical Engineering
- DONALD MERRITT ELDRED, M.A. (1949)
Instructor in Clinical Psychology
- PHILIP NORCROSS ELDRED, B.S. (1958)
Instructor in Civil Engineering
- FAITH GRISCOM EMERSON, M.A. (1959)
Instructor in Public Health Nursing
- LOUIS WILLIAM ESPOSITO, M.D. (1954)
Instructor in Clinical Urology
- JOHN CLIFFORD EVANS, B.S. (1937)
Associate Professor of Physical Education for Men
- WILLIAM THOMAS FAGAN, JR., M.D. (1953)
Assistant Professor of Clinical Urology
- DAVID S. FAIGEL, D.D.S. (1954)
Instructor in Dental Hygiene
- FRANK JAMES FALCK, Ph.D. (1957)
Assistant Professor of Speech Therapy (Preventive Medicine)
- GREGORY ALEXANDER FALLS, Ph.D. (1952)
Associate Professor of Speech
- DOUGLAS PATTEN FAY, M.S. (1953)
Assistant Professor of Civil Engineering
- EDWARD JOSEPH FEIDNER, M.F.A. (1958)
Instructor in Speech
- JEREMY POLLARD FELT, Ph.D. (1957)
Instructor in History
- CHARLES CARROLL FISHBURNE, M.A., Lt. Col. U. S. Air Force (1957)
Professor of Air Science
- ROBERT FITZSIMMONS, M.S. (1949)
Assistant Professor of Animal and Dairy Husbandry
- THEODORE ROSS FLANAGAN, Ph.D. (1953)
Assistant Professor of Agronomy
- ARTHUR HOWARD FLOWER, JR., M.D. (1950)
Associate Professor of Clinical Dermatology
- JOSEPH CLAYTON FOLEY, M.D. (1954)
Assistant Professor of Clinical Radiology
- *MURRAY WILBUR FOOTE, Ph.D. (1947-51; 1953)
Associate Professor of Biochemistry (Agr.)
- JOHN LOUIS PHILIPPE FOREST, M.D. (1942)
Instructor in Clinical Psychiatry
- *PERCY AUSTIN FRALEIGH, Ph.D. (1927)
Flint Professor of Mathematics
- PAUL KENDRICK FRENCH, M.D. (1924)
Professor of Clinical Medicine
- MINORU FUKUDA, M.D. (1956)
Instructor in Clinical Anesthesia
- *FRED WILLIAM GALLAGHER, Ph.D. (1944)
Professor of Medical Microbiology
- BRUCE ARTHUR GAYLORD, Ed.D. (Feb. 1960)
Associate Professor of Agricultural Education
- *ALEXANDER GERSHOY, Ph.D. (1923)
Professor of Botany
- BRADY BLACKFORD GILLELAND, Ph.D. (1957)
Associate Professor of Classical Languages
- *ERLAND CHENEY GJESSING, Ph.D. (1954)
Associate Professor of Biochemistry
- RICHARD WILLIAM GLADE, Ph.D. (1958)
Assistant Professor of Zoology
- ARTHUR GLADSTONE, M.D. (1936)
Associate Professor of Clinical Surgery
- JOSEPH HENRY GOFFI, M.Ed. (1958)
Instructor in Education
- LYMAN JAY GOULD, Ph.D. (1953)
Assistant Professor of Political Science
- MARY JANE GRAY, M.D. (Jan. 1960)
Assistant Professor of Obstetrics and Gynecology
- *DONALD CROWTHER GREGG, Ph.D. (1946)
Professor of Chemistry
- EDWIN CHARLES GREIF, M.S. (1950)
Professor of Economics
- HOWARD THEODORE GUARE, M.D. (1952)
Assistant Professor of Clinical Radiology
- CARLETON RAYMOND HAINES, M.D. (1950-52; 1954)
Instructor in Surgery (Oncology)
- ROBERT WILLIAM HALL, Ph.D. (1957)
Assistant Professor of Philosophy and Religion
- MARJORIE HANLINE, M.A. (1959)
Instructor in Home Management
- *CALVIN HANNA, Ph.D. (1955)
Associate Professor of Pharmacology

†On leave, 1959-1960.

†On leave February-September, 1960.

- JOHN SHERWOOD HANSON, M.D. (1958) *Instructor in Medicine*
 JANE YARD HARSHBERGER, M.A. (1954)
Associate Professor of Public Health Nursing (Preventive Medicine)
 PHILIP HASSMAN, LL.B., Major, U. S. Army (1959)
Assistant Professor of Military Science and Tactics
 *ROLF NORDAHL BRUN HAUGEN, Ph.D. (1947) *Professor of Political Science*
 MOSES ALFRED HAYNES, M.D. (1959)
Assistant Professor of Preventive Medicine and Director of the Family Care Unit
 RICHARD NEIL HAYTON, M.A., Captain, U. S. Air Force (1959)
Assistant Professor of Air Science
 MARY CATHERINE HEININGER (MRS. P. L.), R.N. (1951) *Instructor in Dental Hygiene*
 PAUL LEHMANN HEININGER, D.D.S. (1950) *Instructor in Dental Hygiene*
 JOHN WILBUR HEISSE, JR., M.D. (1956)
Instructor in Clinical Ophthalmology and Otolaryngology
 DONALD CEDRIC HENDERSON, M.S. (1944) *Associate Professor of Poultry Husbandry*
 RAUL HILBERG, Ph.D. (Feb., 1956) *Assistant Professor of Political Science*
 CHARLES WILLIAM HOILMAN, M.S. (1949) *Associate Professor of Electrical Engineering*
 ALAN HOLDER, M.A. (1958) *Instructor in English*
 *RICHARD JOHN HOPP, M.S. (1947) *Associate Professor of Horticulture*
 HARRIET HOWARD, M.A. (1956) *Instructor in Mathematics*
 RICHARD JOHN HOWARD, Ph.D. (1957) *Assistant Professor of Physics*
 NEWTON E. HOWE, D.D.S., M.P.H. (February, 1959) *Instructor in Public Health*
 JOHN LORENZO HUBBELL, M.A. (1957) *Assistant Professor of Romance Languages*
 ROBERT BRUCE HUBER, Ph.D. (1946) *Professor of Speech*
 *JOHN CHARLES HUDEN, Ph.D. (1950) *Professor of Education*
 *MURIEL JOY HUGHES, Ph.D. (1942-44; 1945) *Professor of English*
 A. M. Md. MOAZZAMUL HUQ, Ph.D. (1956) *Assistant Professor of Economics*
 JEAN ELOISE ICHTER, M.S. (1948-52; 1953) *Associate Professor of Nursing*
 *RICHARD GUY INSKIP, Ph.D. (1953) *Associate Professor of Chemistry*
 JOSEPH ANTHONY IZZO, JR., Ph.D. (1956) *Assistant Professor of Mathematics*
 JULIUS H. JACOBSON, II, M.D. (1959) *Associate Professor of Surgery*
 WILLIAM JAMESON, M.A. (1957) *Instructor in English*
 CLINTON DALES JANNEY, Ph.D. (1959) *Associate Professor of Radiologic Physics*
 RICHARD HARRY JANSON, Ph.D. (1958) *Assistant Professor of Art*
 ELBRIDGE EUGENE JOHNSTON, M.D. (1951) *Assistant Professor of Clinical Medicine*
 *STUART LYNDE JOHNSTON, Ph.D. (1940-44; 1946) *Professor of Romance Languages*
 WILLIAM HERBERT JOHNSTON, M.D. (1952) *Instructor in Clinical Radiology*
 *DONALD BOYES JOHNSTONE, Ph.D. (1948) *Professor of Microbiology*
 *LEONIDAS MONROE JONES, Ph.D. (1951) *Assistant Professor of English*
 WESLEY GALE JONES, B.S., Captain, U. S. Army (1959)
Assistant Professor of Military Science and Tactics
 ROY GEORGE JULOW, Ph.D. (1957) *Assistant Professor of Romance Languages*
 †EARLE ERVIN JULSON, Ph.D. (Feb., 1957) *Assistant Professor of Agricultural Education*
 HARRY HELMUTH KAHN, M.A. (1950-53; 1954) *Assistant Professor of German*
 GEORGE KARATZAS, M.A. (1959) *Instructor in Commerce and Economics*
 EVERETT THOMPSON KEACH, JR., M.Ed. (1955-57; 1959) *Assistant Professor of Education*
 JOHN WILLIAM KEHOE, B.S., 1st Lt. U. S. Air Force (1958)
Assistant Professor of Air Science
 JAY EDGAR KELLER, M.D. (1950) *Assistant Professor of Clinical Surgery*
 *JOHN HARVEY KENT, Ph.D. (1950) *Roberts Professor of Classical Languages and Literature*
 ANN MARIE KEPPEL, M.S. (1958) *Assistant Professor of Education*
 MAJID KHADDURI, Ph.D. (1959)
Visiting Professor of Middle East Studies on the Program of Non-Western Studies
 GEORGE VINCENT KIDDER, Ph.D. (1922) *Professor of Classical Languages and Literature*
 THOMAS CLAIR KING, Ed.D. (1951) *Professor of Education*
 DAVID LESLIE KINSEY, Ph.D. (1950) *Associate Professor of Music*
 ARTHUR ROBERT KIRWIN, JR., B.A. (1959) *Instructor in History*
 DONALD ALBERT KLEIN, B.S. (1958) *Instructor in Animal and Dairy Husbandry*
 FRIEDRICH WILHELM KLEMPERER, M.D. (1955) *Assistant Professor of Clinical Medicine*
 STEPHEN CECIL KNIGHT, JR., M.S. (1952) *Associate Professor of Civil Engineering*

†Resigned November 15, 1959.

- ESTHER LUCILE KNOWLES, M.S. (1945) *Associate Professor of Home Economics*
- *ROY KORSON, M.D. (1951-52; 1954) *Associate Professor of Pathology*
- DORIS KRAELING, Ph.D. (1958) *Instructor in Psychology*
- RAYMOND FRANK KUHLMANN, M.D. (1951) *Assistant Professor of Clinical Orthopedic Surgery*
- ARTHUR SAUL KUNIN, M.D. (1957) *Instructor in Medicine and Clinical Biochemistry*
- BERT KARL KUSSEROW, M.D. (1959) *Assistant Professor of Pathology*
- BETTY MAY LaGRANGE, M.S. (1958) *Instructor in Clinical Biochemistry*
- MORRIS WILLIAMS LAMBIE, M.D. (1955) *Assistant Professor of Clinical Medicine*
- *MERTON PHILIP LAMDEN, Ph.D. (1947) *Associate Professor of Biochemistry*
- JOHN CLIFFORD LANTMAN, M.D. (1957) *Instructor in Preventive Medicine (General Practice)*
- RALPH ROBERT LAPOINTE, M.Ed. (1951) *Assistant Professor of Physical Education for Men*
- EUGENE LEPESCHKIN, M.D. (1947) *Professor of Experimental Medicine*
- DAVID ALLEN LeSOURD, Ph.D. (1952) *Assistant Professor of Economics*
- WILLIAM J. LEWIS, Ph.D. (1954) *Associate Professor of Speech*
- LEON ROBERT LEZER, M.D. (1954) *Associate Professor of Preventive Medicine*
- HARRY LIGHTHALL, JR., Ph.D. (1955) *Assistant Professor of Mathematics*
- ROBERT HARTLEY LINNELL, Ph.D. (1958) *Associate Professor of Chemistry*
- *GEORGE THOMAS LITTLE, Ph.D. (1950) *Professor of Political Science*
- *JACK ERNEST LITTLE, Ph.D. (1945) *Professor of Biochemistry (Agr.)*
- *JOHN HUTCHISON LOCHHEAD, Ph.D. (1942) *Professor of Zoology*
- MARGIT LOCHHEAD (MRS. J. H.) Ph.D. (1954) *Instructor in Nursing*
- *PHILIPP HANS LOHMAN, Ph.D. (1945) *Converse Professor of Commerce and Economics*
- ROSALIE MAE LOMBARD, M.A. (1959) *Assistant Professor of Medical-Surgical Nursing*
- EUGENE STEPHEN LONG, A.M. (1958) *Instructor in Romance Languages*
- *LITTLETON LONG, Ph.D. (1949) *Associate Professor of English*
- CARL LUCARINI, A.M. (1928) *Assistant Professor of Chemistry*
- JEROLD FRANCIS LUCEY, M.D. (1956) *Assistant Professor of Pediatrics*
- ELEANOR MERRIFIELD LUSE, Ph.D. (1947) *Professor of Speech*
- RUTH ANNE MacDONALD, M.S. (1957) *Assistant Professor of Nursing*
- *HERBERT CHRISTIAN McARTHUR, Ph.D. (1950) *Associate Professor of English*
- VERNE LIONEL McDONALD, JR., M.Ed. (1956) *Instructor in Education*
- JOHN FARRIS McGAUHEY, B.B.A., Major, U. S. Air Force (1958) *Assistant Professor of Air Science*
- JAMES BISHOP McGILL, M.D. (1952) *Instructor in Clinical Surgery*
- ²ROBERT JAMES McKAY, JR., M.D. (1950) *Professor of Pediatrics*
- EDD RUTHVEN McKEE, M.S., E.E. (1934) *Professor of Electrical Engineering*
- MARION CLAIRE McKEE, M.D. (1958) *Instructor in Clinical Pediatrics*
- MARGUERITE DOW McNEIL, M.Ed. (1955) *Assistant Professor of Education*
- EDWARD DOUGLAS McSWEENEY, M.D. (1923) *Assistant Professor of Gynecology*
- ALBERT GEORGE MACKAY, M.D. (1933) *Professor of Surgery*
- *WILLIAM HOOPER MACMILLAN, Ph.D. (1954) *Associate Professor of Pharmacology*
- JOHN VAN SICKLEN MAECK, M.D. (1948) *Professor of Obstetrics and Gynecology*
- FREDERICK JOSEPH MAHER, JR., B.A. (1958) *Instructor in Sociology*
- VINCENT HERSCHEL MALMSTROM, Ph.D. (1959) *Visiting Assistant Professor of Geography*
- J. EDWARD MARCEAU, D.D.S. (1950-52; 1954) *Instructor in Dental Hygiene*
- CLARE KENT MARSHALL (MRS. E. R.), M.D. (1955) *Instructor in Clinical Psychiatry and in Clinical Neurology*
- GILBERT ADAMS MARSHALL, M.S. (1947) *Associate Professor of Mechanical Engineering*
- *FREDERIC CARVER MARSTON, JR., Ph.D. (1948) *Professor of English*
- HERBERT LLOYD MARTIN, M.D. (1954) *Assistant Professor of Clinical Neurology*
- *JAMES WALLACE MARVIN, Ph.D. (1939) *Professor of Botany*
- INA MAXSON, M.S. (1947) *Assistant Professor of Medical Technology and Assistant in Clinical Pathology*
- SALLY BERRY MAYBURY (MRS. T. J.), Ed.D. (1944) *Associate Professor of Economics*
- JOHN EDMUND MAZUZAN, JR., M.D. (1959) *Instructor in Anesthesiology*
- HAROLD EDWARD MEDIVETSKY, M.D. (1937) *Assistant Professor of Clinical Medicine*
- JAMES TWYFORD MEHORTER, M.S., (1958) *Assistant Professor of Education*

¹On leave January 1-August 31, 1960.

²On leave January 1-July 1, 1960.

- *ALVIN REES MIDGLEY, Ph.D. (1951) *Professor of Agronomy*
 *REGINALD VENN MILBANK, M.S. (1946-48; 1949) *Professor of Civil Engineering*
 DONALD BARKER MILLER, M.D. (1951) *Associate Professor of Clinical Surgery (Thoracic)*
 PAUL ROBERT MILLER, M.S. (1931) *Professor of Agronomy*
 JEAN BEATTIE MILLIGAN, M.A. (1953) *Associate Professor of Nursing*
 ERNEST LEE MILLS, M.D. (1955) *Assistant Professor of Clinical Anesthesia*
 ISABEL CLARK MILLS (MRS. C. H.), M.A. (1932) *Assistant Professor of Art*
 †HENRY DAVIS MINOT, JR., M.D. (1956) *Instructor in Clinical Thoracic and Cardiac Surgery*
 *PAUL AMOS MOODY, Ph.D. (1927) *Howard Professor of Natural History and Zoology*
 DOROTHY JACKSON MORROW (MRS. R. C.) M.D. (1952) *Instructor in Clinical Pediatrics*
 RUFUS CLEGG MORROW, JR., M.D. (1951) *Associate Professor of Otolaryngology*
 *BENNETT BRONSON MURDOCK, JR., Ph.D. (1951) *Associate Professor of Psychology*
 *MILTON JOSEPH NADWORNY, Ph.D. (1952) *Associate Professor of Economics*
 VINCENT HENRY NARAMORE, M.A. (February, 1960) *Visiting Associate Professor of Mathematics*
- CHESTER ALBERT NEWHALL, M.D. (1929) *Thayer Professor of Anatomy*
 DAVID SOULE NEWHALL, M.A. (1959) *Instructor in History*
 AUDREY EVELYN NEWTON, M.S. (1955) *Assistant Professor of Home Economics*
 GEORGE HUBERT NICHOLSON, A.M. (1923) *Associate Professor of Mathematics*
 *ANDREW EDBERTON NUQUIST, Ph.D. (1938) *McCullough Professor of Political Science*
 ELBERT AUSTIN NYQUIST, M.S., C.P.A. (1953) *Associate Professor of Economics*
 LENA RAUB OAKLEY, M.A. (1947) *Associate Professor of Nursing*
 ROBERT EMMETT O'BRIEN, M.D. (1955) *Assistant Professor of Clinical Medicine*
 JAMES DONALD O'HARA, M.A. (1959) *Instructor in English*
 PAUL OREN, JR., Ph.D. (1958) *Associate Professor of Sociology*
 RALPH HARRY ORTH, B.A. (1959) *Instructor in English*
 *JOHN OGDEN OUTWATER, JR., Sc.D. (1956) *Professor of Mechanical Engineering*
 HENRI LOUIS PACHE, M.D. (1951) *Instructor in Clinical Surgery*
 HAROLD GORDON PAGE, M.D. (1954) *Assistant Professor of Surgery*
 EUGENE M. PALMER, B.S. (1957-58; 1959) *Instructor in Electrical Engineering*
 MARY ELLEN PALMER (MRS. E. M.), M.A. (1953-55; 1958) *Assistant Professor of Nursing*
 *IPPOCRATES PAPPOUTSAKIS, Mus.M. (1940) *Professor of Music*
 VICTOR H. PAQUET, B.S. (1949) *Assistant Professor of Graphics*
 NORENE AGNES PAQUETTE, B.S. (1959) *Instructor in Dental Hygiene*
 MALCOLM SKEELS PARKER, M.A. (1953) *Assistant Professor of Romance Languages*
 EDWIN MATTSON PAXSON, M.D. (1957) *Instructor in Clinical Pediatrics*
 HERBERT DEAN PEARL, A.M. (1941-45; 1947) *Professor of Education*
 OSCAR SYLVANDER PETERSON, JR., M.D. (1944) *Associate Professor of Clinical Radiology and Associate in Biophysics*
- PATRICIA MARIE PETERSON, M.S. (1955) *Assistant Professor of Physical Education for Women*
 THOMAS LESLIE PHILBRICK, Ph.D. (1958) *Assistant Professor of English*
 FREDA PHILLIPS, M.S. (1954) *Assistant Professor of Physical Education for Women*
 *HAROLD BARNARD PIERCE, Ph.D. (1937) *Professor of Biochemistry*
 JAMES EUGENE POOLEY, A.M. (1928) *Associate Professor of Classical Languages and History*
 *WILLARD BISSELL POPE, Ph.D. (1934) *Frederick Corse Professor of English Language and Literature*
- ARCHIBALD THOMPSON POST, Ed.M. (1929) *Associate Professor of Physical Education for Men*
 *MILTON POTASH, Ph.D. (1951) *Associate Professor of Zoology*
 PLATT RUGAR POWELL, M.D. (1949) *Associate Professor of Clinical Urology*
 HENRY LEWIS PRATT, M.D. (1952) *Instructor in Clinical Obstetrics and Gynecology*
 MARY LOUISE PRATT, M.Ed. (1955) *Assistant Professor of Economics*
 WILLIAM ARTHUR PRATT, M.D. (1950) *Instructor in Clinical Medicine*
 *HERBERT EVERETT PUTNAM, Ph.D. (1931) *Associate Professor of History*
 PHYLLIS MELVILLE QUINBY, B.S. (1949) *Assistant Professor of Dental Hygiene*
 *WILHELM RAAB, M.D. (1939) *Professor of Experimental Medicine*
 DAVID WILLIAM RACUSEN, Ph.D. (1958) *Assistant Professor of Agricultural Biochemistry*
 ROBERT MALCOLM RAGAN, M.S. (1959) *Assistant Professor of Civil Engineering*
 LOUISE ADELE RAYNOR, Ph.D. (1946) *Associate Professor of Botany*
 ELMER MCCREADY REED, M.D. (1948) *Assistant Professor of Otolaryngology*

†Resigned August, 1959.

- HELEN JOAN REID, M.A. (1956) *Assistant Professor of Home Economics*
 EDWARD K. REIMAN, D.D.S. (1951) *Instructor in Dental Hygiene*
 JOHN DOWNING RICE, JR., M.D. (1958) *Assistant Professor of Pathology*
 *HEATH KENYON RIGGS, Ph.D. (1953) *Associate Professor of Mathematics*
 BENJAMIN ALBERT RING, M.D. (1959) *Instructor in Neuroradiology and Radiologic Anatomy*
 *WILLIAM VAN BOGAERT ROBERTSON, Ph.D. (1945) *Professor of Biochemistry and Associate Professor of Experimental Medicine*
 ALBAN BENNETT ROONEY, M.S. (1922) *Associate Professor of Physics*
 JAMES ALBERT ROOT, M.C.E. (1948) *Associate Professor of Civil Engineering*
 ROBERT ERNEST ROSEEN, B.S., 1st Lieutenant U. S. Air Force (1959) *Assistant Professor of Air Science*
 JOSEPH ROSENSTEIN, M.D. (1955) *Assistant Professor of Clinical Radiology*
 †DIGHTON FRANCIS ROWAN, Ph.D. (1957) *Assistant Professor of Bacteriology*
 LYMAN SMITH ROWELL, M.S. (1925) *Associate Professor of Zoology*
 CHARLES BRUSH RUST, M.D. (1948) *Assistant Professor of Clinical Orthopedic Surgery*
 ALBERT WILLIAM SADLER, Ph.D. (1956) *Assistant Professor of Philosophy and Religion*
 WADI I. SAWABINI, D.D.S. (1950) *Assistant Professor of Dental Hygiene and Assistant Professor of Oral Hygiene and Dental Medicine*
 ROBERT NEWTON SAXBY, M.D. (1950) *Instructor in Clinical Radiology*
 DANIEL JOSEPH SCHEANS, B.A. (1959) *Instructor in Sociology*
 *ARNOLD HAROLD SCHEIN, Ph.D. (1947) *Associate Professor of Biochemistry*
 EDWIN CALVIN SCHNEIDER, M.S. (1946) *Associate Professor of Agricultural Engineering*
 *NORMAN JAMES SCHOONMAKER, Ph.D. (1956) *Professor of Mathematics*
 *HAROLD SEESSEL SCHULTZ, Ph.D. (1946) *Professor of History*
 HERBERT LOUIS SCHULTZ, M.A. (1957) *Assistant Professor of Music*
 GEORGE ADAM SCHUMACHER, M.D. (1950) *Professor of Neurology*
 ROBERTA B. SCHWALB, M.A. (1958) *Assistant Professor of Nursing*
 MALCOLM FLOYD SEVERANCE, Ph.D. (1951-52; 1953) *Assistant Professor of Economics*
 WILLIAM IRELAND SHEA, M.D. (1952) *Instructor in Clinical Surgery*
 NAI-CHENG SHEN, M.A. (1959) *Visiting Professor of Political Science*
 LAURENCE FOREST SHOREY, M.S. (1926) *Associate Professor of Electrical Engineering*
 ELSA MARIE KEIL SICHEL (MRS. F. J. M.), M.A. (1958) *Lecturer in Nursing*
 *FERDINAND JACOB MORRIS SICHEL, Ph.D. (1937) *Professor of Physiology and Biophysics*
 MARGARET HINES SICKELS, (MRS. R. J.), Ph.D. (1959) *Instructor in Zoology*
 ROBERT JUDD SICKELS, M.A. (1958) *Instructor in Political Science*
 MORRIS LEON SIMON, M.A. (1954) *Assistant Professor of Political Science*
 JAMES EDWIN SIMPSON, M.D. (1953) *Instructor in Clinical Orthopedic Surgery*
 ETHAN ALLEN HITCHCOCK SIMS, M.D. (1950) *Associate Professor of Clinical Biochemistry and Medicine*
 *ROBERT ORVILLE SINCLAIR, Ph.D. (1953-55; 1956) *Assistant Professor of Agricultural Economics*
 ADAM STANISLAW SKAPSKI, Ph.D. (1953) *Professor of Physics*
 HOWARD DARELL SLACK, D.D.S. (1950) *Instructor in Dental Hygiene*
 NORMAN JOSEPH SLAMECKA, Ph.D. (1957) *Assistant Professor of Psychology*
 WILLIAM JOSEPH SLAVIN, JR., M.D. (1942) *Associate Professor of Obstetrics and Gynecology*
 ALBERT MATTHEWS SMITH, Ph.D. (1957) *Assistant Professor of Animal and Dairy Husbandry*
 *DURWOOD JAMES SMITH, M.D. (Jan., 1953) *Professor of Pharmacology*
 HOWARD MARSHALL SMITH, JR., M.S. (1947) *Professor of Electrical Engineering*
 KENNETH MORTON SMITH, M.S. (1957) *Assistant Professor of Medical Social Service (Preventive Medicine)*
 ROBERT PEASE SMITH, M.D. (1951-54; 1956) *Instructor in Medicine and Preventive Medicine (Rehabilitation)*
 ROBERT TRAFTON SMITH, M.S. (1956) *Instructor in Poultry Husbandry*
 LAWRENCE RICHARD SNOWMAN, B.S. (1957) *Instructor in Electrical Engineering*
 ARTHUR BRADLEY SOULE, JR., M.D. (1928) *Professor of Radiology*
 ELEANOR SOUVILLE, B.A. (1959) *Instructor in Romance Languages*
 *THOMAS SPROSTON, JR., Ph.D. (1946) *Professor of Botany*
 ERNEST STARK, M.D. (1945) *Associate Professor of Pathology*
 SADAH SHUGHARI START (MRS.) (1946-48; 1949) *Assistant Professor of Music*

†Resigned July 31, 1959.

- EDWARD WILLIAM STEELE, JR., M.A. (1951-53; 1955) *Assistant Professor of Political Science*
 FRANK LESLIE STEEVES, Ed.D. (1958) *Associate Professor of Education*
 CHARLES WATTLES STEPHENSON, M.D. (1948)
Associate Professor of Clinical Neurology and Assistant Professor of Clinical Psychiatry
 GEORGE ROBERT STIBITZ, Ph.D. (1957) *Visiting Professor of Electrical Engineering*
 NORMAN KENNETH STRASSBURG, M.Ed. (1946)
Assistant Professor of Physical Education for Men
 WALTER ALVA STULTZ, Ph.D. (1937) *Professor of Anatomy*
 BORYS SURAWICZ, M.D. (1955)
Assistant Professor of Experimental Medicine and Instructor in Clinical Medicine
 JOSEPH ROBERT SURIANO, Ph.D. (1959) *Instructor in Medical Microbiology*
 RALPH DANIEL SUSSMAN, M.D. (1946) *Associate Professor of Clinical Pediatrics*
 BURTON SAMUEL TABAKIN, M.D. (1954) *Assistant Professor of Medicine*
 DAVID LATHAM TABER, M.D. (1953) *Instructor in Clinical Obstetrics and Gynecology*
 *FRED HERBERT TAYLOR, Ph.D. (1943) *Professor of Botany*
 CHRISTOPHER MARLOWE TERRIEN, M.D. (1939) *Associate Professor of Clinical Medicine*
 LOUIS GEORGE THABAULT, M.D. (1939) *Instructor in Clinical Surgery*
 WILFRID THABAULT, M.D. (Jan., 1958) *Instructor in Clinical Obstetrics and Gynecology*
 ARTHUR BARNARD THOMPSON, JR., M.A. (1958) *Instructor in Political Science*
 JACK EVERARD THOMPSON, M.F. (1959) *Assistant Professor of Forestry*
 MARY ELIZABETH THOMPSON, M.A. (1958) *Assistant Professor of Nursing*
 *REUBEN TORCH, Ph.D. (1953) *Assistant Professor of Zoology*
 RANDOLPH SHEPARDSON TOWNE, A.M. (1928) *Assistant Professor of Romance Languages*
 JOHN COPLEY TRAVIS, A.B. (1959) *Instructor in Speech*
 *RAYMOND HERMAN TREMBLAY, Ph.D. (1953) *Associate Professor of Agricultural Economics*
 *JACK TREVITHICK, Ph.D. (1946) *Professor of English*
 VIRGINIA YAPP TROTTER (MRS. R. T.), M.S. (1955) *Associate Professor of Home Economics*
 KEITH FRANK TRUAX, M.D. (1932) *Associate Professor of Clinical Surgery*
 †ARTHUR FREDERICK TUTHILL, M.S. (1946) *Associate Professor of Mechanical Engineering*
 MARSHALL COLEMAN TWITCHELL, JR., M.D. (1942) *Assistant Professor of Ophthalmology*
 HIRAM EUGENE UPTON, M.D. (1930) *Associate Professor of Clinical Medicine*
 §JAMES GREGG UTTERBACK, M.D. (January, 1959) *Assistant Professor of Pathology*
 FREDERICK WILLIAM VAN BUSKIRK, M.D. (1946) *Associate Professor of Clinical Radiology*
 KENNETH EVERSON VARNEY, M.S. (1946) *Assistant Professor of Agronomy*
 WILLIAM HENRY DALTON VERNON, Ph.D. (1957) *Associate Professor of Home Economics*
 HUBERT WALTER VOGELMANN, Ph.D. (1955) *Assistant Professor of Botany*
 BENJAMIN BOOTH WAINWRIGHT, A.M. (1925) *Associate Professor of English*
 LUCILLE WAKEFIELD, M.S. (1957) *Assistant Professor of Home Economics*
 *NELSON LEE WALBRIDGE, Ph.D. (1924) *Professor of Physics*
 LESTER JULIAN WALLMAN, M.D. (1948) *Associate Professor of Neurosurgery*
 HELEN JANE WAMBOLDT (MRS.), Ph.D. (1953-54; 1959) *Assistant Professor of Speech*
 EARL JAMES WEAVER, Ph.B. (1959) *Instructor in English*
 *FRED CLARENCE WEBSTER, Ph.D. (1951-53; 1956)
Assistant Professor of Agricultural Economics
 TRUMAN MARION WEBSTER, Ph.D. (1945) *Assistant Professor of German*
 JOHN GEORGE WEIGER, M.A. (1958) *Instructor in Romance Languages*
 FRANCIS ALEXANDER WEINRICH, M.A. (1950) *Assistant Professor of Music*
 GEORGE WILLIAM WELSH, 3rd, M.D. (1956) *Instructor in Medicine*
 DOUGLAS CHARLES WEST, B.S. (1959) *Instructor in Mechanical Engineering*
 WENDELL JENNISON WHITCHER, Ph.D. (1952) *Associate Professor of Chemistry*
 ESTON TROUT WHITE, M.A., Lieutenant Colonel U. S. Army (1957)
Professor of Military Science and Tactics
 *JAMES FELLOWS WHITE, Ph.D. (1955) *Professor of German*
 ROY ALVIN WHITMORE, JR., M.F. (1958) *Associate Professor of Forestry*
 HILTON ADDISON WICK, LL.B. (1949) *Instructor in Economics*
 WILBUR WILSON WIDICUS, JR., M.B.A. (1959) *Instructor in Commerce and Economics*
 BLAIR WILLIAMS, M.S. (1949-50; 1951) *Associate Professor of Home Economics*
 MARTIN WESLEY WILLIAMS, Ph.D. (1953-56; 1958) *Assistant Professor of Pharmacology*

†On leave 1959-60.

§Resigned January 31, 1960.

HELEN CROSS WILLIAMSON, M.A. (1958)	<i>Instructor in Nursing</i>
JANET BROWNELL WILSON, M.A. (1957)	<i>Instructor in Home Economics</i>
*WALTER LeROY WILSON, Ph.D. 1949)	<i>Assistant Professor of Physiology and Biophysics</i>
VICTOR S. WOJNAR, M.D. (1959)	<i>Assistant Professor of Clinical Surgery</i>
GEORGE ANTHONY WOLF, JR., M.D. (1952)	<i>Professor of Clinical Medicine</i>
PAUL WOLOTKIN, M.A. (1958)	<i>Assistant Professor of Economics</i>
*GLEN MEREDITH WOOD, Ph.D. (1950)	<i>Associate Professor of Agronomy</i>
FLORENCE MAY WOODARD, Ph.D. (1923)	<i>Professor of Economics</i>
NORMA LOWYN WOODRUFF, M.A. (1952)	<i>Associate Professor of Nursing</i>
RICHARD S. WOODRUFF, M.D. (1950)	<i>Assistant Professor of Pathology</i>
LLOYD ABRAM WOODWARD, M.S. (1920)	<i>Associate Professor of Physics</i>
WILLIAM DORRANCE WORTHINGTON, M.D. (1958)	<i>Instructor in Clinical Pediatrics</i>
ALBERT W. WURTHMANN, M.A. (1947)	<i>Assistant Professor of German</i>
WILLIAM GREENHILL YOUNG, M.D. (1949)	<i>Associate Professor of Clinical Psychiatry</i>

Associates

FRANCIS ARNOLD CACCAVO, M.D.	<i>Clinical Associate in Surgery</i>
HARRY LIVINGSTON COLOMBO, M.D.	<i>Clinical Associate in Medicine</i>
JOHN PATRICK CORLEY, M.D.	<i>Clinical Associate in Medicine</i>
WILTON WARNER COVEY, M.D.	<i>Clinical Associate in Preventive Medicine (General Practice)</i>
EDWARD BYINGTON CRANE, M.D.	<i>Clinical Associate in Preventive Medicine (General Practice)</i>
WILLIAM NELSON DEANE, Ph.D.	<i>Research Associate in Medical Sociology</i>
WINSTON MILO EDDY, M.D.	<i>Clinical Associate in Medicine</i>
RAINER FRIED, Ph.D.	<i>Research Associate in Medicine</i>
EDWARD ESAU FRIEDMAN, M.D.	<i>Clinical Associate in Medicine</i>
WILLIAM H. HEININGER, M.D.	<i>Clinical Associate in Preventive Medicine (General Practice) and in Medicine</i>
HERMAN C. HERRLICH, Ph.D.	<i>Research Associate in Experimental Medicine</i>
HANS ROSENSTOCK HUESSY, M.D.	<i>Clinical Associate in Psychiatry</i>
EDWARD SUTER IRWIN, M.D.	<i>Clinical Associate in Ophthalmology</i>
LINTON JANUARY	<i>Clinical Associate in Medicine</i>
WILLIAM E. KING, M.D.	<i>Teaching Associate in Pathology</i>
FREDERICK M. LAING, M.S.	<i>Research Associate in Botany</i>
ARTHUR BYRON LAWRENCE, M.D.	<i>Clinical Associate in Preventive Medicine (General Practice)</i>
HYMAN BERNARD LEVINE, M.D.	<i>Clinical Associate in Preventive Medicine (General Practice)</i>
MARY GREENE LIGHTHALL, (MRS. H.), M.S.	<i>Research Associate in Botany</i>
MURDO G. MacDONALD, M.D.	<i>Clinical Associate in Medicine</i>
HANS MARCHET, M.D.	<i>Research Associate in Medicine</i>
ALLEN WRAY MATHIES, JR., Ph.D.	<i>Research Associate in Pathology (Parasitology)</i>
CAROL FENTON PHILLIPS, M.D.	<i>Research Associate in Pediatrics</i>
DONALD CARLTON REIFEL, M.D.	<i>Research Associate in Pathology</i>
JOHN LOUIS SAIA, M.D.	<i>Clinical Associate in Medicine</i>
HENRY SCHOENBERGER, M.D.	<i>Clinical Associate in Preventive Medicine (General Practice)</i>
BENJAMIN SINGERMAN, M.D.	<i>Clinical Associate in Preventive Medicine (General Practice)</i>
JOHN B. TOMPKINS, M.D.	<i>Clinical Associate in Psychiatry</i>
CHIN-JO TSENG, M.D.	<i>Clinical Associate in Radiology</i>
LOUIS J. WAINER, M.D.	<i>Clinical Associate in Preventive Medicine and in Medicine (General Practice)</i>
MAURICE J. WALSH, M.D.	<i>Clinical Associate in Medicine</i>
LELON ASHLEY WEAVER, JR., Ph.D.	<i>Research Associate in Experimental Psychology</i>

Assistants

HAROLD ERNEST ADAMS, M/Sgt.	<i>Assistant in Military Science</i>
PATRICIA A. ADAMS (MRS.), B.S.	<i>Assistant Teacher, Nursery School</i>
LEONA B. AMELIA (MRS.), R.N.	<i>Research Assistant, Cardiopulmonary Laboratory</i>
EDWARD R. ATWOOD, M/Sgt.	<i>Assistant in Military Science</i>
JOSEPH ROGER BEAUREGARD, M.S.	<i>Research Assistant in Pharmacology</i>
REBA J. BEECHER (MRS.), R.N.	<i>Research Assistant in Medicine</i>

ELIZABETH B. BICKNELL (MRS.), B.S.
 SHIRLEY LOUISE BLAGRAVE, B.A.
 NAN WHITEFIELD CISNEY
 JOHN FREDERIC COLLIER, A.B.
 JAMES P. CURTIN, SFC.
 PATRICIA LOU DONAHUE
 JAMES F. ELLIS, JR., M/Sgt.
 ROSEMARY ANN EMERY, B.S.
 WILDA ROMAYNE GIGEE, A.B.
 PHYLLIS L. GOODENOUGH
 CLAYTON EUGENE GRIFFITH
 GRETCHEN HEBB, B.S.
 JEAN RYAN HEWITT (MRS.), B.S.
 FREDERICK HYLAND, B.S.
 ESTHER WILSON KLEIN
 BERNARD A. KNOTT, M/Sgt.
 GLORIA F. KURZMANN, B.S.
 JOHN MASON MAXWELL, JR., S/Sgt.
 DAVID HERBERT McDERMOTT, A.B., M.A.
 PATRICIA BIXBY McHUGO, (MRS.)
 EDWARD FREDERICK MERRILL, B.S.
 DOROTHY WRIGHT NEWTON, (MRS.)
 JOAN MARY O'BRIEN, (MRS.), B.S.
 BRIAN WILLIAM PERRISS
 CAROL F. PHILLIPS, M.D.
 JOSEPH PREVITERA, SFC.
 ELIZABETH REILLY, B.S.
 YVONNE K. STARCHESKA
 SHIRLEY JANE STRONG, B.A.
 PAUL B. STRUYS, S/Sgt.
 JOEL F. SURRELL, M/Sgt.
 ERNEST H. SYLVAIN, S/Sgt.
 MICHAEL JOSEPH VENDETTI, B.S.
 VERA M. C. VERVOET
 EUGENIE VON EMNICH, D.V.M.
 WING M. WOON

Research Assistant in Home Economics
Teaching Assistant in Biochemistry
Research Assistant in Pharmacology
Research Assistant in Biochemistry
Assistant in Military Science
Research Assistant in Pharmacology
Assistant in Military Science
Research Assistant in Biochemistry
Research Assistant in Experimental Medicine
Research Assistant in Botany
Technical Research Assistant in Psychiatry
Research Assistant in Physiology and Biophysics
Research Assistant in Experimental Medicine
Teaching Assistant in Pathology
Administrative Coordinator in Preventive Medicine
Assistant in Air Science
Teaching Assistant in Medical Technology
Assistant in Air Science
Research Assistant in Biochemistry
Research Assistant in Pharmacology
Teaching Assistant in Biochemistry
Research Assistant in Biochemistry
Research Assistant in Pharmacology
Research Assistant in Biochemistry
Research Assistant in Pediatrics
Assistant in Military Science
Teaching Assistant in Medical Technology (Pathology)
Research Assistant in Experimental Medicine
Research Assistant in Pharmacology (Documentation)
Assistant in Air Science
Assistant in Military Science
Assistant in Air Science
Special Assistant Football Line Coach
Research Assistant in Medicine
Research Assistant in Anatomy
Research Assistant in Pathology (Photography)

Graduate Fellows

CLARENCE E. BUNKER, B.S.
 Pathology
 PETER C. DOWLING, B.S.
 Anatomy
 KENNETH C. FARBMAN, A.B.
 Biochemistry
 ROBERT W. HEATON, B.A.
 Pharmacology
 ANNE G. KIMBALL, B.A.
 English
 JOHN M. MacAULY, B.A.
 Pathology

RICHARD L. MOMPALER, B.S.
 Pharmacology
 FLORENCE T. SCHEIN, B.A., M.S.
 Pharmacology
 OLGA L. SEARS, B.S.
 Psychology
 LOLA F. SMITH, B.S.
 Zoology
 MARTIN SPIVAK, B.S.
 Biochemistry
 SALLY S. SPEAR, B.A.
 English

Graduate Research Fellows

PETER B. ADAMS, B.S.
 Botany
 CAROLYN BOHAN, B.A.
 Bacteriology
 GORDON E. BUTLER, B.S.
 Agricultural Economics

ROBERT A. CAMPBELL, B.S.
 Agricultural Economics
 WAI-YIU CHEUNG, B.S.
 Agricultural Biochemistry
 JOHN W. COLLINS, A.B., M.S.
 Agricultural Biochemistry

JOHN A. CORSON, B.A.
Psychology
JOHN M. DEAR, B.S.
Agricultural Biochemistry
PAUL S. DIMICK, B.S.
Animal and Dairy Husbandry
JESSE R. INGALLS, B.S.
Animal and Dairy Husbandry
ALMA P. DYKSTRA, A.B.
Agricultural Biochemistry
TAO-KUANG MING, B.S.
Agronomy
ROBERT N. MOREHOUSE, B.S.
Agronomy

MARTIN J. RAFF, B.A.
Bacteriology
CHRISTINE H. RIES, B.S.
Bacteriology
JOHN F. RUITBERG, B.S.
Agricultural Economics
JAMES C. SHIUE, B.S.
Electrical Engineering
CAREEN G. TEUNISSEN, Lic. Tech.
Horticulture
HARLEY TOMLINSON, B.S.
Botany

Graduate Teaching Fellows

HELLMUT H. AMMERLAHN
German
ELAINE S. BARNES, B.A.
Botany
PAUL E. BOUFFARD, B.A.
Chemistry
JOHN L. BREED, B.S.
Mechanical Engineering
JOHN J. BRINK, B.Sc.
Biochemistry
DONALD D. BUSTOS, D.Biochem.
Spanish
NORBERT F. CHARBONNEAU, B.A.
Mathematics
EINAR CHRYSTIE, B.A.
Zoology
LAWRENCE B. CLINE, B.A.
Geology
DOROTHY A. CURTIS, B.A.
Chemistry
ROBERT M. DOLE, JR., B.A.
Botany
EDWARD A. DUDLEY, B.S.
Chemistry
JO-ANN FISH, B.S.
Botany
RICHARD L. HOMOLA, B.S.
Botany
NICOLE JEAMME, Dip.Et.Sup.
French

STANLEY P. LEIBO, A.B.
Zoology
KEITH A. MAAS, S.B.
Chemistry
JOYCE MERRIAM, B.A.
Mathematics
ARTHUR L. NORBERG, B.S.
Physics
MARIA T. RIBERA, Dip. en. I.
Spanish
JOHN C. ROMANO, B.S.
Electrical Engineering
FRANCES R. SCHLICHTING, B.A.
Mathematics
TERRY L. SCRIBNER, B.S.
Mathematics
G. EDGAR SHATTUCK, B.A.
Agricultural Biochemistry
COURTLAND K. SPICER, B.A.
Chemistry
R. BRUCE STEELE, B.A.
Physics
RONALD S. STONE, S.B.
Chemistry
SHIH-YUNG TONG, B.E.
Electrical Engineering
JOHN W. WHITE, B.S.
Mathematics
HAROLD J. WIMETTE, B.A.
Chemistry

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BETTY ANN WITHROW, B.S. in L.S.
DAVID STOLLER, M.S. in L.S.

Agriculture and Documents Librarian
Assistant Director and Technical Services Librarian
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Curator of the Collections and Circulation Librarian

Assistants in Administration

Assistants in Library Administration

PHYLLIS REPA DONOHUE, (MRS.), A.B.
MARY BROMER FELL, M.S.

Assistant Circulation Librarian
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JOYCE FURREY McLAUGHLIN, (MRS.)
 LILLIAN COUTTS IRONS, (MRS.), B.S. in L.S.
 ELIZABETH VAUGHN MYERS, (MRS.), B.A.
 ERROL C. SLACK, M.S. in L.S.
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The Vermont Agricultural Extension Service is a cooperative undertaking of the State of Vermont, the College of Agriculture, the United States Department of Agriculture, and the several counties of the State. It has a State staff, with headquarters at the University, and a staff of county extension agents in each county. Its purpose is "to aid in diffusing among the people . . . useful and practical information on subjects relating to agriculture and home economics, and to encourage the application of the same." It works primarily with the rural people of the State, including both adults and children.

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ROBERT THOMAS WETHERBEE, M.S.

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†On leave for study 1959-60

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Under an alumni reorganization plan approved at the June, 1957, meeting of the Council, the purposes were defined as follows: To give organization and aid for the highest efficiency to all efforts of the Alumni of the University of Vermont for the benefit of the University, and more particularly in the following respects: To act as a clearing house for alumni sentiment and the interchange of alumni ideas; to approve or disapprove projects put forth in the alumni name, and to be the seat of authority in all such matters; to act as the official spokesman of alumni sentiment to the administration, and as the avenue of approach by which the administration should have access to the Alumni collectivity; to initiate and carry on such undertakings, or to provide for their being carried on, as are reasonably within the province of alumni activity, and are of benefit to the University; to plan and activate programs and services for the classes and clubs.

Officers of the Council consist of a president, vice-president, secretary and treasurer. The president and vice-president are elected annually, and neither office may be held by the same individual for more than two consecutive one-year terms.

Membership on the Council is made up of fifty or more members, who shall be the president, and immediate past president for the University's Alumni Association; two members elected by and representative of each of the seven class and club officers Association; one representative from each of seventeen prescribed regions of the country, and approximately 20 members-at-large nominated by the nominating committee of the Council. Members of the Council, except for the representatives of the Alumni Association, shall be elected for a term of one year, and, if eligible, may be re-elected for not more than three consecutive terms. Vacancies may be filled in between elections by appointment of the Council President.

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 James F. Burke, '17, Box 205, Dorset, Vt.
 Peter M. Haslam, '51, P. O. Box, Contoocook, N. H.
 Elmer L. Nicholson, '39, 68 Frederick St., Newington, Conn.
 Mrs. Nancy Goodwin Reynolds, '42, 15 Abingdon Sq., Apt. 26, New York 14, N. Y.
 John J. Zellingner, M.D. 1944, 46 Trinity Pl., New Rochelle, N. Y.
 Lloyd S. Coughtry, '36, Mt. Kemble Rd., Morristown, N. J.
 Alfred E. Brooks, '26, 100 Hoover Rd., Rochester, N. Y.
 Neil Tolman, '26, 1625 Eye St. N. W., Washington 6, D. C.
 Elias Lyman, Jr., '38, 125 Ninth St., Wilmette, Ill.
 Robert T. Palmer, '23, 6315 Norway Rd., Dallas, Tex.
 Harold C. Simonds, '22, 1717 LaVista Pl., Pasadena, Calif.

Class Chairmen:

Lyman C. Hunt, '12, 48 University Ter., Burlington, Vt.
 John J. Spasyk, '42, 178 West St., Essex Jct., Vt.

Class Secretaries:

Mrs. Ruth Harrington Lane, '21, 47 Hillcrest Rd., Burlington, Vt.
 Mrs. Florence Farr Hard, '23, 82 Adams St., Burlington, Vt.

Class Agents:

Feno H. Truax, '37, Box 22, Vergennes, Vt.
 Robert D. Paterson, '42, 110 Summit St., Burlington, Vt.

Club Presidents:

M. Baxter Cummings, Jr., '45, 71 Crescent Beach Dr., Burlington, Vt.
 Stewart P. Washburn, '51, 33 Chestnut St., Dorchester, Mass.

Club Secretaries:

Robert D. Taisey, '50, 30 West 60th St., New York 19, N. Y.
 Helen M. Wippich, '53, 12 Canterbury Lane, Roslyn Heights, L. I., N. Y.

Club Development Committee Chairmen:

Douglas L. Liston, '48, 23 Ardmore Rd., Worcester, Mass.
 Edward D. Sowka, '34, 196 Westchester Ave., Crestwood, Tuckahoe 7, N. Y.

Association of UVM Club Legislative Committee Chairman:

Reginald Arnold, '30, Bradford, Vt.

Athletic Council:

Loren F. Palmer, '29, 308 Maple St., Burlington, Vt.
 W. R. Buck, '19, 414 Colchester Ave., Burlington, Vt.
 William S. Gilbertson, '50, 69 Tracy Dr., Burlington, Vt.
 Robert P. Davison, '35, 12 West Hillcrest Rd., Essex Jct., Vt.

Enrollment Statistics

Summary of Resident Enrollment

Fall Semester, 1959-60

	<i>Men</i>	<i>Women</i>	<i>Total</i>
The Undergraduate Colleges:			
Arts and Sciences	668	372	1040
Technology	864	99	963
Education and Nursing	78	428	506
Agriculture and Home Economics	211	131	342
TOTAL	1821	1030	2851
College of Medicine	173	9	182
Graduate College	103	30	133
Unclassified	49	32	81*
School of Dental Hygiene		31	31
TOTAL	2146	1132	3278
Undergraduate Colleges by Classes:			
	<i>Men</i>	<i>Women</i>	<i>Total</i>
Senior	358	187	545
Junior	348	203	551
Sophomore	490	314	804
Freshman	625	326	951
TOTAL	1821	1030	2851

	<i>In-State</i>			<i>Out-of-State</i>			<i>Total</i>
	<i>M</i>	<i>F</i>	<i>T</i>	<i>M</i>	<i>F</i>	<i>T</i>	
Arts and Sciences	319	176	495	349	196	545	1040
Technology	512	45	557	352	54	406	963
Education and Nursing	63	216	279	15	212	227	506
Agric. and Home Economics	153	67	220	58	64	122	342
Graduate	86	18	104	17	12	29	133
Medicine	55	3	58	118	6	124	182
Unclassified	40	26	66	9	6	15	81
Dental Hygiene	0	21	21	0	10	10	31
	1228	572	1800	918	560	1478	3278

In addition to the above regularly enrolled students are the following:

Pre-Clinic Nurses 49

GRAND TOTAL—FALL SEMESTER 1959—3327

Enrollment by Divisions

I. COLLEGE OF ARTS AND SCIENCES

	<i>In-State</i>			<i>Out-of-State</i>			<i>Total</i>
	<i>M</i>	<i>F</i>	<i>T</i>	<i>M</i>	<i>F</i>	<i>T</i>	<i>In & Out</i>
Class of 1960	70	27	97	96	36	132	229
Class of 1961	85	32	117	80	50	130	247
Class of 1962	83	51	134	75	70	145	279
Class of 1963	81	66	147	98	40	138	285
	319	176	495	349	196	545	1040
MEN	668						
WOMEN		372					
TOTAL						1040	

*16 Unclassified students are enrolled in a full-time program.

II. COLLEGE OF TECHNOLOGY

	<i>In-State</i>			<i>Out-of-State</i>			<i>Total</i>
	<i>M</i>	<i>F</i>	<i>T</i>	<i>M</i>	<i>F</i>	<i>T</i>	<i>In & Out</i>
Class of 1960	93	9	102	47	5	52	154
Class of 1961	101	4	105	37	9	46	151
Class of 1962	149	16	165	97	17	114	279
Class of 1963	169	16	185	171	23	194	379
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	512	45	557	352	54	406	963

By Curricula:

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Engineering—undecided	9	0	9
Civil Engineering	98	3	101
Electrical Engineering	137	0	137
Management Engineering	18	0	18
Mathematics	15	7	22
Mechanical Engineering	110	0	110
Commerce and Economics	267	12	279
Secretarial	0	3	3
Professional Chemistry	24	4	28
Medical Technology	2	48	50
Pre-Medical	184	22	206
	<hr/>	<hr/>	<hr/>
	864	99	963

III. COLLEGE OF EDUCATION AND NURSING

	<i>In-State</i>			<i>Out-of-State</i>			<i>Total</i>
	<i>M</i>	<i>F</i>	<i>T</i>	<i>M</i>	<i>F</i>	<i>T</i>	<i>In & Out</i>
Class of 1960	10	48	58	3	39	42	100
Class of 1961	8	37	45	2	50	52	97
Class of 1962	20	58	78	4	57	61	139
Class of 1963	25	73	98	6	66	72	170
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	63	216	279	15	212	227	506

By Curricula:

	<i>Men</i>	<i>Women</i>	<i>Total</i>
Elementary	0	169	169
Junior High	7	11	18
Secondary	64	79	143
Business	2	18	20
Music	5	10	15
Nursing	0	141	141
	<hr/>	<hr/>	<hr/>
TOTAL	78	428	506

IV. COLLEGE OF AGRICULTURE AND HOME ECONOMICS

	<i>In-State</i>			<i>Out-of-State</i>			<i>Total</i>
	<i>M</i>	<i>F</i>	<i>T</i>	<i>M</i>	<i>F</i>	<i>T</i>	<i>In & Out</i>
Class of 1960	27	13	40	12	10	22	62
Class of 1961	27	13	40	8	8	16	56
Class of 1962	48	22	70	14	23	37	107
Class of 1963	51	19	70	24	23	47	117
	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>	<hr/>
	153	67	220	58	64	122	342

By Curricula:	<i>Men</i>	<i>Women</i>	<i>Total</i>
Agriculture (General)	131	6	137
Agricultural Engr.	26	0	26
Pre-Forestry	37	0	37
Pre-Veterinary	17	3	20
Home Economics	0	122	122
TOTAL	211	131	342

V. GRADUATE COLLEGE

	<i>Men</i>	<i>Women</i>	<i>Total</i>
In-state	86	18	104
Out-of-state	17	12	29
TOTAL	103	30	133

VI. COLLEGE OF MEDICINE

	<i>In-State</i>			<i>Out-of-State</i>			<i>Total</i>
	<i>M</i>	<i>F</i>	<i>T</i>	<i>M</i>	<i>F</i>	<i>T</i>	<i>In & Out</i>
Class of 1960	16	0	16	25	2	27	43
Class of 1961	13	2	15	28	1	29	44
Class of 1962	10	0	10	34	1	35	45
Class of 1963	16	1	17	31	2	33	50
TOTAL	55	3	58	118	6	124	182

VII. UNCLASSIFIED DIVISION (Special Students)

	<i>In-State</i>			<i>Out-of-State</i>			<i>Total</i>
	<i>M</i>	<i>F</i>	<i>T</i>	<i>M</i>	<i>F</i>	<i>T</i>	<i>In & Out</i>
Arts & Sciences	8	14	22	7	6	13	35
Technology	27	3	30	2	0	2	32
Agriculture & H. Ec.	2	2	4	0	0	0	4
Educ. & Nur.	3	7	10	0	0	0	10
	40	26	66	9	6	15	81*

VIII. SCHOOL OF DENTAL HYGIENE

	<i>In-State</i>	<i>Out-of-State</i>	<i>In & Out</i>
Second Year	8	5	13
First Year	13	5	18
TOTAL	21	10	31

IX. UNDERGRADUATE MARRIED STUDENTS

	<i>M</i>	<i>F</i>	<i>T</i>	
Class of 1960	89	22	111	18.5%
Class of 1961	48	9	57	10.4%
Class of 1962	38	2	40	5.0%
Class of 1963	16	1	17	1.8%
TOTAL	191	34	225	7.9%

Degrees

June 14, 1959

School of Dental Hygiene

Leola Ruth Amena, Milford, Conn.
Leigh Rae Andelmann, Hempstead, N. Y.
Norene Cress Baslow, Bristol
Wanda Cynthia Cox, Randolph
Grayce Arlene Darling, Brattleboro
Lorraine R. Dill, Gillette, N. J.
Joan Marie Dyer, Albany

Nancy Lee Getchell, Portland, Me.
Ruth Elaine Morse, Bristol
Barbara Verna Schneider, White Plains, N. Y.
Julie Angela Watts, Barre
Constance Ann White, Barnet
Lois Ann Wilder, Rutland
Eleanor Jane Wilson, Craftsbury Common

College of Education and Nursing

Bachelor of Science in Nursing

Margaret Elizabeth Anderson, Jamaica Plain,
Mass.
Vilma Elda Camardella, New Rochelle, N. Y.
Lillian Hortense Chevalier, Swanton
Nancy Jane Clow, Kenmore, N. Y.
Joyce Clement Colclough, Henniker, N. H.
Charlene Ruth Cook, Wallingford
Jimmie Ruth Coshatt, Burlington
Joan Lea Dietrich, Madison, N. J.
Sylvia Jean Emslie, Barre
Anita Louise Fregosi, Proctor
Gladys Valentine Gardner, Sea Cliff, N. Y.

Beverly Jaques Haskins, Huntington
Judith Marie Hauck, Burlington
Janet Margiotta Holmes, Middlebury, Conn.
Ann Elizabeth Maher, North Tonawanda, N. Y.
Barbara Levy Manheim, Westbury, N. Y.
Margaret Ruth McFeeters, St. Albans
Louise Ann Nelson, West Hartford, Conn.
Linda Ann Nitschke, Warwick, R. I.
Roberta May Nugent, Baldwin, N. Y.
Margaret Dolliver Ouellette, Edison, N. J.
Naomi Smith Warner, West Hartford, Conn.

Bachelor of Science in Business Education

Lois Martha Annable, Burlington
Beverly Arlene Atwell, Burlington
Sally Joan Buxton, Bellows Falls

Dolores June Fidler, North Troy
William Albert Jones, Richford
Frances Katherine Nault, Newport

Bachelor of Science in Music Education

Dora June Brown, Hydeville

Judith Dutton, Bethel

Bachelor of Science in Education

Sarah Louise Bain, Milwaukee, Wis.
Judith Anne Baker, Burlington
Judith Siegel Bloomfield, Great Neck, N. Y.
David Hackett Brock, Windsor
Linda Coulter Brown, Brandon
Robert Elmer Brown, Bethel
Carol Stickney Burdett, Essex Junction
John Ralph Burgess, Brattleboro
Norma Jean Canales, Barre
Ruth Ellen Carlson, Nichols, Conn.
Patricia Anne Caron, Falls Church, Va.
Margaret Mary Carpenter, Barre

Carol Geo Chapman, Burlington
Peter Sam Costopoulos, Burlington
Emma Sarah Crafts, Fairfax
Barbara Gail Crocker, North Adams, Mass.
Jane Elizabeth Cushman, Vergennes
Agatha Bell D'Aquila, Middletown, Conn.
Margaret Jean Douglas, Shoreham
Constance Patricia Egner, South Ryegate
Molly Amelia Falone, Montclair, N. J.
Linda Rose Fish, New York, N. Y.
Deborah Covert Flewelling, Saugerties, N. Y.
Lola Alice Foster, *cum laude*, Hardwick

Mary Katherine Free, Ogdensburg, N. Y.
 Lois Barbara Frisch, Flushing, N. Y.
 Constance Colodny Gordon, Burlington
 Thomas Greenwood III, Shelburne
 *Richard Allard Harrison, Springfield
 Elizabeth Maynard Hayes, Tenafly, N. J.
 Phyllis Bromberg Heller, Burlington
 Joanna Beth Henderson, Nashua, N. H.
 Anita Elizabeth Hirsch, Bronx, N. Y.
 Sally Avis Houston, Hardwick
 Marcellete Ann Johnson, West Rutland
 Sue Davenport Johnson, Winooski
 Mary Josephine Judd, Burlington
 Stanislaw Karyta, Winooski
 Ann Coffin Kimball, Boonton, N. J.
 Karen Lou Kirby, Burlington
 Louella Chadwick Kittell, St. Albans
 Kalton Carroll Lahue, Burlington
 Bernard Patrick Leamy, Burlington
 Elsa Lee Levinson, Crestwood, N. Y.
 Ann Elizabeth Lewis, Washington, Conn.
 Mary Gove Macey, Burlington
 Fred Sanford May, Barton
 George Thaire Mazuzan, Northfield
 James Seaton Meyer, Great Neck, N. Y.
 Thomas Ralph Muir, Winooski
 Shirley Josephine Nichols, White Plains, N. Y.

Mary Elizabeth Noonan, Glens Falls, N. Y.
 Carolyn Alice Paine, Bristol
 Marlene Helen Paradee, Grand Isle
 John Lawrence Petelle, Fair Haven
 Laura Agnes Peterson, Williston
 Pauline Marilyn Plummer, Plainfield, N. H.
 Louis George Provost, Winooski
 *Sally Ann Reagan, Pittsfield, Mass.
 Katherine Margaret Reed, South Burlington
 Jean Louise Robinson, Brownsville
 Barbara Gail Rothman, Burlington
 Jane Edith Rowan, Schenectady, N. Y.
 Helen Fogg Rucker, Hardwick
 Nancy Merrill Scribner, Lyndonville
 Marilyn Suzanne Sharpe, Ridgewood, N. J.
 Barbara Wei-hao Shen, Plainfield
 Sheila Frances Speir, Hardwick
 Sandra Hope Stephenson, Westfield
 Patricia Ann Tewksbury, *cum laude*, Windsor
 Geraldine Weiss Tisdell, Winooski
 Mary Patricia O'Connell Tomasi, Burlington
 Howard Lawrence Vuley, Winooski
 Gwen Hall Waite, Grosse Pointe Woods, Mich.
 Richard Walter Ward, St. Johnsbury
 Ellen Williams, Poultney
 Catherine Elaine Zissopoulos, Bristol, Conn.

College of Technology

Bachelor of Science in Chemistry

Paul Stanley Anderson, Swanton
 Barbara Noble, *cum laude*, Burlington
 Robert Joseph Ouellette, *magna cum laude*,

St. Johnsbury
 George Philip Roberts, Orleans

Bachelor of Science in Commerce and Economics

John Turnell Austin, West Hartford, Conn.
 James Elliott Baum, Mount Vernon, N. Y.
 David Charles Bell, St. Albans
 Norman John Bergeron, Winooski
 Daniel Craig Bianca, Patchogue, N. Y.
 Allen Neil Blake, Chelsea
 Walter Theodore Blank, Johnsbury, N. Y.
 Arthur Leslie Blumberg, West Hartford, Conn.
 John Avery Booth, Jr., Essex Falls, N. J.
 Robert Moore Botsford, Poughkeepsie, N. Y.
 Michael Van Buren Case, Milford, Conn.
 *Peter Myles Costello, Cambridge, Mass.
 *Samuel Brooks Cummings, Lebanon, N. H.
 Edward Bernard Ellis, Chestnut Hills, Mass.
 *David Patrick Fagan, Rutland
 Henry Wilfred Ferry, Northfield
 *Edward Leon Fink, Flushing, N. Y.
 Sally Dwight Folz, Babylon, N. Y.
 William H. Foote III, Burlington
 William Gustav Geissel, Union, N. J.

Charles Thomas Goetz, Townshend
 Edward Arnold Goldberg, Laurelton, N. Y.
 Samuel Stephen Gould, Barre
 David Edwards Hagberg, North Wilbraham,
 Mass.
 Donald Lechnyr Hasseltine, Winooski
 *Richard Frederick Haus, Manhasset, N. Y.
 Carole Holmes, Brandon
 John Charles Howe, Hamburg, N. Y.
 Hugh Lindell Hunter, Millerton, N. Y.
 Jay Eli Karetnick, Hillside, N. J.
 Tomma Jean Keith, Peru, N. Y.
 *Victor Edward Kendall, North Springfield
 Robert Andrew Kuchar, Jersey City, N. J.
 Ruben Abril Lamarque, Jr., Brooklyn, N. Y.
 John Charles Lefrancois, Rutland
 Patrick Barrett Levins, Jr., Rutland
 Clement Charles Looby, Vergennes
 Laurence Evan Lublin, Great Neck, N. Y.
 Robert Stewart Mason, Glens Falls, N. Y.

*As of October 18, 1958.

Roy Edwin McMahon, St. Albans
 Durwood Randall Montgomery, Richford
 Donald Charles Morse, Proctorsville
 Carole Elizabeth Moyer, Lansdale, Penn.
 *William Doyle O'Day, Hydesville
 †Jacob Omland, Stockbridge
 Robert James Redmond, Amsterdam, N. Y.
 Martin Howard Rotter, Jackson Heights, N. Y.
 Richard Jay Rubin, Brookline, Mass.
 Donald George Santa Croce, Staten Island,
 N. Y.
 *Robert Frederick Schaffrick, Plainville, Conn.
 *William Laurence Scofield, Stamford, Conn.
 Edward Hubert Sinclair, Jr., Windsor

Richard Daryl Slayton, Stowe
 Harold Leland Staples, Hamden, Conn.
 David Whitney Stearns, Ludlow
 Joan Eileen Stimets, Woodstock
 Norman William Strickland II, Boston, Mass.
 William Craig Tillinghast, Danielson, Conn.
 John Burgoyne Tobey, Barre
 *George Joseph Trono, Burlington
 Andre Gordon Turenne, Fayville, Mass.
 Donald William Wallace, Claremont, N. H.
 LeRoy Stanley Williams, Albany, N. Y.
 Thelma May Williams, Charlotte
 Albert Richard Wilson, Indian Lake, N. Y.

Bachelor of Science in Civil Engineering

Francis Felice Beverina, Montpelier
 John Raymond Campbell, Jr., Milton
 Joseph Damboiu, Burlington
 Raymond Avery Hall, Jr., Burlington
 James Henry Hoag, Jr., Burlington
 John Francis Kennedy, Athens
 Elroy Lee Langdell, Morrisville
 Wayne Douglas Lawrence, Rochester
 Larry Wayne Seymour, Rochester, N. Y.

Richard Everett Shine, Townshend
 Frank Walworth Smith, St. Albans
 Charles Elbert Streator, Burlington
 Leon Paul Tessier, Enosburg Falls
 †Richard Wallace Turner, Montpelier
 †John Robert Webster, Orleans
 Richard Maurice Wheeler, Essex Junction
 Donald Allen Wilcox, North Pownal

Bachelor of Science in Electrical Engineering

Brigitta Anne Brand, New Rochelle, N. Y.
 William James Cimonetti, Wilmington
 Robert Adams DeForest, *cum laude*, Troy, N. Y.
 Gilbert Andrew Gagne, Swanton
 Richard Charles Grace, Waterbury
 Reginald Orvis Hill, Burlington
 Kenneth Anthony Klem, Waterbury, Conn.
 Bernard Francis Leach, Burlington
 William Howard McAnney, Brattleboro

Earl George McDonald, Jr., Burlington
 William Barrett Nichols, St. Johnsbury
 †Conrad Herbert Ormsbee, Montpelier
 Robert Joseph Perfetti, Rutland
 Alphonse Clifford Ratte, Brattleboro
 Richard Webster Sanders, Rutland
 Dean Arlen Sinclair, Johnson
 †Lawrence Alan Underwood, Rutland
 †David Gene Willard, Charlestown, N. H.

Bachelor of Science in Mechanical Engineering

†James Edward Bellemare, Bennington
 John Lincoln Breed, Jr., Burlington
 Anthony Michael Corrado, Lynbrook, N. Y.
 Richard Henry Dowhan, Burlington
 John Leonard Klinck, Washington, D. G.
 Leo Henry Lusignan, Burlington
 Ralph William Mauro, Brooklyn, N. Y.
 †Peter Kenneth Ousley, Dover, Mass.

Lloyd Metcalf Perry, Dumond, N. J.
 Wilder Thornall Pray, E. Chappaqua, N. Y.
 Stanton Almon Robinson, West Wardsboro
 Stanley William Smyrski, West Rutland
 Richard Louis Speer, Flushing, N. Y.
 Duane Raymond Tanguie, Island Pond
 Douglas Charles West, Riverhead, N. Y.

Bachelor of Science in Management Engineering

Donald Earl Bradbury, Springfield, Mass.
 Raymond Clement Brault, Burlington

William John Brunt, Bristol, Conn.
 John Frederick Gibson, St. Johnsbury

Bachelor of Science in Mathematics

Richard Beckett Buckey, Castleton

Clement Flick Pease, Princeton, N. J.

*As of October 18, 1958.

†As of February 21, 1959.

Bachelor of Science in Medical Technology

Roberta Lee Clauss, Poughkeepsie, N. Y.	Sandra Phyllis Pierce Lewis, Enosburg
Patricia Kathryn Cyr, Newark, N. J.	Aune Weeks Plaisted, Meredith, N. H.
Janet Elinor Dauchy, Montpelier	Christine Hedy Ries, Maplewood, N. J.
Sarah Humphrey, Mt. Carmel, Conn.	Eleanor Lou Thomas, Burlington
Frances Mary Levesque, Richmond	Mary Louise Tyer, Bridgeport, Conn.
Mary Louise Lombard, Barre	Judy L. Vincent, Larchmont, N. Y.
Sheila Kathleen O'Toole, Springdale, Conn.	Carol Patricia Webber, Montclair, N. J.

College of Agriculture and Home Economics

Bachelor of Science in Agriculture

†Peter Bent Adams, Burlington	Richard Hubert McFarlin, St. Johnsbury
Ray Wallace Allen, South Hero	Gerald Mason, Pawlet
David Clesson Arms, Burlington	Theodore Nelson Mellin, Glen Rock, N. J.
*James Daniel Bianca, Patchogue, N. Y.	Peter Barnes Millett, Springfield
Frank Platt Bolles, Bellows Falls	†William Gordon Mitchell, Wilmington, Del.
Glenn William Bronson, Shelburne	Bertrand Perry Muzzy, Chittenden
Harold Curtis Burrell, Summit, N. J.	Wales Adams Newell, Woodbury, Conn.
Richard Joseph Cartier, Burlington	*William Thayer Nichols, Glen Head, N. Y.
Robert Willington Chutter, Jr., Pittsford	*Wilfred Lawrence Pollender, Richford
Everett Walter Coffey, Orleans	David Walker Riggs, Baltimore, Md.
John Edgar Cook, W. Groton, Mass.	Milton Alexander Robison, East Wallingford
Ronald Herman Cook, Orleans	Peter Varney Rogers, Johnson
Carlton Lee Doane, Bakersfield	Daniel Knight Rudolph, Charlote
Marvin S. Dobert, Glens Falls, N. Y.	James Russell, Burlington
Lewie Carroll Dodge, Grand Isle	Durward Wayne Starr, North Troy
Herbert Albert Ehrenfreund, Broad Brook, Conn.	Charles Brigham Swan, Jericho
Arthur Palmer French, Burlington	Harley Tomlinson, Tunbridge
Spencer Gibbs Gregory, Winoski	Donald Richard Tourville, Burlington
Bradford Anthony Haines, Bellows Falls	Richard Norman Webler, Essex Jct.
†Eugene Charles Hanchett, Thetford Center	Charles Peter Wilde, W. Brattleboro
†Frederick Clyde Harper, Stamford, N. Y.	John Hyman Willey, Essex Jct.
John Kenneth Ketcham, Brandon	†Isley Stanford Zecher, Manchester Ctr.
†Rodney Wilder Larrow, South Hero	†Lloyd K. Zimmermann, Forest Hills, N. Y.

Bachelor of Science in Agricultural Engineering

†Stanley Leroy Lawrence, Burlington	Robert George Turner, Burlington
Stephen Francis Moore, East Peacham	

Bachelor of Science in Home Economics

Mary Elizabeth Arnold, Jacksonville	Wilma Mae Jordan, Wells
Nancy Lou Atwood, Milton	Marlene Dolores Mansfield, Stowe
Aileen Barden Barnhart, Bethesda, Md.	Helen Osborne Meyer, Bloomington, Ill.
Nancy Elizabeth Bartlett, W. Orange, N. J.	Dianne Warner Morse, Burlington
Marcia Beals, Glens Falls, N. Y.	Galen Ferris Norton, Vergennes
†Elizabeth Jean Beck, Westfield, N. J.	Mary Davison Parker, Morrisville
Barbara Ann Bond, Barre	Roberta Reed Petelle, South Shaftsbury
Patricia Anne Deacon, Oradell, N. J.	Priscilla Llynn Roberts, Danville
Barbara DeMar, Reading, Mass.	*Marian Foster Tinsley, Burlington
Nancy Louise DesLauriers, S. Burlington	Diane Cecile Weiss, Long Beach, N. Y.
Barbara Lee Evans, Long Branch, N. J.	Ann Patricia Whitcomb, <i>cum laude</i> , Springfield
Susan Voorhis Gilbert, Needham, Mass.	Caryanne Randolph Whitmore, Port Washing- ton, N. Y.
Dorris Ann Graff, Guilford, Conn.	
Bonnie Marjorie Hazen, Midland Park, N. J.	

*As of October 18, 1958.

†As of February 21, 1959.

College of Arts and Sciences

Bachelor of Arts

- Nancy Grace Agosta, Barre
Lawrence Harold Albert, Waterbury, Conn.
Nancie Todd Anderson, Glen Rock, N. J.
Nicholas James Andreson, Worcester, Mass.
Helen Margaret Atwood, *cum laude*, Storrs, Conn.
Edward Michael Austin, Brattleboro
Roger David Baker, Burlington
Linda Virginia Ball, Saugerties, N. Y.
Elaine Severance Barnes, Middlebury
Rhona Dvora Bayer, Burlington
Joey Lee Bellman, Bronxville, N. Y.
Robins Woodward Best, Burlington
Donald Thomson Black, Barre
Edgar Atkinson Boadway, Jr., East Broughton Station, Que.
Carole Mildred Brown, Rutland
Elliott Alan Brown, Glens Falls, N. Y.
Patrick Ernest Brown, Burlington
†James Walter Burns, Burlington
Joseph Donald Capra, Barre
Carl William Carlson, Clifton, N. J.
Stuart Burton Carr, Brooklyn, N. Y.
Robert Wallace Chapman, Plainville, Conn.
David Stuart Chase, Lancaster, N. H.
Matthew Handlin Connors, Fitchburg, Mass.
†Frederick Nelson Cook, Cuttingsville
Nancy Gertrude Coolidge, Dorset
Nancy Louise Crawford, Katonah, N. Y.
Alan Frederick Crosby, Burlington
Ruth Margaret Cross, Albany, N. Y.
Anthony Lawrence Crovo, West Newton, Mass.
Arthur Wesley Dacy, Danvers, Mass.
Nancy Louise Dana, East Wallingford
Kenneth S. Dannett, Scarsdale, N. Y.
Ruth Mary Darling, Bradford
John Carl Darwin, Fairhaven, Mass.
Robert Powers Davison, Jr., Essex Junction
Mari-Jo Decker, Long Valley, N. J.
Frederick William Dickerman, Jr., Milldale, Conn.
Robert Malcolm Dole, Jr., Georgetown, Mass.
Marcia Ann Dowd, Westfield, N. J.
†Mabel Durand Dukehart, New Rochelle, N. Y.
Paul Clinton Dunham, Jr., Pittsfield, Mass.
Barbara Louise Dunn, Brattleboro
Alice Carolyn Dvorsky, Southbridge, Mass.
Philip Harry Eby, Princeton, N. J.
Richard Walter Echtenkamp, Buffalo, N. Y.
Edward Thomas Eggert II, Medina, N. Y.
Robert Ehrlich, New Rochelle, N. Y.
Marsha Harriet Eisen, Newark, N. J.
Samuel Henry Evanson, Jr., Swanton
Robert Harris Feinberg, Narberth, Penn.
Patricia Ann Fenn, St. Johnsbury
Rita Ferrolo, Asbury Park, N. J.
Harvey Eli Flum, Roslyn Heights, N. Y.
Lawrence Jay Freidman, Woodcliff Lake, N. J.
Joseph Mario Fumagalli, Barre
Patricia Ann Funkhouser, Hanover, N. H.
David Goodsell Gale, Richmond
Robert John Gallagher, Lyndhurst, N. J.
Michael Samuel Giancola, Proctor
Mary Ann Gillingham, Woodstock
Theodor Morton Ginsberg, Flushing, N. Y.
Philip Anthony Goddard, Morrisville
Sarah Berrick Godfrey, Albany, N. Y.
Rochelle Goldman, Scarsdale, N. Y.
Gary Lewis Gover, Burlington
Susan Elizabeth Graf, Buffalo, N. Y.
Katherine Winterbotham Grath, Passaic, N. J.
Adair Alan Graves, Wolcott
Eric Rupert Graves, Waterbury
*Robert John Grimm, Jamaica, N. Y.
Ann LoRaine Jeanne Gros-Daillon, Astoria, N. Y.
John Richard Haff, Fort Edward, N. Y.
*Daniel Lancelot Hairston, Rand, W. Va.
Pauline Ann Harrison, Glen Ridge, N. J.
William Francis Hartigan, Rutland
Linda Ann Hartwell, Burlington
Jerome Heller, New York, N. Y.
John Peter Hempel, Denver, Colo.
Eugene Harold Higgins, Rupert
†Charles Samuel Hirsch, New York, N. Y.
Carl Donald Hirschborn, Brooklyn, N. Y.
*Robert Louis Holenstein, Montclair, N. J.
Allen Seales Holt, West Hartford, Conn.
*Guy Henry Holt, Great Neck, N. Y.
Nancy Platt Hoppen, North Haven, Conn.
Marshall Horowitz, Bridgeport, Conn.
Margaret Alice Huggett, East Theford
Patricia Evans Hunt, Barton
Stanley Israel, Berlin, N. H.
Sherwin Louis Iverson, Aurora, N. Y.
Andrew Francis Jause, Granville, N. Y.
Patricia Jay, Burlington
John Francis Joyce, Albany, N. Y.
†John Leemon Kaiser, Upper Montclair, N. J.
*Steven Erwin Kanor, River Edge, N. J.
David Kallman Kanter, Pittsfield, Mass.
†Alberta Paula Kauzmann, Maplewood, N. J.
*Donald Dean Keller, Scarsdale, N. Y.
John Clark Kendrick, St. Albans
Alan Kessler, Little Neck, N. Y.
Wallace Frank Kessler, Riverdale, N. Y.
Thomas Low Kiehl, Willsboro, N. Y.
Robert Jay Koonas, Brooklyn, N. Y.

*As of October 18, 1958.

†As of February 21, 1959.

Ned Kopald, Highland Falls, N. Y.
 Walter Albert Kramarz, West Rutland
 Helen Louise Kruk, Newark, N. J.
 Frederic Joel Kupperman, New York, N. Y.
 Larry Jackson Laber, Burlington
 †John Battles Lane, Burlington
 †Jared Albion Larrow, Middlebury
 Joseph Brett Lazar, Staten Island, N. Y.
 Roger Lee Lerner, Bridgeport, Conn.
 †Nelson Joseph Letourneau, Burlington
 Catherine A. Brown Levin, Houlton, Me.
 Tanya Maria Lohman, Burlington
 Jean Elinor Long, East Craftsbury
 Shirley Carol Long, *magna cum laude*,
 Piermont, N. H.
 Clyde Ormond Lord, Brooklyn, N. Y.
 Richard Bert Loth, Buffalo, N. Y.
 Douglas Clark MacDonald, Harrison, N. Y.
 Martha Elizabeth McDonald, Shelburne
 Richard Freal MacLean, Braintree, Mass.
 Mary Helen Shaw Mackay, Cambridge, Mass.
 Lawrence John Markell, Brookline, Mass.
 Richard Charles Marron, Albany, N. Y.
 Gayla Emma Mayo, Northfield
 Gene Lee Meder, Burlington
 Froman Simon Mehl, Rutland
 Doreen Leonia Mekkelsen, Barre
 Cecelia Griffiths Meloney, New York, N. Y.
 Michael Alvin Meltzer, Brooklyn, N. Y.
 Samuel Lewis Meltzer, Brooklyn, N. Y.
 Gasper Alfred Mercaldo, Burlington
 Joyce Evelyn Merriam, North Troy
 Leroy George Meshel, Lido, N. Y.
 Clark Moeller, Tenafly, N. J.
 Carolyn Ann Morin, Middlebury
 Lynette Sayre Muller, Burlington
 Joan Merriam Myers, Schenectady, N. Y.
 Ronald Stanley Nadel, Brookline, Mass.
 Donald Simon Neitlich, Brookline, Mass.
 Margaret Ann Newton, St. Albans
 George Carl Noor, Chester
 John Lowery Noyes, Brattleboro
 Daniel Thomas O'Connell, St. Albans
 Donald Michael O'Connell, St. Albans
 Peter William Oesterlin, Hamden, Conn.
 John Parker Olmstead, Plymouth, N. H.
 Alan Doughty Overton, Manchester
 Martha Malvina Page, *cum laude*, Hyde Park
 Mary Fay Pendergast, Wayne, Penn.
 *Richard Leroy Plath, Forest Hills, N. Y.
 William David Pope, Morrisville
 Luther Curler Porter, Richmond

John Francis Power, Jr., Stamford, Conn.
 Ivan Irwin Prager, Bronx, N. Y.
 Alice Linda Prince, Jackson Heights, N. Y.
 Martha Parkhurst Proffitt, Great Neck, N. Y.
 Karl Herbert Raab, Burlington
 Peter Ivan Rabinovitch, Norwich, Conn.
 David Henry Reilly, Fairlawn, N. J.
 Patricia Ellen Richards, Burlington
 Jean Hotchkiss Robbins, *cum laude*, Medina,
 N. Y.
 Edward James Rockett, Marblehead, Mass.
 Martin Sumner Rosenblatt, Everett, Mass.
 Judith Mary Rossiter, St. James, N. Y.
 Ronald Mark Rothschild, New Rochelle, N. Y.
 Frances Pearl Saldinger, Riverdale, N. Y.
 Gerald Howard Sanders, Larchmont, N. Y.
 †David Jack Schapira, West Orange, N. J.
 Elaine Wendy Schneider, New York, N. Y.
 Claire Enid Weber Schoffstall, Burlington
 Peter Henry Schoffstall, Burlington
 Diane June Schutta, Orchard Park, N. Y.
 Ann Keithline Scribner, Tariffville, Conn.
 Olga Sears, Williamstown, Mass.
 Ruth A. Seeler, *cum laude*, Ardsley, N. Y.
 Jerome Saul Seiler, Brooklyn, N. Y.
 Richard George Sharkey, Carteret, N. J.
 Henry Shaw, IV, Rochester, N. Y.
 Fred Stephen Shmasc, Peabody, Mass.
 Larry Owen Shufeldt, East Berkshire
 Paul Charles Silver, Rego Park, N. Y.
 Glenn Barrie Skillin, *cum laude*, Burlington
 Benson Abram Snaider, New Haven, Conn.
 Michael Arthur Solby, New York, N. Y.
 Frederick William Sommer, Flushing, N. Y.
 Martin Howard Spar, Yonkers, N. Y.
 Robert Bruce Steele, Burlington
 William Carl Swanson, Woodstock
 Lloyd Bernard Tamarin, Staten Island, N. Y.
 Margaret Ruth Thomann, Roslyn Heights, N. Y.
 William Patrick Thompson, West Rutland
 Richard Adam Tretowicz, West Rutland
 Clare Mary Tully, Madison, N. J.
 Joel Clarke Ullman, Jackson Heights, N. Y.
 Linda Jane Wansker, Newtonville, Mass.
 Dixon Sherman Welt, Albany, N. Y.
 Richard Ernest Wheeler, Burlington
 *Alfred Edward Wilder, Newbury
 Francis Earl Willette, Northfield
 David Winer, Nashua, N. H.
 Bennett Jules Woll, Bronx, N. Y.
 David John York, Springfield

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†As of February 21, 1959.

SPECIAL HONORS

Classics

Sarah Godfrey

Physics

Robert Bruce Steele

English

Nancy Louise Dana
Lawrence J. Friedman

Psychology

Theodore Morton Ginsberg
Alberta Kauzmann
Olga Sears
Ruth A. Seeler

German

Peter W. Oesterlin

Speech

Linda A. Hartwell

Philosophy

Sherwin Iverson

Graduate College

Master of Education

- †Frederick Cecil Aldrich, B.Ed. (Keene Teachers), 1949; Amarillo, Tex.
Thesis: A Proposed Handbook for Vermont School Board Directors.
 Grace Alele, B.A. (Ibadan), 1954; Ede, Nigeria
 *Ruth Hoffer Cruze, B.S. (Penn State), 1942; Burlington
 *Beryle Emily Gardner, B.Ed. (UVM), 1943; Burlington
 *Annette Izola Lachance, B.Ed. (Plymouth Teachers), 1951; Burlington
 *Dorothy Kauffmann Lind, B.A. (Hunter), 1940; Worcester
 *Zena-Gray Nemeck, B.A. (Chicago), 1936; Western Springs, Ill.
 William Skerneski, Jr., B.S. (UVM), 1952; Winooski

Master of Arts in Teaching

- *Luke Wentworth Bicknell, Ph.B. (St. Michael's), 1943; Essex Junction
 *George Lawrence Hopkins, B.S. (Trinity), 1943; St. James, Md.
 Carroll Raymond McBride, Jr., B.A. (UVM), 1952; Vergennes
 *Ruth Mehuron McGill, A.B. (Middlebury), 1926; Waitsfield
 *Erald Edward Medlar, B.A. (St. Michael's), 1953; Jericho
 *Jean MacIver Watson, B.A. (UVM), 1945; South Barre

Master of Science

Agricultural Economics

- *Francis Joseph Russo, B.S. (Cornell), 1957; Parma, Ohio
Thesis: An Economic Analysis of the Processing and Distribution Costs of a Selected Sample of Vermont Milk Dealers.

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†As of February 21, 1959.

Anatomy

- Stuart Donald Cook, A.B. (Brandeis), 1957; Brookline, Mass.
Thesis: Reticular Function in Altered Adrenal States.

Animal and Dairy Husbandry

- Yousif Ibrahim Atabani, D.V. Sc. (Khartoum), 1953; Khartoum, Sudan
Thesis: A Study of Persistency of Milk Production in the Vermont Experiment Station Herd.
- Robert Norman Mullen, B.S. (UVM), 1957; Winooski
Thesis: Observations on Some Factors Affecting Water and Milk Quality on the Farms Along One Milk Collection Route.
- David Antonio Sobrevilla, D.V.M. (San Marcos), 1956; Lima, Peru
Thesis: The Influence of Hay Quality Upon Rumen Development in Dairy Calves.
- †James William Slade, Jr., B.S. (UVM), 1956; Burlington
Thesis: A Study of the Titration Test of Thomas *et al.*, as a Simplified Means of Measuring the Degree of Rancidity Present in Normal Raw Milk.

Bacteriology

- Regina Mae Sullivan, A.B. (Brown), 1954; Naugatuck, Conn.
Thesis: A Study of the Herpes Simplex Virus-Human Amnion Cell System.

Botany

- Elwood Dale Bickford, B.S. (UVM), 1957; Burlington
Thesis: Seasonal Relationships of Sap Characteristics and the Growth of Sugar Maple (*Acer saccharum* Marsh).
- Philip William Cook, B.S. (UVM), 1957; Burlington
Thesis: A Study of the Morphology and Physiology of *Bulbochaete hiloensis* (Nordst.) Tiffany.
- *Alun Jones, B.S. (UVM), 1956; Middlebury
Thesis: Lambertellin: A Fungicidal Compound Isolated from *Lambertella hickoriae* Whetzel.
- Jean Barbara Obreiter, B.A. (UVM), 1957; Glen Ridge, N. J.
Thesis: Biochemical and Cytological Studies on the Fungus *Sclerotinia Trifoliorum* Eriks.

Chemistry

- Norman Flynn Bruce, B.S. (UVM), 1957; Rutland
Thesis: The Oxidation of Certain Hydroperoxides by Alkaline Ferricyanide.
- Niles Devereaux Gilmour, Jr., B.S. (Michigan), 1957; Pleasant Ridge, Mich.
Thesis: Oxidation of Some Hindered Phenols.
- Mary Lou Gover, B.S. (UVM), 1957; Burlington
Thesis: Studies in the Syntheses of Symmetrical Triazines.
- Leonard Meyer Klein, B.A. (Bridgeport), 1955; Bridgeport, Conn.
Thesis: A Novel Reduction of Triphenylcarbinol.
- Dorothy Manfredi, B.S. (Queens), 1957; Corona, N. Y.
Thesis: A New Colorimetric Agent for Copper.
- *Helen Kathryn McKuskie, B.S. (UVM), 1957; Nashua, N. H.
Thesis: Infrared Studies of Hydrogen Bonding in Equilibrium Mixtures of Methanol and Acetone.
- Richard Fredrick Stockel, B.S. (Iowa), 1957; Iowa City, Iowa
Thesis: Oxidation of Some Aryl Trityl Sulfides in Basic Medium.

Geology

- John Joseph Migliore, Jr., B.A. (Boston University), 1957; Midland, Pa.
Thesis: Petrography of Some Champlain Valley Dikes.

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†As of February 21, 1959

Electrical Engineering

Tzay-yuan Young, B.S. (Taiwan), 1955; Taipei, China

Thesis: A Preliminary Study of the Application of Servomechanism Techniques to Ballistocardiography.

Mechanical Engineering

Glenn Hancock Dewey, B.S. (UVM), 1957; Wardsboro

Thesis: The Bulk Pressures of Reinforced Plastics.

Physics

André René LeBlanc, B.S. (UVM), 1956; Winooski

Thesis: The Bounce and the Chatter of Wire Contact Relays.

Physiology

George Galli Lucchina, B.S. (UVM), 1955; M.D. (UVM), 1958; Barre

Thesis: Reversible Frequency—Selective Reduction by Cold of Round Window Potentials in the Cat.

Master of Arts

Economics

Rodney Walter Eldridge, B.A. (UVM), 1949; Burlington

Thesis: Some New Considerations for the United States' Economic Policy.

English

Anne-Marie Deval, Lic. en Litt. (Grenoble), 1956; Romans, France

Thesis: The Adjectives in Robert Frost's Poetry.

*John Joseph Duffy, Jr., B.S. (Georgetown), 1957; Trenton, N. J.

Thesis: Graham Greene and The Universe of Pity.

Mary Starritt Hall, A.B. (Smith), 1958; Burlington

Thesis: The Mythico-Poetical View of Form in the Poetry of William Blake and Friedrich Hölderlin.

*Ellen LaFleur McIlroy, A.B. (Bryn Mawr), 1952; Syracuse, N. Y.

Thesis: Albert Camus; A Study of his Evolution.

Margery Cornwell Ricklefs, B.A. (Kansas State), 1957; Plattsburgh, N. Y.

Thesis: The Whirling You Unknown: Conrad Aiken's Aesthetic Study of the Unconscious.

Mathematics

Robert Edwin Helbush, B.A. (Chicago), 1943; Burlington

Thesis: Numerical Weather Prediction: The Barotropic Forecast Model.

Psychology

Ernest Damianopoulos, A.B. (Syracuse), 1950; A.M. (Syracuse), 1952; Syracuse, N. Y.

Thesis: An Experimental Test of a Sensory-Tonic Theory of Perception.

Gerald Groden, B.A. (UVM), 1957; Burlington

Thesis: Anxiety and Defensiveness in an Interview Situation.

*As of October 18, 1958

College of Medicine

Doctor of Medicine

Patricia Ann Adams, B.A., West Scarboro, Me.
 Americo Bernardo Almeida, B.S., M.S., Fall River, Mass.
 Virginia Lee Ault, B.S., Baltimore, Md.
 Randolph Chandler Blodgett, Jr., B.S., Bloomfield, N. J.
 William Francis Cirno, B.S., New Haven, Conn.
 Lewis Robert Dan, B.A., Brooklyn, N. Y.
 James Arthur Danigelis, B.S., Burlington
 Howard Randall Deming, A.B., St. Albans
 Herbert James Deutsch, B.S., *cum laude*, Taunton, Mass.
 Robert Healy Elwell, A.B., *cum laude*, Arlington
 George Joseph Feroletto, A.B., M.S., Bridgeport, Conn.
 Peter Jay Hamre, A.B., North Weymouth, Mass.
 Clifford Morris Herman, B.A., B.S., *cum laude*, Portsmouth, N. H.
 William Elwin Hodgkin, B.S., Auburn, Me.
 Leonard Samuel Kaplow, B.S., M.S., Burlington
 Nancé Jane Lefrancois, B.S., Rutland
 Arnold Manheim, B.A., Burlington
 George Mastras, B.A., Middletown, Conn.
 Norman Gerald Mireault, B.S., *cum laude*, Rochester, N. H.
 Maurice Edward Mongeon, B.S., Burlington
 Judith O'Connor Nepveu, B.S., Bloomfield, Conn.
 Joseph Francis John Palma, B.S., Winsted, Conn.
 Norman Gerard Pare, B.S., Manchester, N. H.
 Bernard Passman, A.B., Portland, Me.
 Henry John Ramini, Jr., B.A., Meriden, Conn.
 Fayette Cecil Root, B.A., Charlotte
 Murray Keith Rosenthal, A.B., A.M., Arlington, Mass.
 Harold Leon Rudman, B.S., Springfield, Mass.
 Theodore Philip Sanders, A.B., Burlington
 Glenn Marvin Seager, B.S., Burlington
 Jay Elliott Selcow, B.A., Bayonne, N. J.
 Robert Edward Sharkey, A.B., Lakewood, R. I.
 Harry Samuel Spaulding, B.S., M.S., Waterbury
 Stanley Irwin Stein, B.A., Brooklyn, N. Y.
 William Craigie Street, B.E.E., Old Bennington
 Parker Allen Towle, B.A., *cum laude*, Holden, Mass.
 Ronald Orrin Weinraub, B.A., Bronx, N. Y.
 Stephen William Weinstein, B.S., West Hartford, Conn.
 Alan Weisel, B.S., Stamford, Conn.
 Andrew Paul Zak, Jr., B.S., Turners Falls, Mass.

Degrees Honoris Causa

William Eustis Brown, Burlington	Doctor of Science
Edmond LaB. Cherbonnier, Hartford, Conn.	Doctor of Divinity
Francois D'Harcourt, Paris, France	Doctor of Laws
Alexander Hollaender, Oak Ridge, Tenn.	Doctor of Science
Edwin W. Lawrence, Rutland	Doctor of Laws
Elmer E. Towne, Montpelier	Doctor of Science

Academic Awards

- THE GEORGE H. WALKER DAIRY AWARD—Lewie C. Dodge, '59
- THE SEYMOUR HORTICULTURAL AWARD—Ray Wallace Allen, '59
- BURPEE AWARD IN HORTICULTURE—Careen G. Teunissen, Lic. Bot. Tech. (The Hague), 1957.
- THE GERMAN LITERARY AWARD—Peter W. Oesterlin, '59.
- THE FRED DONALD CARPENTER GERMAN AWARD—Gordon H. Small, '61.
- KIRBY FLOWER SMITH LATIN AWARD—Sandra J. Cameron, '62.
- THE EDWARD PAGE BUTLER DEBATING AWARD—*First*: Jane E. Sherman, '61; *Second*: Claire R. Harvey, '61; *Third*: Adele M. Kahwajy, '61.
- THE ROBERT ASHTON LAWRENCE AND GEORGE EDWIN LAWRENCE DEBATING AWARD—*Second*: Kenneth S. Dannett, '59; *Third*: David G. Gale, '59.
- THE ROBERT ASHTON LAWRENCE DEBATING AWARD—*First*: Kenneth S. Dannett, '59; *Second*: David G. Gale, '59; *Third*: Charles R. Tierney, '61; *Fourth*: Jane E. Sherman, '61; *Fifth*: Robert H. Ronan, '61.
- THE GOLDBERG AWARD—Wales A. Newell, '59.
- THE INSTITUTE OF RADIO ENGINEERS AWARD—Robert A. DeForest, '59
- THE A. ATWATER KENT AWARD—William J. Cimonetti, '59.
- THE AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS AWARD—William H. McAnney, '59.
- THE EDMUND F. LITTLE CUP—Stanton A. Robinson, '59.
- CARBEE MEDICAL AWARD—Parker Allen Towle, B.A., '59.
- WOODBURY AWARD IN MEDICINE—Robert Healy Elwell, A.B., '59; Norman Gerald Mireault, B.S., '59.
- LAMB FOUNDATION ESSAY AWARD—*First*: Parker Allen Towle, B.A., '59; *Second*: Herbert James Deutsch, B.S., '59; *Third*: Harold Leon Rudman, B.S., '59.
- WALL STREET JOURNAL STUDENT ACHIEVEMENT AWARD—James Russell, Jr., '59
- THE MARY JEAN SIMPSON CUP—Awarded jointly to Patricia Anne Fenn, '59, and Sarah Berrick Godfrey, '59
- THE ALPHA LAMBDA DELTA AWARD—Lola Alice Foster, '59.
- THE WARREN R. AND MILDRED L. AUSTIN AWARD—Elliott Brown, '59.
- BORDEN AGRICULTURAL AWARD—Bertrand P. Muzzy, '59.
- HAMILTON WATCH COMPANY AWARD—William J. Cimonetti, '59.
- THE THOMAS TROPHY—Frank P. Bolles, '59
- VERMONT SOCIETY OF CPA AWARD—Richard D. Slayton, '59.
- THE 1959 STUDENT AWARD MEDAL OF THE AMERICAN INSTITUTE OF CHEMISTS—Robert J. Ouellette, '59.
- THE CORSE TRAVELING FELLOWSHIP—Margaret Atwood, '59.
- THE MARY B. SULLIVAN MEMORIAL SCHOLARSHIP—Jane Oliver Page, '60.

Loan Funds, Scholarships, and Awards

Loan Funds

AMERICAN AGRICULTURALIST RESEARCH FOUNDATION For juniors and seniors in home economics.

CATHERINE ARMSTRONG LOAN FUND For women only.

REV. STEPHEN G. BARNES To provide loans or gifts for needy students to attend religious conferences.

JOHN H. AND MARY A. BLODGETT Established in 1938 by bequest of Mary A. Blodgett of Bellows Falls, preference to be given to graduates of the Kurn Hattin and Warner Memorial Homes and to residents of Rockingham.

MATTHEW HENRY BUCKHAM Any needy girl.

DR. MOSES DYER CARBEE, 1873 Established by Mrs. May D. Carbee in memory of her husband for students of the College of Medicine.

ROBERT M. CARTER Agriculture and Home Economic Students.

ELIZABETH CHAPMAN Established by bequest in 1950.

CLASS OF 1929 LOAN FUND.

THE CONSOLIDATED FUND Composed of the following: the Class of 1916 Fund, the Class of 1923 Fund, the Class of 1924 Fund, the Class of 1925 Fund, the Emergency Loan Fund, the Julia I. Bates Fund, the Student Loan Fund, the B. F. Taylor Fund, the New York Alumni Fund of November, 1927, the Edmund Seymour Fund, the Kidder Loan Fund, the Lydia M. Blood Loan Fund, the Charles H. Bayley Fund, the Charles S. and Etta M. Kehoc Fund, the Sealand W. Landon Fund, the Annette Fiske Mereness Fund, the Pearl E. and Iddie F. Stone Loan Fund, the Student Emergency Loan Fund, and the Emily and Thomas Telfer Fund.

LEONARD PERLEY DICKINSON For students in engineering, preference to be given to those in electrical engineering.

FACULTY EMERGENCY LOAN FUND For faculty members only.

ASA FISKE Established for women students by Annette Fiske Mereness in memory of her father.

ELLIS EDWIN FOSTER LOAN FUND Preference to graduates of Peoples Academy of Morrisville, Vt.

MARY GRAVES Established for women students by Annette Fiske Mereness in memory of her mother.

JOSEPH LAWRENCE HILLS Established by friends of Dean Hills, who completed fifty years of service to the University in 1937.

STEPHEN DWIGHT AND LIDA MASON HODGE For women students in the College of Arts and Sciences.

CORNELIUS A. JEDEVINE Established by Allen E. Jeudevine as a memorial to his son to aid Vermont men in obtaining a liberal education.

KELLOGG FOUNDATION LOAN FUND Medical students.

LADIES OF THE FACULTY For women students. Not more than fifty dollars is loaned to any one student.

DR. JOSEPH E. LUMBARD Established in 1946 by the gift of Mr. J. Edward Lumbard, Jr., for students in the College of Medicine.

MEDICAL STUDENT LOAN FUND Established in 1933 by Medical College alumni for students in the College of Medicine.

NATIONAL DEFENSE STUDENT LOAN FUND.

NEW ENGLAND SOCIETY IN THE CITY OF NEW YORK LOAN FUND Temporary loans.

CHARLES D. AND CARRIE D. ORDWAY Bequeathed by Charles D. Ordway in 1933, for Vermont students.

MARY MAUD PATRICK Established by Epsilon Sigma as a memorial to Mary Maud Patrick for students in elementary education.

PHI BETA KAPPA Available to members of the senior class; preference being shown to members of the society.

ELIZABETH D. AND CLIFFORD R. PROCTOR Established in 1953 for students in the College of Medicine.

RIXFORD MANUFACTURING COMPANY For students from Highgate.

HENRY BIGELOW SHAW, 1896 Established in 1938 by Mrs. Willard Pope in memory of her brother, Henry Bigelow Shaw of the Class of 1896, for young men who have been graduated from the University and who wish to study at Harvard University Law School.

MARY A. SHAW AND FANNY E. SHAW Established by Mrs. Willard Pope, daughter of Mary A. Shaw, for women students.

F. H. AND GRACE M. SHEPARDSON For deserving students, subject to such regulations as the Board of Trustees shall prescribe.

HORACE E. STEVENS, 1870 Established in 1926 by his relatives for students in engineering.

TERRILL-HOLBROOK For women students, preference being shown to those in Home Economics.

THE WOMEN'S STUDENT HEALTH COUNCIL FUND For women designated by the Dean of Women and the Chairman of the Department of Physical Education for Women, under special regulations as to interest and repayment.

ELLEN E. H. WOODRUFF For personal emergencies for any girl with limit of \$50.00 and approved by the Dean of Women.

Scholarships

LIZZIE P. ALLEN Founded in 1900 by Lizzie P. Allen, a descendant of Ira Allen, founder of the University.

ANONYMOUS Craftsbury preference.

FRANKLIN BALDWIN Established in 1915 by bequest of Mr. Baldwin for students from Putney.

REV. LUCIUS E. BARNARD, 1853 Established by bequest in 1903.

REUBEN CLARK BENTON, 1854 Established by bequest for students from Waterford and Lunenburg, Vermont, or from Minneapolis, Minnesota.

ADA S. BLAIR Established by bequest in 1926.

ELIZABETH F. BRIGHAM Established by bequest in 1910; preference to be given to students from Brigham Academy.

MARCIA P. BROWNE Established by bequest for women students.

RALPH J. BUGBEE SCHOLARSHIPS in Agricultural Engineering given by the Central Vermont Public Service Corporation. Four scholarships at \$200 each, annually.

EMORY N. BURRITT Established by bequest for women students.

SARAH L. BURRITT Established by bequest for women students.

EZRA HOYT BYINGTON Founded in 1905 in memory of Mr. Byington by Mrs. Louisa J. Byington for students from Hinesburg, or students bearing the name of Byington, Boynton, Hoyt, or Wortman, or in some way related to these families.

MOSES D. CARBEE, 1873 Established by a bequest from Mrs. May D. Carbee in memory of her husband; available for medical students.

DR. WALTER CARPENTER Established by bequest; preference to be given to sons of clergymen and physicians.

DEAN JOSEPH E. CARRIGAN Established in 1957 by the people of Vermont to honor Dean Carrigan. The income from the fund is used to provide scholarships for Vermont boys and girls attending the College of Agriculture and Home Economics.

ELIZABETH CHAPMAN Established by bequest in 1950.

CLASS OF 1861 Endowed and made available in 1891.

CLASS OF 1881 Endowed in 1937 by William H. Rice.

CLASS OF 1940 No restriction.

CONNECTICUT LIGHT AND POWER No restriction.

JOHN H. CONVERSE, 1861 Established in 1882.

LIZZIE S. CONVERSE Founded by bequest of Sarah Elizabeth Converse for students of classics.

CHARLES M. COX Income from this trust fund provides a scholarship of \$300 for a student in agriculture, preferably to one majoring in dairy or poultry husbandry, on the basis of need, character, and scholarship.

CRAFTSBURY Founded in 1900 for relatives of Mr. and Mrs. Nathan S. Hill, or residents of Craftsbury or Isle La Motte.

PHILIP HENRY CREER Founded by Ex-Gov. Redfield Proctor for students from Proctor.

ESSO 4-H Awarded each year by the Esso Standard Oil Company of New Jersey to an incoming freshman in the College of Agriculture on the basis of need, character, and scholastic ability, plus at least three years of 4-H work. If satisfactory grades are maintained, two hundred dollars per year will be paid the recipient for the succeeding three years.

JOHN W. AND JOHN SEELEY ESTABROOK Established by bequest in 1956; for students in the College of Medicine from Rutland County, preference being given to students from Brandon.

JOHN M. EVANS Established in 1958 in memory of himself and his wife, Mary Hinckley Evans, for worthy students in civil engineering.

ROLLO J. FRANCISCO Established by bequest in 1951.

GENERAL SCHOLARSHIP.

DR. EDWARD EVERETT HAWES Established by bequest in 1946; available for medical students.

ALBERT T. HENDERSON Established in 1945 by a bequest from William J. Henderson in memory of his son.

FRANCIS WHELPLEY HICKOK, 1871 Founded in 1902 by Mrs. Julia F. Hickok, widow of James W. Hickok, '37, in memory of their son.

DAVIS HOLLIS.

DR. CHARLES H. HOOD Given by the Charles H. Hood Dairy Foundation. Six of \$250 each awarded to upperclass students studying milk production.

LOUISA H. HOWARD Founded in 1882; available for men.

CHARLES A. HOYT, 1858 Established by bequest in 1904.

ISLE LAMOTTE Founded in 1884 by Nathan S. Hill; for students from Isle LaMotte or from Craftsbury.

SARAH B. JACOBS Founded in 1882; available for graduates of Brigham Academy only.

EDITH BLANCHE KIDDER Established by Joseph W. Kidder for students in the College of Medicine; preference to be given to legal residents of Barre.

ROBERT J. KIMBALL Founded in 1900 for students from Randolph. The Trustees of Randolph High School may make nominations for this scholarship.

CELINDA A. B. LILLEY Founded in 1880 for women students.

LYNDON INSTITUTE Endowed by George E. P. Smith, 1897; awarded annually to a graduate of Lyndon Institute nominated by the faculty of that school.

CHARLES MUNSON MARSH Established by bequest in 1893 for students from Woodstock by Charles P. Marsh in memory of his son.

CHARLES P. MARSH Established by bequest in 1893; for men and women from Windsor County.

EDWIN WRIGHT MARSH, 1872 Founded in 1883 by Charles P. Marsh, 1939 in memory of his son; for students from the town of Weathersfield or from Windsor County.

MARGARET PATTERSON McDANIELS Established in 1941 by a bequest of George M. McDaniels in memory of his mother; preference to be given to applicants from the towns of Craftsbury and Greensboro.

DANIEL PITKIN MINER Established by bequest in 1943; for native-born students, not over twenty-five years of age.

MORETOWN AND MIDDLESEX Founded by the Rev. E. C. Bass, 1859.

JUSTIN S. MORRILL Founded in 1900 by Senator Justin S. Morrill; for students from Strafford.

NEW YORK ALUMNI ASSOCIATION Men or women from N. Y. or vicinity awarded by N. Y. Alumni Association.

JOHN ORDRONAUX Founded in 1909; for students in the Academic and Medical Colleges.

PARKER Founded in 1880 by Rev. Charles C. Parker, D.D., 1841, in memory of himself and his son, Charles Edmund Parker, 1867.

ARTHUR W. AND LOUISE S. PERKINS Established in their memory in 1947 by their son and daughters. The income provides aid for students of high character and reasonably good scholarship who are graduates of a secondary school in Rutland. School authorities in Rutland are to be consulted regarding the qualifications of candidates who are not already enrolled in the University.

MINNIE A. PICKERING Established in 1938 by gift in memory of her daughter.

RALSTON PURINA \$500 awarded at the beginning of the senior year to a student majoring in an area related to animal nutrition on the basis of need, scholarship, leadership, and character.

CHARLES W. RICH, 1836 Founded in 1883 for students in the College of Arts and Sciences.

SEARS-ROEBUCK FOUNDATION Three of \$200 for men in agriculture and two of \$100 for women in home economics are awarded annually to incoming freshmen; one of \$250 for a sophomore in agriculture. Awarded on the basis of need, scholarship, and farm origin.

WILLIAM G. SHAW, 1849 Originally founded in 1892 by bequest of one thousand dollars and increased by his daughter, Mrs. Willard Pope; available for men students.

CHARLES D. SIAS Established by bequest in 1943; available for men.

SAMUEL SIDNEY SMITH Founded in 1896 by bequest of Mrs. Elisa Smith in memory of her husband.

SOLDIERS' Founded in 1913 by a group of Civil War Veterans for students who are descendants of soldiers in the Civil War.

SOPHIA STOW Endowed in 1937 by bequest of George L. Stow, '73, in memory of his mother; for students of classical languages.

DR. H. C. TINKHAM Established by bequest in 1956; for students in the College of Medicine.

DR. DANIEL WASHBURN Founded in 1853 for young men; preference to be given to those studying for the ministry.

JOHN AND MARY WATERMAN Endowed in 1923 by Charles W. Waterman, 1885, in memory of his father and mother; for residents of Waitsfield or Denver, Colorado.

WESTFORD Founded in 1882 by Luke P. Poland; available first to students from the town of Westford.

HATTIE LAURA WETHERBY WESTON Established by bequest in 1936.

JOHN A. S. WHITE Established by bequest; for students from Washington County or from Vermont.

JAMES B. WILBUR The University of Vermont Trust Fund, amounting to over one million dollars, was established by James B. Wilbur as an endowment for scholarships for Vermont students who are in need of assistance to undertake college work and who have earned entrance or college records that indicate extraordinary scholastic ability.

LELAND MASON WILLEY Preference to students majoring in Chemistry.

NORMAN WILLIAMS.

CLAYTON J. WRIGHT Established by bequest; available first for students from the town of Williston.

DAVID PARKER WRIGHT AND ALICE M. WRIGHT Established in 1958 for students from Westminster, Vermont.

Awards

THE AIR FORCE ASSOCIATION AWARD, a silver medal, is awarded to the advanced class cadet who has the highest over-all average in the Air Force ROTC.

THE ALPHA LAMBDA DELTA AWARD, a book, is presented by the National Council to the senior member who has the highest average for four years. Certificates are awarded to the senior members who have maintained an average of 90 or more for four years.

THE ALPHA ZETA PROFICIENCY AWARD is given to that agricultural student who in his freshman year is deemed the most proficient in scholarship, extracurricular activities, and self-support.

AMERICAN INSTITUTE OF ELECTRICAL ENGINEERING AWARD, a certificate, is awarded annually to the student member who has been the most outstanding in the activities within the branch for the academic year.

THE AMERICAN LEGION MEDAL, presented by Burlington Post No. 2, is awarded annually to the Air ROTC cadet who has demonstrated the most outstanding qualities of character and leadership.

THE AMERICAN LEGION TROPHY, a silver shield, presented by Burlington Post, No. 2, is annually awarded to the ROTC company which is the most proficient in attendance, neatness, set-up and drill.

THE ARNOLD AIR SOCIETY AWARD, a silver medal, is awarded annually by the honorary society of the Air Force ROTC, named in honor of General H. H. Arnold, to the most proficient cadet of the freshman class.

THE ATHLETIC COUNCIL MANAGERIAL AWARD of twenty-five dollars is awarded annually to that senior sports manager who has shown the greatest proficiency.

THE WARREN R. AND MILDRED L. AUSTIN AWARD, to the student ascertained and found to have shown the most interest and endeavor in knowledge of international organization for the principles and purposes of the United Nations.

THE BENEDICT ESSAY AWARD was established by Robert Dewey Benedict of the Class of 1848, to be awarded annually to the member of the senior class who presents the best essay on the subject of international arbitration.

THE BENNETT ESSAY AWARD, endowed by Philo Sherman Bennett, provides an annual award for the best essay discussing the principles of free government.

THE B'NAI B'RITH AWARD of \$25 is given annually by the Joseph Frank Lodge of Burlington to that student who has done most to encourage interfaith cooperation and activities.

BORDEN AGRICULTURAL AWARD is awarded annually to that eligible student in the College of Agriculture who on entering his senior year has the highest average grade of all eligible students in all preceding college work. Students who have included in their courses of study two or more dairy subjects are eligible for the award.

THE BURPEE AWARD IN HORTICULTURE, an annual award of \$100 donated by the W. Atlee Burpee Company, is made on the basis of scholarship, practical experience, and interest in flower and vegetable growing.

THE BUTLER DEBATING AWARDS were endowed by Edward Page Butler, 1870, for the promotion of extemporaneous debate. From the income of this fund of \$1200 three awards are made annually to the three women students who have shown the greatest ability in debate.

THE CARBEE MEDICAL AWARD was established by Mrs. May D. Carbee in memory of her husband, Moses Dyer Carbee, M.D., 1873. The income from the fund is given annually to the student in the College of Medicine who shows the greatest proficiency in the subject of obstetrics.

THE CARPENTER GERMAN AWARD is presented in memory of Professor Fred D. Carpenter to that student in the intermediate German course who has demonstrated the greatest degree of progress and improvement.

THE CARPENTER TENNIS AWARD, presented in appreciation of Professor Fred D. Carpenter's service as coach of the tennis team and as a member of the Athletic Council, is awarded annually to that member of the varsity tennis squad who has demonstrated the greatest degree of progress in tennis proficiency during the season.

CHEMICAL RUBBER COMPANY UVM ACHIEVEMENT AWARD. Given annually to the highest ranking student in the beginning course in chemistry and in physics.

THE CONVERSE AWARDS IN COMMERCE AND ECONOMICS were established by John Heman Converse, 1861, by gift of a fund of \$1000, the income from which may be used in whole or in part for prizes.

THE ALAN COUTTS SCHOLARSHIP TROPHY, presented by the first Dean of Men, is awarded annually to that men's dormitory which attains the highest scholastic average for the previous year.

THE CRAIG TROPHY, donated by Major M. E. Craig in honor of the 1936-37 Rifle Team, has each year engraved upon it the name of the man making the highest cumulative score throughout the year in the principal matches in which the rifle team competes.

THE EMERSON AWARD IN HISTORY, offered annually in memory of Samuel Franklin Emerson, Professor of History for forty-two years, is awarded to an undergraduate for the best original essay on any topic chosen from any field of history.

THE GOLDBERG AWARD, a gold watch, is awarded annually by Phi Chapter of Phi Sigma Delta Fraternity to that senior man who, in addition to achieving an over-all average of at least 80, plans to continue with graduate work, who has excelled in intramural athletics, and who has contributed to the University as a sincere and respected individual, exemplifying the character and personality of Baily Herman Goldberg, 1950.

THE HOWARD AWARDS were provided by a bequest of \$1250 from Mrs. Hannah T. Howard, the income of which is awarded to students in the College of Arts and Sciences for excellence in the work of the freshman year.

THE ELWIN LEROY INGALLS AWARD is provided from a fund established in 1934 to honor Elwin Leroy Ingalls, 1896, who had then completed twenty years of continuous service as State 4-H Club Leader. It is awarded annually to a University student of outstanding merit as shown in character, 4-H Club record, and scholastic attainment in college.

THE JACOBSEN TROPHY was donated in 1951 by Colonel Earl H. Jacobsen, the first Professor of Air Science and Tactics assigned to the University. Upon it is engraved each year the name of the cadet in the Air Force ROTC making the highest cumulative smallbore rifle marksmanship score throughout the year.

THE A. ATWATER KENT AWARD IN ELECTRICAL ENGINEERING is provided by the income of a fund of \$5,000 and is awarded annually to the most improved senior in electrical engineering. The names of the recipients are placed on a tablet which is located in the Waterman Building.

THE KIDDER MEDAL is provided by the income of a fund of \$400, established in memory of Dr. F. T. Kidder, 1880, a trustee of the University. The specially engraved gold medal is awarded to the male student in the senior class ranking first in character, leadership, and scholarship.

LAWRENCE DEBATING AWARDS were established by Edwin Winship Lawrence, 1901. The first group of three awards is established in memory of his brother, Robert Ashton Lawrence, 1899, and is offered annually to students who exhibit the greatest proficiency in debate. A \$10,000 fund provides for these awards.

The second group of awards, established in memory of his brother, Robert Ashton Lawrence, 1899, and his father, George Edwin Lawrence (Middlebury College, '67), is awarded to the four students participating in a joint debate between representatives of the University and Middlebury College who, in the opinion of the judges chosen, show the greatest proficiency in this debate.

THE EDMUND F. LITTLE CUP is provided by the income from a fund established by Arlington P. Little, 1901. It is awarded annually for meritorious work in mechanic arts.

THE LOYAL LEGION MEDAL is presented annually by the Vermont Commandery of the Military Order of the Loyal Legion to the most proficient junior cadet of the Reserve Officers' Training Corps.

THE MERCK INDEX AWARDS. Given annually by the Merck Co. for proficiency in Chemistry to the outstanding junior and to the outstanding senior.

THE MORTAR BOARD SCHOLARSHIP CUP is awarded annually to the women's dormitory attaining the *highest scholarship average for the first semester.*

THE NU SIGMA NU AWARDS are given annually in the College of Medicine to the outstanding students in the freshman and junior classes.

THE OMCRON NU CUP is awarded to the student in home economics who attains the highest scholastic average during her freshman year.

THE OUTING CLUB SKI TROPHY is awarded annually to the member of the varsity ski team who has shown outstanding leadership, character, and athletic attainment in skiing during the past year.

PAN-HELLENIC AWARD. Annually to the sorority whose scholastic average shows greatest improvement in the fall semester.

THE PHELPS AWARD IN CIVIL ENGINEERING, derived from a fund of \$900, was endowed in memory of Edward Haight Phelps, 1872, by his father, Edward J. Phelps. The award is made annually to an outstanding senior in civil engineering.

THE INSTITUTE OF RADIO ENGINEERING AWARD, a certificate and a voucher for one year's dues as a member after graduation, is awarded annually to the student member who has shown the greatest professional development, accomplishment, and interest in the activities of the student branch.

THE COLONEL WADSWORTH RAMSEY-SMITH TROPHY AND AWARD, in the amount of ten dollars, are awarded annually to the outstanding senior cadet of the Reserve Officers' Training Corps. The name of the senior is inscribed on the trophy, a saber, which is maintained by the Military Department. This award is presented by Mrs. Ramsey-Smith, in honor of her husband.

THE SEMANS TROPHY, presented by the local chapter of Tau Epsilon Phi Fraternity in memory of Henry Semans, 1924, is awarded annually to a senior for outstanding qualities of leadership, loyalty and service to the University, active participation in athletics, and winning the respect and regard of his fellow students.

THE SEYMOUR HORTICULTURAL FUND of \$2500 was given by William W. Seymour in memory of his father, Henry E. Seymour, 1835. The income from the fund is used in part for an award for that senior who has done the best work in original horticultural research.

THE MARY JEAN SIMPSON CUP is awarded annually to that senior woman who best exemplifies the qualities of character, service, and constructive influence which Miss Simpson strove to set before the women students during her term of office as Dean of Women.

THE KIRBY FLOWER SMITH LATIN AWARD is derived from a \$3000 fund established by his wife as a memorial to Kirby Flower Smith, 1884. An award is made annually to the student having the highest standing in second year college Latin.

THE HANNAH G. SOLOMON AWARD is awarded by the Burlington Section of the National Council of Jewish Women to the senior woman who has exhibited in the highest degree the qualities of scholarship, leadership, and service.

THE SONS OF THE AMERICAN REVOLUTION MEDALS are presented annually by the Vermont Society, Sons of the American Revolution, one to the member of each class in the Reserve Officers' Training Corps who is outstanding in character, conduct, leadership, and in theoretical and practical knowledge of the year's course.

THE STROH TROPHY is awarded annually in honor of Charles Stroh, 1934, to the member of the baseball team who achieves the highest total of runs-batted-in during scheduled games each year.

THE SUNDERLAND MEMORIAL TROPHY is awarded annually to that senior man who has best exemplified those qualities of character, leadership, and persistence in overcoming obstacles, which were outstanding traits in the life of Russell O. Sunderland, 1938. Each recipient's name is engraved on the permanent trophy, and the Boulder Society makes a suitable personal award.

THE THOMAS TROPHY is awarded annually to that senior student in agriculture who most closely exemplifies the character of John M. Thomas.

THE VERMONT BANKERS ASSOCIATION AWARD, a \$100 Government Savings Bond, is awarded annually to the best senior student from Vermont in the field of finance.

VERMONT CERTIFIED PUBLIC ACCOUNTANTS AWARD. Annually to the outstanding student in accounting.

THE VETERANS OF FOREIGN WARS MEDALS AND PLAQUES, presented by the Howard Plant Post 782, are awarded annually to the freshman cadet of the Army ROTC unit who demonstrates the highest proficiency in leadership, drill, and military science and to the cadet commander of the best Air ROTC drill squad. Their names are inscribed upon the plaques, which are maintained by the military departments.

THE GEORGE H. WALKER DAIRY AWARD is derived from a fund of \$2000, donated by George H. Walker, one of the founders of the Walker-Gordon Milk Company. It is awarded annually to an outstanding senior in dairy studies.

THE WALL STREET JOURNAL AWARD, a silver medal and a one year subscription to the *Wall Street Journal*, is awarded annually to the member of the senior class who shows the greatest proficiency in the field of finance.

THE WASSON ATHLETIC AWARD is derived from an endowment of \$250, given by Mrs. Pearl Randall Wasson in memory of her husband, Dr. Watson L. Wasson, 1901. The income provides a prize for the member of the senior class who has maintained the highest standard of academic scholarship and athletic attainment.

WIRTHMORE 4-H AWARD. One hundred dollars is awarded annually to a freshman 4-H member who has done outstanding work in 4-H dairy or dairy feeding projects.

THE WOODBURY MEDICAL AWARDS are derived from a fund of \$1000 created by Mrs. Pauline S. Woodbury in memory of her husband, Dr. Urban A. Woodbury, 1859. The first award is awarded annually to the student who has shown the greatest proficiency in the clinical subjects in his senior year. The second award is awarded to that member of the sophomore class who has received the highest standing of the class in all subjects of the freshman and sophomore years.

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Academic Calendar

Academic Calendar

Spring Semester 1960

February	5, Friday	Second semester enrollment*
February	6, Saturday	Second semester enrollment
February	8, Monday	Classes resume
February	19, Friday	Kake Walk holiday
February	20, Saturday	Kake Walk holiday
April	9, Saturday	Spring recess begins at noon
April	20, Wednesday	Classes resume
May	2, Monday	Honors' Day
May	26, Thursday	No classes
May	27, Friday	Final examinations begin
June	7, Tuesday	Examination period ends
June	12, Sunday	Commencement

Fall Semester 1960

September	13, Tuesday	Preliminary Days Program begins; Opening Convocation
September	16, Friday	Enrollment for all new students
September	17, Saturday	Enrollment for all other students
September	19, Monday	Classes begin
November	23, Wednesday	Thanksgiving recess begins; no classes
November	28, Monday	Classes resume
December	21, Wednesday	Winter recess begins; no classes
January	4, Wednesday	Classes resume
January	16, Monday	Midyear examinations begin
January	25, Wednesday	Examination period ends

Spring Semester 1961

February	3, Friday	Second semester enrollment*
February	4, Saturday	Second semester enrollment
February	6, Monday	Classes resume
February	24, Friday	Kake Walk Holiday
February	25, Saturday	Kake Walk Holiday
March	31, Friday	Spring recess begins; no classes
April	10, Monday	Classes resume
May	1, Monday	Honors' Day
May	25, Thursday	No classes
May	26, Friday	Final examinations begin
June	6, Tuesday	Examination period ends
June	11, Sunday	Commencement

*Enrollment dates for medical students are announced in the College of Medicine Bulletin.

CALENDAR

1960

JANUARY

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FEBRUARY

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JUNE

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1961

JANUARY

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15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	--	--	--	--

FEBRUARY

S	M	T	W	T	F	S
--	--	--	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	--	--	--	--

MARCH

S	M	T	W	T	F	S
--	--	--	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	--

APRIL

S	M	T	W	T	F	S
--	--	--	--	--	--	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	--	--	--	--	--	--

MAY

S	M	T	W	T	F	S
--	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31	--	--	--
--	--	--	--	--	--	--

JUNE

S	M	T	W	T	F	S
--	--	--	--	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	--
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