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UNIVERSITY OF MAINE BULLETIN

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Issued monthly in October, November, and March; twice in August, April, and May; thrice in September and February; and four times in December.

CATALOG FOR 1962

CALENDAR FOR 1961-62

Fall 1961

		1961
Freshman Week, Opening	Thurs., 6:30 P.M.	Sept. 14
Freshman Week Registration	Fri., 7:30-12:00 M. 1:00-4:30 P.M.	Sept. 15
Registration of Upperclass, Former, Transfer and Graduate Students who have not previously completed it by mail	Sat., 8:00-12:00 M. 1:00-4:30 P.M.	Sept. 16
Classes begin	Mon., 8:00 A.M.	Sept. 18
Final Examinations in Correspondence courses due	Tuesday	Sept. 19
Freshman reports due	Wed.	Oct. 18
Registration of Two-Year Agriculture Students	Mon., 9:00 A.M.	Oct. 23
Midsemester reports due (covering the first half semester to Nov. 11)	Tues. noon	Nov. 14
Thanksgiving recess begins	Wed., 11:50 A.M.	Nov. 22
Classes resumed	Mon., 8:00 A.M.	Nov. 27
Christmas recess begins	Fri., 11:50 A.M.	Dec. 15
		1962
Classes resumed	Wed., 8:00 A.M.	Jan. 3
Classes end (Fall Semester)	Sat., 11:50 A.M.	Jan. 20
Final Examinations begin	Mon., 8:00 A.M.	Jan. 22
Registration of Freshman and Upperclass Students	Mon-Sat.	Jan. 22-27
Final Examinations end	Tuesday	Jan. 30
Registration of Former and Transfer Students	Sat., 8:00-11:00 A.M.	Feb. 3

Spring 1962

Classes begin	Mon., 8:00 A.M.	Feb. 5
Written Comprehensive Examinations—Arts and Sciences	Saturday	Mar. 10
Spring recess begins	Fri., 11:50 A.M.	Mar. 30
Farm and Home Week	Mon.-Thurs.	Apr. 2-5
Midsemester reports due (covering the first half semester to March 30)	Tues. noon	Apr. 3
Classes resumed	Mon., 8:00 A.M.	Apr. 9
Oral Comprehensive Examinations—Arts and Sciences	Saturday	Apr. 21
Maine Day	Wednesday	May 2
Graduation Exercises, Two-Year Course in Agriculture	Saturday	May 5
Master's Theses due	Mon.	May 21
Classes end	Sat., 11:50 A.M.	May 26
Final Examinations begin	Mon., 8:00 A.M.	May 28
Final Examinations end	Wednesday	June 6
Class Day	Friday	June 8
Alumni Day	Saturday	June 9
Baccalaureate Exercises	Sunday, 10:30 A.M.	June 10
Commencement Exercises	Sunday, 2:30 P.M.	June 10

Summer Camp

Forestry Junior Camp begins	Monday	June 11
Forestry Junior Camp ends	Saturday	Aug. 11
ROTC Junior Camp begins	Saturday	June 16
ROTC Junior Camp ends	Friday	July 27
Forestry Freshman Camp begins	Monday	Aug. 27
Forestry Freshman Camp ends	Saturday	Sept. 8

Summer Session
(tentative)

Summer Session Registration (three-week courses)	Mon., 8:00-10:00 A.M.	June 18
Summer Session Registration (six-week courses)	Mon., 8:00-12:00 M. 1:30-4:30 P.M.	July 9
Classes begin	Tues., 7:45 A.M.	July 10
Classes end	Friday	Aug. 17
Commencement Exercises	Fri., 8:15 P.M.	Aug. 17

CALENDAR FOR 1962-63 (Tentative)

Fall 1962

		1962
Freshman Week, Opening	Thurs., 6:30 P.M.	Sept. 13
Freshman Week Registration	Fri., 7:30-12:00 M. 1:00-4:30 P.M.	Sept. 14
Registration of Upperclass, Former, Transfer and Graduate Students who have not previously completed it by mail	Sat., 8:00-12:00 M. 1:00-4:30 P.M.	Sept. 15
Classes begin	Mon., 8:00 A.M.	Sept. 17
Final Examinations in Correspondence courses due	Tuesday	Sept. 18
Freshman reports due	Monday	Oct. 15
Registration of Two-Year Agriculture Students	Mon., 9:00 A.M.	Oct. 15
Midsemester reports due (covering the first half semester to Nov. 3)	Tuesday noon	Nov. 6
Thanksgiving recess begins	Wed., 11:50 A.M.	Nov. 21
Classes resumed	Mon., 8:00 A.M.	Dec. 3
Christmas recess begins	Fri., 11:50 A.M.	Dec. 14
		1963
Classes resumed	Thurs., 8:00 A.M.	Jan. 3
Classes end (Fall Semester)	Sat., 11:50 A.M.	Jan. 19
Final Examinations begin	Mon., 8:00 A.M.	Jan. 21
Registration of Freshman and Upperclass Students	Mon.-Sat.	Jan. 21-26
Final Examinations end	Tuesday	Jan. 29
Registration of Former and Transfer Students	Sat.,8:00-11:00 A.M.	Feb. 2

Spring 1963

Classes begin	Mon., 8:00 A.M.	Feb. 4
Written Comprehensive Examinations—Arts and Sciences	Saturday	Mar. 9
Spring recess begins	Fri., 11:50 A.M.	Mar. 29
Farm and Home Week	Mon.-Thurs.	Apr. 2-5
Midsemester reports due (covering the first half semester to March 30)	Tuesday noon	Apr. 2
Classes resumed	Mon., 8:00 A.M.	Apr. 8
Oral Comprehensive Examinations—Arts and Sciences	Saturday	Apr. 20
Maine Day (if approved)	Wednesday	May 1
Graduation Exercises, Two-Year Course in Agriculture	Saturday	May 4
Master's Theses due	Monday	May 20
Classes end	Sat., 11:50 A.M.	May 25
Final Examinations begin	Mon., 8:00 A.M.	May 27
Final Examinations end	Wednesday	June 5
Class Day	Friday	June 7
Alumni Day	Saturday	June 8
Baccalaureate Exercises	Sunday, 10:30 A.M.	June 9
Commencement Exercises	Sunday, 2:30 P.M.	June 9

Summer Camp

Forestry Junior Camp begins	Monday	June 10
Forestry Junior Camp ends	Saturday	Aug. 10
ROTC Junior Camp begins	Saturday	June 15
ROTC Junior Camp ends	Friday	July 26
Forestry Freshman Camp begins	Monday	Aug. 26
Forestry Freshman Camp ends	Saturday	Sept. 7

Summer Session

Summer Session Registration (three-week courses)	Mon., 8:00-10:00 A.M.	June 17
Summer Session Registration (six-week courses)	Mon., 8:00-12:00 M. 1:30-4:30 P.M.	July 1
Classes begin	Tues., 7:45 A.M.	July 2
Classes end	Friday	Aug. 9
Commencement Exercises	Fri., 8:15 P.M.	Aug. 9

BOARD OF TRUSTEES

RAYMOND HENRY FOGLER, B.S., M.S., LL.D., President Term expires March 26, 1964	Exeter, Maine (RFD, East Corinth) or 18 Calumet Avenue, Hastings-on-Hudson, New York
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FRANK WASHBURN HUSSEY, B.S. Term expires December 3, 1961	Presque Isle
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COLLEGE OF EDUCATION. Mark Richard Shibles, Dean, 12 Stevens Hall, South.
COLLEGE OF TECHNOLOGY. Weston Sumner Evans, Dean, 110 Boardman Hall.
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SUMMER SESSION. Mark Richard Shibles, Director, 12 Stevens Hall, South.
COOPERATIVE EXTENSION SERVICE. George Edgar Lord, Director, 14 Winslow Hall.
MAINE AGRICULTURAL EXPERIMENT STATION. George Farrington Dow, Director, Holmes Hall.

* A complete list of personnel is given in the back of this catalog.

OFFICERS OF ADMINISTRATION

Maine Technology Experiment Station. Weston Sumner Evans, Director, 110 Boardman Hall.

Department of Industrial Cooperation. Thomas H. Curry, Director, Boardman Hall.

University of Maine in Portland. William Lloyd Irvine, Dean, 96 Falmouth Street, Portland.

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Agricultural Economics and Farm Management. Professor Charles Henry Merchant, 36 Winslow Hall.

Agricultural Education. Professor Wallace Henry Elliott, 24 Winslow Hall.

Agricultural Engineering. Professor Byron L. Bondurant, 2 Agricultural Engineering Building.

Agronomy. Professor Roland August Struchtemeyer, 114 Deering Hall.

Animal Science. Professor Bruce R. Poulton, 26 Rogers Hall.

Animal Pathology. Professor John Franklin Witter, Hitchner Hall.

Art. Professor Vincent Andrew Hartgen, Art Gallery, 204 Carnegie Hall.

Bacteriology. Professor Alvin R. Whitehill, 229 Hitchner Hall.

Biochemistry. Professor Frederick Herbert Radke, 231 Hitchner Hall.

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Chemistry. Professor John William Beamesderfer, 261 Aubert Hall.

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Engineering Graphics. Professor Matthew McNeary, 122 East Annex.

English. Professor John Erskine Hankins, 225 Stevens Hall.

Entomology. Professor Geddes Wilson Simpson, 306 Deering Hall.

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Forestry. Director Albert Deane Nutting, 104 Deering Hall.

History and Government. Professor Edward French Dow, 145 Stevens Hall.

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Horticulture. Professor Franklin Paul Eggert, 211 Deering Hall.

Industrial Cooperation. Associate Dean Thomas Harvey Curry, Boardman Hall.

Journalism. Associate Professor Brooks Witham Hamilton, 2 Fernald Hall.

Mathematics and Astronomy. Professor Spofford Harris Kimball, 135 Stevens Hall.

Mechanical Engineering.

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Music. Professor Lewis Hamilton Niven, Carnegie Hall.

Nursing. Professor Jean MacLean, Wingate Hall.

Philosophy. Professor Ronald Bartlett Levinson, 335 Stevens Hall.

PHYSICAL EDUCATION AND ATHLETICS. Professor Rome Rankin, 20 Stevens Hall, South.
PHYSICS. Professor Clarence Edwin Bennett, Physics Building.
POULTRY SCIENCE. Professor Francis H. Bird, 132 Hitchner Hall.
PSYCHOLOGY. Professor Albert Douglas Glanville, 31 Stevens Hall, North.
SOCIOLOGY AND ANTHROPOLOGY. Professor Raymond Forer, Stevens Hall, South.
SPEECH. Professor Wofford Gordon Gardner, 310 Stevens Hall.
ZOOLOGY. Professor Benjamin Robert Speicher, 24 Coburn Hall.

CORRESPONDENCE

Inquiries should be directed as indicated below:

General administrative matters ..... President, Lloyd H. Elliott
Scholarship records ..... Registrar, George H. Crosby
Admission to the freshman class and to
advanced standing (Orono) ..... Director of Admissions, James A. Harmon
University of Maine in Portland ..... Director of Admissions, Alfred E. Clarke
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College of Education ..... Dean of the College, Mark R. Shibles
College of Technology ..... Dean of the College, Weston S. Evans
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..... Director of Student Aid, Robert C. Worrick
Dormitory rooms for women
..... Manager, Women's Housing, Miss Velma K. Oliver
Dormitory rooms for men, rooms in private homes,
and apartments ..... Manager, Men's and Family Housing, Vernon C. Elsemore

INFORMATION IN THIS CATALOG COVERS 1961-62 ACADEMIC YEAR

The information contained in this catalog covers rules, regulations, curricula, and programs for the 1961-62 academic year. The University reserves the right to make changes at any time.

Top: Stevens Hall, home of the College of Arts and Sciences.
Bottom: Memorial Union Building.

GENERAL INFORMATION

GENERAL INFORMATION

The University of Maine is a part of the public educational system of the State. It is located in Orono, an attractive town of 5,000 population, about half way between Kittery, the most southerly town in the State, and Fort Kent on the northern boundary.

The extensive campus of over three hundred acres is situated about a mile from the business section of Orono and borders the Stillwater River, a branch of the Penobscot. The University is approximately eight miles from Bangor, the third largest city of the State, on U. S. Route 2A.

History.—The University was established originally as the State College of Agriculture and the Mechanic Arts under the provisions of the Morrilll Act, approved by President Lincoln in 1862. The next year the State of Maine accepted the conditions of the Act and in 1865 created a corporation to administer the affairs of the college. The original name was changed to the University of Maine in 1897.

The institution opened September 21, 1868, with twelve students and two faculty members; Dr. Merritt Caldwell Fernald was appointed acting president. By 1871 curricula had been arranged in Agriculture, Civil Engineering, Mechanical Engineering, and Elective. From these curricula there gradually developed the Colleges of Agriculture, Technology, and Arts and Sciences. Women have been admitted as students since 1872. The School of Education was established in 1930 and became the College of Education in 1958. The College of Law was extant from 1898 to 1920.

By an act of the Maine Legislature, the University of Maine in Portland was established in 1957.

Schools of Business Administration, Forestry, Home Economics, and Nursing were established in 1958.

The merger of Portland University and the University of Maine was approved by the 100th Maine Legislature in 1961.

The Maine Agricultural Experiment Station was established as a division of the University by act of the Legislature of 1887, as a result of the passage by Congress of the Hatch Act. It succeeded the Maine Fertilizer Control and Agricultural Experiment Station, which had been established in 1885.

Graduate instruction has been given by various departments for many years. The first master's degree was conferred in 1881 and the first doctor's degree in 1960. Since 1923 graduate work has been a separate division in charge of a dean.

Beginning in 1902, a Summer Session has usually been held each year. The former six-week progam was extended to nine weeks in 1961. This session is designed for teachers, school administrators, and for college students who desire to accelerate their work.

The institution has been served by the following president: The Rev. Charles Frederick Allen, Dr. Merritt Caldwell Fernald, Dr. Abram Winegardner Harris, Dr. George Emory Fellows, Dr. Robert Judson Aley, Dr. Clarence Cook Little, Dr. Harold Sherburne Boardman, and Dr. Arthur Andrew Hauck.

Organization of the University.—The University is controlled by a Board of Trustees. Eight members are appointed by the Governor of the State, with the advice and consent of the Council, for a term of seven years. Two members are appointed for three years by the Governor upon the nomination of the General Alumni Association. The Commissioner of Education is ex officio a member of the

Board. The Board of Trustees has supreme authority in all matters pertaining to the University, and all policies applying to the University as a whole must be approved by the Board. Administrative units of the University include the Colleges of Agriculture, Arts and Sciences, Education, and Technology; University of Maine in Portland; Graduate Study, Summer Session, Cooperative Extension Service, Maine Agricultural Experiment Station, Maine Technology Experiment Station, and Department of Industrial Cooperation. Each division regulates those affairs which concern itself alone.

THE COLLEGE OF AGRICULTURE offers programs leading to the Bachelor of Science degree in the following fields: Agriculture, Agricultural Engineering (jointly with the College of Technology), Bacteriology, Biochemistry, Botany, Entomology, Forestry, Home Economics, and Wildlife Management. It also offers two-year courses in Pre-Veterinary, Pre-Dairy Manufacturing, and Pre-Food Processing, a two-year Course in Agriculture, Short Courses, and annually holds Farm and Home Week.

THE COLLEGE OF ARTS AND SCIENCES offers curricula in an approved field of concentration or in any of the following subjects: Business Administration, Business and Economics, Chemistry, English, Geology, Government (option in Public Management), History, Journalism, Mathematics, Medical Technology, Music, Nursing, Philosophy, Physics, Psychology, Romance Languages, Sociology, Speech, Theatre, and Zoology.

THE COLLEGE OF EDUCATION offers during the academic year and its Summer Session program professional training for prospective elementary and secondary school teachers, principals, guidance counselors, physical education instructors, and school supervisors. The degree of Bachelor of Science in Education is given for those who have successfully completed the requirements for the degree.

THE COLLEGE OF TECHNOLOGY offers curricula in Agricultural Engineering (jointly with the College of Agriculture), Chemical Engineering, Pulp and Paper Technology, Pulp and Paper Management, Chemistry, Civil Engineering, Electrical Engineering, Engineering Physics, and Mechanical Engineering.

THE UNIVERSITY OF MAINE IN PORTLAND offers basic programs in the Colleges of Agriculture, Arts and Sciences, Education, and Technology. Curricula covering work of the first two years are available in the Colleges of Arts and Sciences and Education. Transition to the Orono campus at the end of the first year is necessary for those students who wish to continue programs in the College of Agriculture, Technology, or in certain preprofessional programs.

THE FACULTY OF GRADUATE STUDY offers programs of study leading to the degrees of Master of Arts, Master of Science, Master of Education, and Doctor of Philosophy. At present the doctoral program is offered in the fields of animal nutrition, chemistry, general-experimental psychology, and American history. The professional degrees of Chemical Engineer, Civil Engineer, Electrical Engineer, Forest Engineer, and Mechanical Engineer are granted upon completion of the appropriate requirements.

THE SUMMER SESSION offers a wide variety of academic and educational courses on both the elementary and secondary level. College students by enrolling in selected subjects can accelerate graduation. For teachers and school administrators there are workshops in elementary and secondary education as well as numerous other courses and conferences especially designed for those engaged in the teaching profession.

THE COOPERATIVE EXTENSION SERVICE is an educational agency representing

the University of Maine and the U. S. Department of Agriculture, operating in all counties in Maine. It provides educational and informational assistance in agriculture, home economics, and 4-H club work to individuals and families on farms and in the rural and urban homes of the state.

County Extension Associations are the sponsoring organizations of the Extension program. They function through local committees organized in nearly 500 Maine communities.

Extension Service personnel is made up of two groups, one serving at the county level and the other at the state level. The county staff, usually housed at the county seat, consists of the county (agricultural) agent, home demonstration agent, and 4-H club agent. The other group is the subject matter specialists located at the University of Maine, who work closely with the county staffs in serving the people of Maine.

THE MAINE AGRICULTURAL EXPERIMENT STATION maintains its offices and principal laboratories at Orono. Experimental farms include Highmoor Farm at Monmouth, Aroostook Farm at Presque Isle, Chapman Farm at Chapman, and Blueberry Hill Farm at Jonesboro.

THE MAINE TECHNOLOGY EXPERIMENT STATION, established in 1915, carries on practical research in engineering subjects, makes investigations for various state and municipal departments, and on request furnishes scientific information to industries. Research is conducted in the fields of geology and chemical, civil, electrical, and mechanical engineering. The Station maintains offices and laboratories in Boardman Hall, and is under the control of the Dean of the College of Technology and the heads of the departments of that college.

THE DEPARTMENT OF INDUSTRIAL COOPERATION co-ordinates the academic and research facilities of the University for the prosecution of basic and applied industrial research. The objective of the Department of Industrial Cooperation is to place the personnel and equipment of the University at the disposal of industry to the extent consistent with the policies and functions of the University. Investigations within the scope of the department take the form of contracted experimental and consulting work, fellowships or summer employment that utilize the University facilities. The department is located in Boardman Hall. It is administered by the Dean of the College of Technology.

Buildings.—The following are dormitories for women.

BALENTINE HALL (1914-1916) has accommodations for one hundred and seven students. It was named in honor of the late Elizabeth Abbott Balentine, secretary and registrar of the University, 1894-1913.

CHADBOURNE HALL (1948) has accommodations for one hundred and fifty-six women. It was named for Dr. Ava Harriet Chadbourne, Professor Emerita of Education.

COLVIN HALL (1930) has accommodations for forty-eight students. It was named in honor of the late Caroline Colvin, Professor Emerita of History and Government and the first dean of women at the University. It became a cooperative dormitory in 1961.

ESTABROOKE HALL (1940) has accommodations for eighty-six students, in each of its two sections. It was named in honor of the late Kate Clark Estabrooke, a former superintendent of the first women's dormitory, the Mount Vernon House.

KENNEBEC HALL (1961) has accommodations for one hundred and eighty students. It was named for the county having the third largest number of regular full-time students enrolled at the University at the time of its construction.

Penobscot Hall (1960) has accommodations for one hundred and eighty students. It was named for the county having the largest number of regular full-time students enrolled at the University at the time of its construction.

Stodder Hall (1956) has accommodations for one hundred and seventy students. It was named in honor of the late Mrs. Anne E. Stodder, of Bangor, a benefactress of the University.

The following are dormitory and dining-hall facilities for men:

Corbett Hall (1947) has accommodations for two hundred and twenty-eight students. It was named in honor of the late Lamert Seymour Corbett, formerly professor of Animal Industry and Dean of Men.

Cumberland Hall (1961) has accommodations for two hundred and sixty students. It was named for the county having the second largest number of regular full-time students enrolled at the University at the time of its construction.

Dunn Hall (1947) has accommodations for two hundred and twenty-eight students and was named in honor of the late Charles John Dunn, formerly Chief Justice of the Supreme Judicial Court of Maine and Treasurer of the University from 1909 to 1923.

Gannett Hall (1959) has accommodations for two hundred and sixty students. It was named in honor of Registrar Emeritus James Adrian Gannett.

Hannibal Hamlin Hall (1911) has accommodations for eighty-nine students. It was named for the Hon. Hannibal Hamlin, late of Hampden and Bangor, the first president of the Board of Trustees.

Hart Hall (1955) has accommodations for two hundred and forty-four students. It was named in honor of the late James Norris Hart of Orono, Dean of the University and Professor of Mathematics and Astronomy.

North Dormitories (1946) have rooms for sixty-two men. These temporary dormitories were provided by the Federal Public Housing Authority.

Oak Hall (1937) has accommodations for ninety-six students. This building, like the "Oak Hall" built in 1871, which it replaces, was named for the Hon. Lyndon Oak, late of Garland, a long time member and president of the Board of Trustees.

The University Cabins (1945) have accommodations for forty-two men students. These are cooperative unis.

The Commons (1958) is a central dining hall for men students. Fifteen hundred persons can be served here cafeteria style.

University Park (1961) is a family housing development which provides apartments for 120 families (24 three-bedroom, 48 two-bedroom and 48 one-bedroom apartments).

The following are used mainly for administration and instruction.

Agricultural Engineering Building (1938) houses the Agricultural Engineering Department and its laboratories for teaching and research.

Alumni Hall (1901) contains administrative offices, the gymnasium for women, and the Little Theatre. It received its name because of contributions made by alumni to supply a part of the funds for its erection.

Alumni Memorial, consisting of an Indoor Field, Armory, and Gymnasium, was erected as a memorial to the Maine men who died in the service of their country in the Spanish-American War and World War I and is the gift of alumni,

students, faculty, and friends of the University. The Indoor Field (1926), one of the largest in the country, provides ample facilities for indoor track, winter baseball practice, and military drill. The Armory (1926) houses offices and classrooms of the military unit, including an indoor rifle range. The Gymnasium (1933) contains the offices of the Department of Physical Education and Athletics, equipment and rooms for handball, boxing, wrestling, and corrective exercise, shower and locker rooms, and an auditorium with a seating capacity of approximately 3,000 used for basketball, lectures, student assemblies, banquets, and dances.

AUBERT HALL (1914) houses the Departments of Chemistry and Chemical Engineering, including the Pulp and Paper Division. It was named in honor of the late Alfred Bellamy Aubert, professor of chemistry from 1874 to 1909. A wing was added in 1940 to increase the facilities in Chemical Engineering and the Pulp and Paper Division. Two additional wings were added in 1958 to provide more facilities for Chemistry and Chemical Engineering including the Pulp and Paper Division.

BOARDMAN HALL (1949) houses the Department of Civil Engineering including Geology and Sanitary Engineering, Department of Mechanical Engineering, Technology Experiment Station laboratories, Department of Industrial Cooperation, and office of the Dean of the College of Technology. It was named in honor of President Emeritus Harold Sherburne Boardman.

CARNEGIE HALL (1948), the former library building erected in 1906 through the generosity of Andrew Carnegie, is now devoted to the Departments of Art and Music. It was named in honor of the original donor.

COBURN HALL (1888) houses the Department of Zoology. It was named for the late Hon. Abner Coburn, a former president of the Board of Trustees and benefactor of the University.

COLLEGE OF EDUCATION BUILDING (1961) contains facilities for the College of Education and, on the top floor, for the Department of Mathematics of the College of Arts and Sciences. The Audio-Visual Service, Placement Bureau, and laboratories for teacher training, including closed-circuit television, are located in this building.

CROSBY LABORATORY (1928) contains the laboratories of the Department of Mechanical Engineering. It was named for the late Hon. Oliver Crosby, Class of '76, who bequeathed $100,000 for its construction.

DEERING HALL (1949) contains the Departments of Agronomy, Botany, Entomology, Forestry, and Horticulture, also part of the facilities for the Agricultural Experiment Station and the Cooperative Extension Service. It was named in honor of Dr. Arthur L. Deering, Dean Emeritus of Agriculture, who served the University from 1912-1957.

EAST ANNEX (1947) houses the Department of Engineering Graphics, Wildlife Conservation, Offices of Student Aid, and provides classrooms and offices for the several colleges. The building, formerly a unit of the Naval base at Sanford, was erected on the campus by the Bureau of Community Facilities of the Federal Works Agency.

FERNALD HALL (1870), the oldest building on the campus, contains offices and classrooms used by the Department of Journalism, editorial offices of *The Maine Campus*, and the University Store. It was named in honor of the late President Merritt Caldwell Fernald.

HITCHNER HALL (1959) contains offices, laboratories, and classrooms for the Departments of Animal Pathology, Bacteriology, Biochemistry, and Poultry Sci-

ence for programs in instruction, research, and extension. It was named for Dr. E. Reeve Hitchner, Professor Emeritus of Bacteriology.

HOLMES HALL (1888) is used by the Maine Agricultural Experiment Station for its administrative offices, and Departments of Chemistry and Food Science. It received its name from the late Dr. Ezekiel Holmes, writer, editor, and pioneer in Maine agriculture.

LIBRARY BUILDING (1941-47) was erected and furnished with the aid of a fund-raising campaign by alumni, faculty, students, and friends of the University. The completion in 1950 of the main reading room has increased the seating capacity of the library to 570, and made possible the utilization of the science and technology room for the purpose it was originally planned. In this building are located the Louis Oakes Room, designed for exhibits and to serve the needs of small group meetings; the Joseph P. Bass Room, comfortably furnished for recreational reading; and reading rooms for education and for the use of reserved books.

LORD HALL (1904) is used by the Department of Electrical Engineering. A Soil Mechanics laboratory is located here. It was named for the late Hon. Henry Lord, a former president of the Board of Trustees.

MEMORIAL UNION (1953) is a memorial to the University of Maine men who died, and a tribute to all who served, in World War II. It is the gift of alumni, students, non-alumni faculty, and friends. This Union is the center of student activities and recreational programs on the campus. It has a Memorial Room, meeting rooms, lounges, offices, snack bar, and game room. Bowling alleys, offices for the director of Religious Affairs and for student organizations, a faculty lounge, faculty dining room, and additional meeting rooms were added in 1961.

MERRILL HALL (1931) is used for work in Home Economics. It was named for the late Dr. Leon S. Merrill, dean of the College of Agriculture from 1911 to 1933.

PHYSICS BUILDING (1959) contains offices, classrooms, and laboratories for the Department of Physics.

ROGERS HALL (1928) houses the Department of Animal Science and contains laboratories for the manufacture of dairy products. It was named in honor of Dr. Lore A. Rogers, Class of '96, chief of research laboratories (retired), Bureau of Dairy Industry, U. S. Department of Agriculture.

STEVENS HALL (1924), with two wings constructed in 1933, supplies accommodations for the larger part of the work of the College of Arts and Sciences. It was named in honor of the late Dr. James S. Stevens, for many years dean of the College of Arts and Sciences.

WINGATE HALL (1892) contains offices and classrooms, the office of the Director of Admissions, the office of the Registrar and Director of Student Services, the office of the Director of the School of Nursing, offices and laboratories for Soil Mechanics, and the University Planetarium. It was named for the late Hon. William P. Wingate, a former president of the Board of Trustees.

WINSLOW HALL (1909) is used by the College of Agriculture, the Cooperative Extension Service, and the Publicity Department. It was named for the Hon. Edward B. Winslow, late of Portland, a former president of the Board of Trustees.

Other buildings include the Horticultural Greenhouses, Dairy Barns and Milk House, Poultry Buildings, Stock Judging Pavilion, Mechanical Engineering Shops,

Agricultural Engineering Shop Building, Observatory, Infirmary, University Press, Home Management House, the Central Heating Plant, the President's House, several residences occupied by faculty members, and various farm buildings.

UNIVERSITY OF MAINE IN PORTLAND.—Please see section on University of Maine in Portland for list of the buildings at that campus.

FRATERNITY HOUSES.—The following fraternities have houses on or near the campus: Beta Theta Pi, Delta Tau Delta, Kappa Sigma, Lambda Chi Alpha, Phi Kappa Sigma, Sigma Alpha Epsilon, Sigma Chi, Sigma Nu, Theta Chi, Phi Eta Kappa, Alpha Gamma Rho, Alpha Tau Omega, Phi Gamma Delta, Phi Mu Delta, Tau Epsilon Phi, Tau Kappa Epsilon, and Sigma Phi Epsilon.

Residence and Dining Halls.—The rooms in Balentine Hall, Estabrooke Hall, Chadbourne Hall, Kennebec Hall, Penobscot Hall, and Stodder Hall, accommodating one or two students each, are available to women students. The rooms in Colvin Hall, the cooperative dormitory for women, accommodate two or four students each. Selection for this dormitory is based on financial need, cooperation and satisfactory scholarship.

Oak Hall, Hannibal Hamlin Hall, Corbett Hall, Cumberland Hall, Dunn Hall, Gannett Hall, Hart Hall, North Dormitories, and the University Cabins are available to men students. In general, rooms in the north section of Hannibal Hamlin Hall, Oak Hall, Corbett Hall, Cumberland Hall, Dunn Hall, Gannett Hall, Hart Hall and the North Dormitories will accommodate two students each; and those in the south section of Hannibal Hamlin Hall, four students each. The University Cabins will each accommodate four students. Men assigned to the dormitories are expected to reside within the dormitory system for the complete semester unless relations with the University are terminated or permission is granted by the Housing Office for a student to withdraw to live elsewhere. This permission is granted only in unusual circumstances. No refund of room and board charges will be made to a student leaving the dormitory system without prior permission from the Housing Office for such a move. Established dormitory regulations are to be observed at all times.

Students will furnish towels, pillows, bed linen, and blankets. Dormitory residents may have their bed linen and towels laundered each week without extra charge.

Ordinarily dormitories will be closed to students during scheduled recess periods.

Women students not living at home are required to live in one of the women's dormitories. In exceptional cases, the Dean of Women may approve other arrangements.

All men students who are members of the freshman class and who do not live at home are required to live in a University dormitory, except that the Dean of Men may authorize off-campus residence in exceptional cases.

Residents of dormitories are required to take their meals in specified dining halls. Special diets, whether temporary or continued, cannot be provided.

Athletic Facilities.—The University facilities for athletics and physical education include the Memorial Gymnasium, the Memorial Indoor Field House, the Women's Gymnasium, and numerous athletic fields.

The athletic fields for men include ten tennis courts, two baseball fields, a football stadium, football practice fields (one of which is illuminated for evening

practice), a quarter-mile cinder track, a 220-yard straightaway, hammer and discus fields, fields for intramural sports, a two-mile-and-a-half cross country course, a four-mile cross country course, skiing facilities, and a skating rink.

A special athletic field for women consists of a regulation hockey field, archery range, two tennis courts, and a large practice area, artificially lighted for late afternoon activities. A field house, containing a club room, a store room for athletic equipment, and a kitchenette, is adjacent to the women's athletic field.

University Farms.—The University farms include approximately 900 acres of land used primarily for a dairy operation. One farm adjoins the campus; others are located in the Stillwater section of Old Town.

The campus farm includes a modern dairy barn housing an outstanding herd of registered dairy cattle representative of the leading breeds. A sizeable poultry laying flock, a flock of sheep, and a herd of swine are also maintained on the campus farm. A herd of registered beef cattle located off campus is also a part of the total farm operation.

The farms serve several purposes. They are utilized for student instruction, as laboratories for agricultural courses, and as demonstration projects for Extension programs. Research projects are continuously in progress in various segments of the operation. Milk and eggs produced on the farm are utilized by the University dormitory system.

University Forest.—The University forest, totaling 1,746 acres, located in the Stillwater-Old Town area, is administered by the School of Forestry for student instruction, project demonstration, and research. An additional 20 acres of forest on University owned land is under systematic forest management, and two acres are operated as a forest nursery by the State Forestry Department. The Robert I. Ashman Forestry Camp is operated by the School of Forestry for summer instruction purposes on Indian Township, a tract of 17,000 acres near Princeton.

The Library.—The University Library attempts to serve the intellectual needs of students and faculty, and to stimulate the use of books both for research and recreational reading. The library contains about 308,421 books and pamphlets and receives some 1,529 periodicals. It is a depository for both state and federal documents, and has a file of the maps of the Army Map Service. It extends these resources to other libraries through the interlibrary loan service, to visiting scholars, and to graduates of the University, whenever it can do so without interference with local needs. Periodical articles and similar library materials not available for lending may often be photocopied, subject to copyright regulations.

University of Maine Film Series consists of master's theses accepted by the graduate faculty after January 1941. The film series is available in two forms; as microfilm negatives (images one inch high on standard 35 mm. safety film), or as photoprints, 6 x 8 inches, legible without a film reader. Either may be purchased from: ADI Auxiliary Publications Project, by citing the document number, and enclosing the purchase price, made payable to Photoduplication Service, Library of Congress, Washington 25, D. C. Price lists are published annually in University of Maine *Studies*. Inquiries may be directed to the University Library, Orono, Maine, U.S.A.

The University of Maine Art Collection.—The University of Maine Art Collection, in Carnegie Hall, contains materials depicting the history of art through all ages. More than ten thousand photographs, color reproductions, and slides of art masterpieces are available to students and faculty for study and loan.

Through generous gifts in recent years the collection has been augmented by some 600 original sculptures, paintings, and graphic arts by outstanding American artists: Inness, Homer, Hassam, Marin, Hartley, Sprinchorn, Kienbusch, Wyeth, Pleissner, Kingman, Peirce, Hamabe, Langlais, and others. Many of these items are hung in public areas throughout the campus.

THE UNIVERSITY OF MAINE PROGRAM OF EXHIBITIONS.—Throughout the academic year, the Department of Art presents, each month, four different art exhibitions: two in Carnegie Hall, and one each in the Oakes Room, Library, and the Lobby of the Memorial Union Building. These exhibits, open without charge, display only original art, with special preference given to professional artists and craftsmen living or working in Maine. All inquiries about these exhibits should be addressed to Professor Vincent A. Hartgen, Head of the Department of Art.

Scientific Collections.—The following collections are located on the campus.

BOTANY.—The herbarium in Deering Hall includes several collections the most important of which is the one made by the late Rev. Joseph Blake and presented to the University by Mr. Jonathan G. Clark, of Bangor. The late Professor F. L. Harvey left to the herbarium the general collections accumulated during his connection with the University. Other important collections are Collins's Algae of the Maine Coast, Halsted's Lichens of New England, Halsted's Weeds, Ellis and Everhart's North American Fungi, Cook's Illustrative Fungi, Underwood's Hepaticae, Cummings and Seymour's North American Lichens, and Bartholomew's Fungi Columbiana.

The herbarium has been enriched recently by the personal collections of Mrs. Frank Hinckley, Helen Paine Scoullar, Charles Curtis, Henry Wilson Merrill, Maynard Quimby, Louise Coburn, Sue Gordon, and Ralph C. Bean. Numerous Centuries of Plantae Exsiccatae Grayanae are significant additions. Fifty thousand herbarium sheets are available.

Approximately three acres of land extending southward from the Heating Plant and between the Forest Nursery and the Stillwater River were assigned to the Department of Botany for the establishment of a Botanical Plantation in the autumn of 1934. The first tree plantings were made in conjunction with Maine Day of 1935. At present, more than 300 species of trees and shrubs have been introduced. Many species of ferns and flowering plants have also been included.

ENTOMOLOGY.—A small area partly enclosed by trees of the Botanical Plantation and near the southern boundary of the Forest Nursery forms a site for a small University Apiary. This Apiary has approximately 10 colonies which are used for instruction in beekeeping. A small frame building nearby serves as a storage for beekeeping and entomology equipment.

The Edith M. Patch aphid collection, housed in Deering Hall, is one of the outstanding aphid collections in North America. It is a major portion of the insect collection maintained by the University for reference purposes in dealing with inquiries concerning insect pests sent in by the citizens of Maine.

GEOLOGY.—The geological collections of minerals, rocks, and fossils are housed in Boardman Hall. One case containing mineralogical specimens is located in the Agricultural Engineering Building.

ZOOLOGY.—These collections in Coburn Hall consist of a working collection of bird skins, a display of bird mounts, and a study collection of various other groups of both vertebrates and invertebrates. The Anson Allen collections of Invertebrates and of Maine Birds, presented by Mrs. Mattie Munson, and the

Eckstorm Collection of birds, presented by Mrs. Fannie H. and Mrs. P. F. Eckstorm, form an important part of the whole.

Planetarium.—A Planetarium, operated under the supervision of the Department of Mathematics and Astronomy, is located on the second floor of Wingate Hall. The Planetarium is used in connection with courses in astronomy but is also open to the public. Groups may visit by making arrangements in advance through the Department of Mathematics and Astronomy.

University Publications.—The following are included in the various bulletins and reports regularly issued by the University.

University of Maine Bulletin is issued eighteen times a year to give information to students, faculty, alumni, and the general public.

University of Maine Studies, Second Series, consists of research studies by members of the faculty and graduate students, published under the direction of the Faculty of Graduate Study. A price list is available from the University Library. Orders and exchanges should be sent to the Library.

Agricultural Experiment Station Publications include bulletins, miscellaneous publications, and miscellaneous reports in which are contained the results of research studies; and Official Inspections which contain the results of inspection of feeding stuffs, fertilizers, agricultural seeds, fungicides and insecticides, and foods and drugs. A report of progress is issued quarterly as Maine Farm Research. A free copy of each publication is available upon request.

Cooperative Extension Service Bulletins and Circulars are issued by the Cooperative Extension Service on a wide variety of subjects relating to agriculture, home economics, and boys' and girls' 4-H clubs. Any resident of Maine may secure a list of available bulletins and circulars upon request.

Technology Experiment Station Publications consist of bulletins and papers giving the results of investigations and research, and are usually sent free of charge on request.

The Maine Alumnus, an illustrated magazine of campus and alumni news published monthly during the college year, is sent to former students of the University who subscribe through payment of alumni dues, or by making donations to the Annual Alumni Fund.

Student publications are described in a section of this catalog called "Student Activities."

The Coe Research Fund.—The Trustees of the University have set aside the sum of $100,000 to form a permanent fund, the income to be used by the faculty for carrying on various kinds of research work. Applications for grants from this fund should be addressed to the Secretary, Coe Research Fund Committee.

Placement Bureau.—A University Placement Bureau was established in 1935 in cooperation with the General Alumni Association. Its services are available to graduating students and alumni of the University seeking employment in teaching and non-teaching fields.

Purposes of the Placement Bureau are: (1) to counsel and assist students and alumni seeking employment; (2) to refer suitable employment opportunities to registered students and alumni; (3) to cooperate with employers in developing more effective employment for University men and women and in locating new fields of opportunity. For teaching positions guidance is given to prospective candidates in compiling essential credentials. Service is rendered to presently employed teachers in maintaining continuous professional records of achievement

to facilitate advanced payment. No charge to students, graduates, or employers is made. The Bureau also offers assistance to students in securing employment during the summer vacation.

Office of Student Aid.—The Office of Student Aid receives applications for student aid including part-time employment, scholarships, University loans, and loans under the National Defense Education Act. Detailed information on student aid will be found on pages 37 and 41.

Health Service.—The University Health Service is organized and operated for the benefit of students. Supervision of medical care and health needs afforded by a family physician is the goal of this program. Insofar as possible, all aspects of a personal doctor-patient relationship are preserved. The following services are offered at no charge to the student:

1. Twenty-four-hour emergency care, including weekends when the University is in session; emergency visits by the physician when necessary.
2. In-patient care in the Infirmary as needed, including physician visits, nursing care, medicines, and diagnostic tests.
3. Consultations with staff physicians and surgeons for diagnosis and treatment during regular clinic hours.
4. Limited dispensing of medicines on an out-patient basis.
5. Routine immunizations, allergy injections, etc.
6. Limited diagnostic laboratory tests, x-rays, and physical therapy.
7. Follow-up examinations for various athletic activities, pre-employment physical examinations, and other routine physical examinations.
8. Coordination of the Health Insurance Program to insure maximum benefits to the students when illness requires hospital treatment or consultation with physicians not on the Health Service Staff.
9. Supervision of the University environment to minimize exposure of students to health hazards.

To meet these goals, the Health Service maintains a 25-bed Infirmary, a medical staff of three physicians, two of whom are full-time employees of the University, and adequate nursing and technical help.

No major steps in health care of individual students are undertaken without consultation with the student's parents except in extreme emergency cases when the parents cannot be located.

Office of Religious Affairs.—The Office of Religious Affairs consists of a Committee on Religious Affairs and a Director of Religious Affairs.

The Committee on Religious Affairs serves as the policy making group in the area of religion at the University of Maine. It oversees the activities of the Student Religious Association and functions as the official body through which the religious foundations serving the Maine campus are related to the administration of the University.

The Director of Religious Affairs, whose office is on the second floor of the Memorial Union, serves as adviser to the Student Religious Association and counselor to students. As administrator of the Office of Religious Affairs, he works toward coordination among the faith groups and between these groups and the University, and seeks to underline the religious dimension of the University.

Use of Laboratory Apparatus.—Many laboratory courses involve instruction in and the use of various types of power equipment and laboratory apparatus. The University takes every precaution to provide competent instruction and super-

vision 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.

Registration.—Undergraduates will register in accordance with the following.

FRESHMEN.—All members of the incoming freshman class are required to attend the period known as Freshman Week. The dates are announced in the calendar in the front of the catalog. This period will be devoted to tests whereby the University authorities may obtain accurate information concerning the type and degree of mental qualifications of the new students, and to lectures and conferences by which the students may be more intelligently informed of the University and its customs.

About August 1 parents of each candidate admitted will receive from the Registrar's office a letter giving detailed instruction about arrangements for Freshman Week. Parents of candidates admitted after August 1 will receive the information at the time the candidate is admitted to the University.

UPPERCLASSMEN.—In the fall, upperclassmen will be required to register by mail prior to, or in person on, the day specified or to present written evidence that they have been allowed by their dean to register late. Upperclassmen must communicate in advance with the dean of their college giving their reason for wishing to register late, and have received from him written permission to do so. In the event of an unusual circumstance wholly beyond the control of the student, and occurring just prior to the opening of the fall term, the student may present his case in person to the dean upon his arrival at the University.

Degrees.—The degree of Bachelor of Arts (B.A.) with specification of the major subject, is conferred upon students who complete a curriculum in the College of Arts and Sciences, except students in Business Administration.

The degree of Bachelor of Science (B.S.) in the curriculum pursued is conferred upon students who complete the prescribed work of four years in the Colleges of Agriculture or Technology, or in Business Administration in the College of Arts and Sciences.

The degree of Bachelor of Science in Education (B.S. in Ed.) is conferred upon students who complete the prescribed work in the College of Education.

A minimum residence of one year is required for the attainment of any Bachelor's degree. This regulation refers to the senior year.

No student will be recommended for a degree who, having been reported to the Committee on Student's Use of English of his college, shall have failed to satisfy the requirements of the committee.

The degree of Master of Arts (M.A.), Master of Science (M.S.), or Master of Education (M.Ed.) is granted for one year's graduate work completed with distinction.

The Doctor of Philosophy degree (Ph.D.) is offered in animal nutrition, chemistry, American history, and psychology.

DEGREES WITH DISTINCTION are conferred at Commencement for the following attainments in rank:

Seniors having an average grade of 3.50 or above will be graduated with highest distinction, 3.25 to 3.49 with high distinction, and 3.00 to 3.24 with distinction if they meet the criteria listed below.

The average grade is based on the work of the first three and one-half years, which must include three years of resident study at the University of Maine.

Candidates must have completed seven-eighths of the required hours at the end of the fall semester of the senior year. Candidates must take their senior year at the University of Maine.

DEGREES WITH HONORS, WITH HIGH HONORS, OR WITH HIGHEST HONORS are awarded to seniors in the College of Arts and Sciences who successfully complete the Honors program.

Grading System.—Grades at the University are given in terms of letters. For this purpose the letters A, B, C, D, E, Abs., and Def. are used.

The meaning of these symbols is: A, high honors; B, honors; C, satisfactory, successful, and respectable meeting of the course objectives; D, low level passing work; E, failed; Abs., absent from examination; Def., deficient in some specific class activity. The term, Acceptable, is used in reporting on the completion of a Master's thesis or paper. For purposes of comparison these letters carry the following arbitrary values: A=4, B=3, C=2, D=1, E=0.

Each college sets its own graduation requirements in terms of grades or grade points.

A candidate for a Bachelor's degree must, (a) receive passing grades in all courses required by his major department; (b) accumulate the number of degree hours specified by the College in which he is registered; (c) achieve an accumulative average of not less than 1.80.

The degree hours are the sum of the course credit hours of those courses which may be counted toward a degree, provided a passing grade has been received.

The accumulative average is the quotient of the grade points divided by the total hours, carried to two decimal places. The grade points are the product of the course credit hours and the numerical value of the letter grade: A=4, B=3, C=2, D=1, E=0. The total hours are the sum of the course credit hours from all courses.

GRADE REPORTS are sent to the parents of freshmen at the middle and end of each semester and to the parents of sophomores, juniors, and seniors and graduate students at the end of each semester. Grade reports for the Summer Session are sent to the parents of all students from the University who are attending the Session.

Parents are notified whenever a student is placed on, continued on, or removed from probation. (This procedure is omitted in the case of veteran students who are of legal age.)

CREDIT HOUR.—One credit hour is assigned to a class that meets fifty minutes a week over a period of a semester; or laboratory, field work, computation or other type of instruction that meets, in general, at least two hours a week or the equivalent thereof over a period of a semester. Semesters are approximately seventeen weeks in length from the beginning until the close of classes.

Student Regulations.—It is assumed that all students entering the University are willing to subscribe to the following: *A student is expected to show both within and outside the University, respect for order, morality, and the rights of others, and such sense of personal honor as is demanded of good citizens.*

Freshmen are not permitted to have or operate motor vehicles at the University of Maine. This regulation prohibits a freshman from keeping an automobile on the campus or in Orono or vicinity. Students are expected to observe the spirit as well as the letter of the regulation and the cooperation of parents is solicited in the operation of the rule. Exceptions may be made by the Dean of Men or

the Dean of Women in cases of freshmen who commute daily from their homes.

Upperclass students are allowed to have and to operate motor vehicles on the campus, but all such vehicles must be registered in the Office of the Dean of Men or Dean of Women and bear an official University sticker. There is a registration fee of $1.00. In addition, evidence of automotive liability insurance must be shown.

Each student is expected to be present at every college exercise for which he is registered.

DISMISSAL.—Students may be dismissed from the University for unsatisfactory work (academic dismissal) or for misbehavior (disciplinary dismissal).

WITHDRAWAL.—Students who desire to withdraw from the University for any reason must secure a withdrawal slip from the Registrar's Office and have it completed. Failure to do so may result in failing grades being recorded in all courses at the end of a semester. Additionally, withdrawal after the final date of the "withdrawal with penalty" period set by the University as detailed in student regulations, except for approved emregency reasons, will also result in failing grades.

DRINKING.—The possession or use of intoxicating beverages is prohibited on the University of Maine campus and at all University functions whether held on or off the campus.

PHYSICAL EXAMINATIONS.—The University requires that all entering students, freshman, transfer, graduate, and special, have a physical examination, tuberculin skin test and also a chest X-ray if the latter seems indicated. Physical examinations and tuberculin tests as outlined above may also be required of readmission students.

Detailed information about the regulations affecting students is contained in a pamphlet entitled "Information for the Guidance of Students" obtainable at the office of the Registrar.

Responsibility for Personal Property.—*The University does not under any circumstances assume responsibility for loss of or damage to personal property through fire, theft, or other causes. Persons desiring protection against possible loss or damage should purchase appropriate insurance unless it is found that parents already have the desired coverage by means of a family policy.*

STUDENT ACTIVITIES

Cooperative Government.—The organizations through which cooperative government is effected are the following.

THE GENERAL STUDENT SENATE seeks to promote the general welfare of the student body and the best interests of the University. It is composed of representatives of various student organizations and resident groups, plus the four officers who are elected by vote of the students. The Senate is responsible for appointing student members of committees, campus elections, events such as Maine Day and the Winter Carnival, and for consideration of any business properly brought before it.

THE ASSOCIATED WOMEN STUDENTS, composed of all regularly enrolled undergraduate women, is organized to promote the welfare of the women students, to represent them in relation to the administration, and to administer self-governing regulations. They are represented on the General Student Senate Executive Committee and belong to the New England Association of Women's Student Govern-

ment associations as well as to the National Intercollegiate Association of Women Students.

Religious Activities.—THE STUDENT RELIGIOUS ASSOCIATION, called "SRA," is the campus-wide religious organization promoting religiously motivated activities for the entire campus and for coordinating student activities among the four major religious groups serving the University community. The Association maintains a broad program including Religion-in-Life Week, Religious Action Week, Religious Arts Festival, International Club, Book Mart, lectures and symposia, as well as a variety of campus and wider service projects. The SRA cabinet is responsible to the Committee on Religious Affairs of the University.

Four major religious groups provide chaplains and active programs for their members: The Episcopal Church at the Maine campus for Episcopal students, Hillel Foundation for Jewish students, Maine Christian Association for Protestant students, and Our Lady of Wisdom Chapel and the Newman Club for Roman Catholic students. Worship services for each group are held regularly on campus or at the nearby student centers.

The churches and synagogues of Orono, Old Town, and Bangor always welcome the attendance of University students. A small meditation chapel next to the Office of Religious Affairs on the second floor of the Memorial Union is open at all times.

Scholastic Honor Societies.—These groups recognize attainment and promise in the academic field by selecting for membership undergraduates whose accumulative point averages are not lower than 3.0 after completing five or more semesters of college work or 3.3 after completing less than five semesters. The date indicates when the chapter was established at the University.

PHI KAPPA PHI (1900).—All colleges.
TAU BETA PI (1911).—Engineering.
PHI BETA KAPPA (1923).—College of Arts and Sciences.
NEAI MATHETAI (1925).—Freshman Women.
OMICRON NU (1931).—Home Economics.
KAPPA DELTA PI (1932).—College of Education.
SIGMA XI (1948).—Scientific research.

Departmental Honor and Professional Honor Societies.—These organizations elect undergraduates from those who have demonstrated superior scholarship in a particular departmental or professional field. Minimal scholastic membership requirements are lower than a 3.0 accumulative average.

ALPHA ZETA (1906).—Agriculture.
*ETA KAPPA NU (1961).—Electrical Engineering.
XI SIGMA PI (1917).—Forestry.
SIGMA PI SIGMA (1949).—Psysics.

Other Student Organizations.—

a. Professional Societies.—Many departments or divisions of the University sponsor an organization to bring together students having a common interest. Such clubs follow.

STUDENT BRANCH OF THE AMERICAN SOCIETY OF AGRICULTURAL ENGINEERS.
STUDENT CHAPTER OF THE AMERICAN INSTITUTE OF CHEMICAL ENGINEERS.
STUDENT AFFILIATES OF THE AMERICAN CHEMICAL SOCIETY.

Student Branch of the American Society of Civil Engineers.
Branch of the American Institute of Electrical Engineers.
Branch of the Institute of Radio Engineers.
Branch of the Amercian Home Economics Association.
Branch of the Amercian Society of Mechanical Engineers.
Pershing Rifles.—Military.
Scabbard and Blade.—Military.
Student National Education Association.

b. Departmental clubs:

Agricultural Club.
Animal-Dairy Science Club.
*Associated Nursing Students.
College 4-H Club.
Forestry Club.
Future Farmers of America.
Home Economics Club.
Philosophy Club.
Physical Education Majors.
Press Club.—Journalism
Rock and Hammer.—Geology.

The following organizations elect to membership students who have achieved distinction in the field represented:

Deutscher Verein.—German.
Mu Alpha Epsilon.—Music.
Pi Kappa Delta.—Speech.
Sigma Mu Sigma.—Psychology.

c. Additional Student Clubs and Associations:

All-Maine Women
Amateur Radio Club
*Biology Club
Business Club
*Circle K Club
*Greek Studies Club
Interfraternity Council
International Club
Intramural Athletic Association
Maine Business Club
Maine Debating Council
Maine Masque
Maine Outing Club
Mathematics Club
"M" Club
Memorial Union Activities Board
Men's Athletic Association
Men's Central Dormitory Council
Modern Dance Club
Ocummo
Off-Campus Women
Panhellenic Council
Public Management Club
Radio Guild
Sailing Club
Senior Skulls
Sophomore Eagles
Sophomore Owls
Square Dance Club
Women's Athletic Association

*Preliminary approval granted.

Musical Organizations.—The University Band, Chorus, and Orchestra, which are all under the supervision of the Department of Music, provide opportunity for those with interest and ability to engage in group work. All three performing groups give on-campus and off-campus concerts, and also appear at assemblies and at other University functions. Credit is granted for participation in these organizations.

Vocal and instrumental ensembles are formed to give more advanced students additional opportunity for musical experience and training for which academic credit is also granted. These include ensembles for brass, strings, woodwinds, percussion, and the University Singers.

GENERAL INFORMATION

Maine Masque Theatre.—The Masque, under the administration and supervision of the Department of Speech, is the University Theatre.

The Theatre provides an opportunity for all undergraduate students to participate in stage and house managing, publicity, scenery, costumes, properties, acting, and make-up. It also provides the University community with stage entertainment, by presenting public performances both of classic and contemporary plays.

The Masque, designed to give the student experience in theatre organization, operates with an Executive Committee and an Executive Council chosen from students who hold membership in the organization. Membership may be gained through participation in the Theatre's program.

Maine Debating Council.—The Council is made up of those underdgraduate students, from the entire University, who are interested in debate and other forensic activities such as discussion, extemporaneous speaking, oral interpretation, and original oratory. Representatives are chosen to participate in both on-campus and off-campus speaking activities with colleges and universities of Canada and the United States. Conditions for membership are established by the Council which is under the administration and supervision of the Department of Speech.

Radio Station WORO.—Students from the entire University have an opportunity through working on WORO to participate in all forms of radio broadcasting. WORO, operated with a student staff, is under the administration and supervision of the Department of Speech. The full and varied program, both in and out of the studios, enables the student to gain actual experience in station management, engineering, programming, announcing, and writing. Studios are located in 275 Stevens Hall.

Student Publications.—The University's regular student publications are:

THE MAINE CAMPUS, a newspaper published weekly during the academic year.

THE PRISM, an illustrated annual sponsored by the junior class.

The Student Publication Committee, a joint faculty-student group, is the publishing board for all the University's student publications.

Social Fraternities and Sororities.—The following fraternities and sororities have chapters at the University, the figures in parentheses giving the dates they were established.

FRATERNITIES.—National: Beta Theta Pi (1879), Kappa Sigma (1886), Alpha Tau Omega (1891), Phi Kappa Sigma (1898), Phi Gamma Delta (1899), Sigma Alpha Epsilon (1901), Sigma Chi (1902), Theta Chi (1907), Delta Tau Delta (1908), Lambda Chi Alpha (1913), Sigma Nu (1913), Phi Mu Delta (1923), Alpha Gamma Rho (1924), Tau Epsilon Phi (1929), Sigma Phi Epsilon (1948), Tau Kappa Epsilon (1948). Local: Phi Eta Kappa (1906).

SORORITIES.—National: Alpha Omicron Pi (1908), Phi Mu (1912), Delta Delta Delta (1917), Pi Beta Phi (1920), Chi Omega (1921), Delta Zeta (1924), Alpha Chi Omega (1958).

ADMISSION

All correspondence concerning undergraduate admission and financial aid should be addressed to the Director of Admissions, Wingate Hall, University of Maine, Orono, Maine. Maine students who desire to attend the University of Maine in Portland should write to the Director of Admissions, University of Maine in Portland, 96 Falmouth Street, Portland, Maine.

ADMISSION TO THE FRESHMAN CLASS

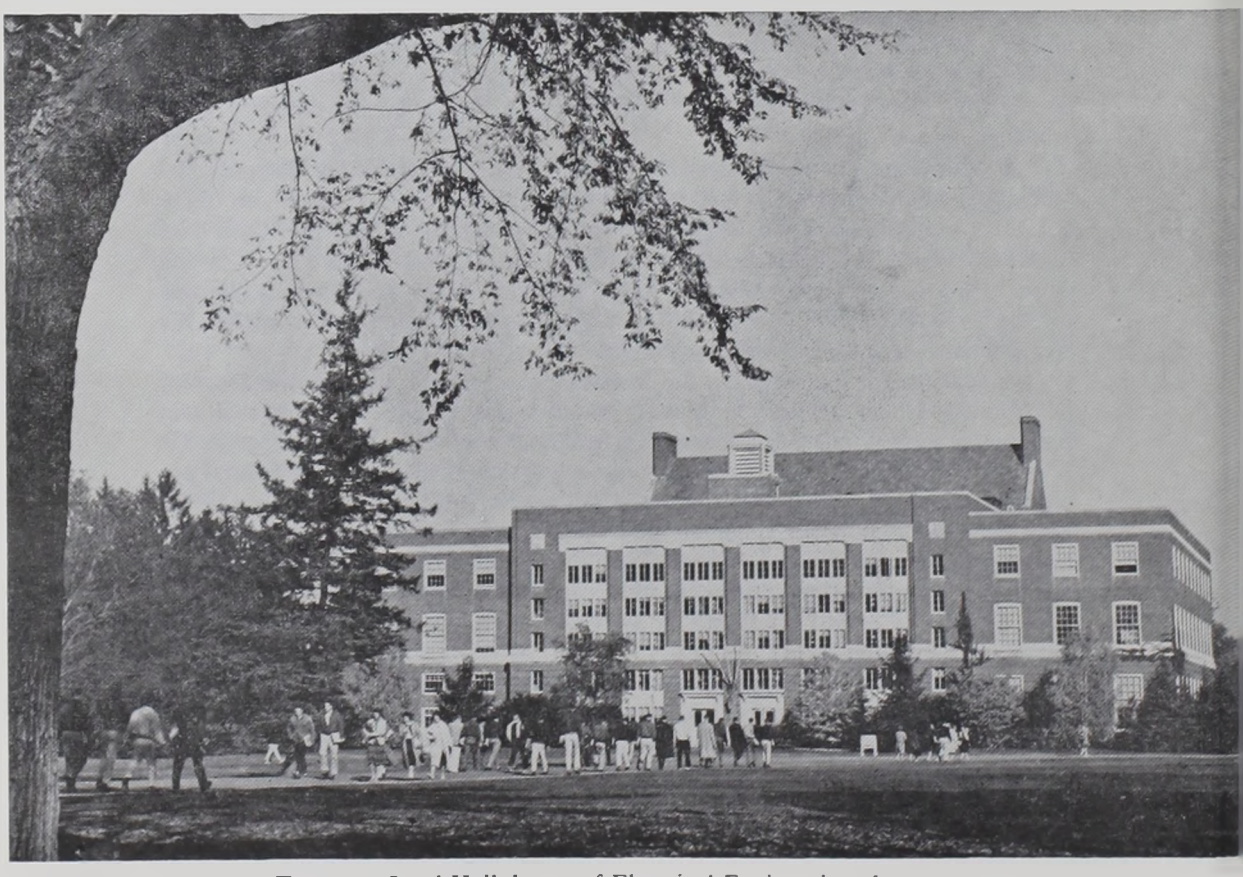
The approval of candidates for admission is on a selective basis. The University is interested in candidates whose scholastic achievement, aptitudes, interests, character, health, and established study habits give definite promise of success in a senior college program. The University admits men and women, both residents of Maine and non-residents; it reserves the right to terminate admissions whenever the capacity of the University to care properly for the students has been reached.

The candidate is required to submit a carefully answered questionnaire concerning favorite studies, school activities, community interests, hobbies, choice of college course, choice of a life work, and other matters bearing upon preparation for a college course. This information is required so that the University may better guide the student in selecting courses of study best suited to his individual abilities, aptitudes, and interests. The principal, teachers, and adult acquaintances of the applicant are asked to give confidential information regarding character, personality, school and community activities, and ability to pursue successfully a college course.

All candidates are required to submit the scores on the College Entrance Examination Board Scholastic Aptitude (S.A.T.) Test, and the scores on three C.E.E.B. Achievement Tests. Candidates are also asked to submit the WRITING SAMPLE which is administered on the December, January, and March testing dates. (See section concerning the C.E.E.B. Tests which follows.) Applicants for the Two-Year Course in Applied Agriculture are not required to complete the Achievement Tests or the Writing Sample.

Candidates for admission to the freshman class should apply to the Director of Admissions for application forms. These forms should be completed and returned promptly, together with the application fee of $10. The application fee is non-refundable and must be sent to the Admissions Office with the formal application blank. It is advisable to file applications in October or November of the year prior to the date the candidate plans to begin his studies. Resident students must apply for admission prior to March 1 (non-resident students prior to February 1) for equal consideration with other candidates. Applications received after April 15 will be placed on a waiting list for possible consideration by the Committee on Admissions.

Candidates for the freshman class are normally accepted for the opening of the academic year in September. The priority of the housing assignments is based primarily upon the date of formal acceptance by the Committee on Admissions. *Certificates of admission issued prior to the completion of the current school year may be rescinded if the final report is unsatisfactory.*



Top: Lord Hall, home of Electrical Engineering classes.
Bottom: The Library.

SCHOLASTIC APTITUDE AND ACHIEVEMENT TESTS

All candidates for admission are required to take the Scholastic Aptitude Test and, Two-Year Applied Agriculture candidates excepted, three Achievement Tests administered by the College Entrance Examination Board. Candidates are urged to take the December or January Aptitude Test and the WRITING SAMPLE which is administered in the afternoon on each of these testing dates. The Achievement Tests should be taken in March of the senior year in high or preparatory school. The Achievement Tests should include English Composition (Intermediate Mathematics is also required of all engineering candidates) and two other tests of the candidates' choice or as recommended by the Director of Admissions. High school juniors are encouraged to take achievement tests in *non-continuing* subjects on the May or August testing dates. Guidance counselors should be consulted prior to registering for such tests.

Arrangements to take the C.E.E.B. Tests should be made by writing to the College Entrance Examination Board, P. O. Box 592, Princeton, New Jersey, for application forms and information. *Arrangements must be made at least one month in advance of the testing date.*

The College Entrance Examination Board will administer tests on each of the following dates:

Saturday, December 2, 1961*	Saturday, May 19, 1962
Saturday, January 13, 1962*	Wednesday, August 8, 1962
Saturday, March 3, 1962*	

* WRITING SAMPLE administered in afternoon on these dates.

ADVANCED PLACEMENT

In certain subjects, candidates who have completed advanced work in secondary schools may apply for advanced placement and credit at the University of Maine. Candidates interested in advanced placement and credit must take the Advanced Placement Test, or Tests, administered by the College Board. Each case will be considered individually on its own merits.

INFORMATION FOR VETERANS

Miss Elizabeth S. Reid, Assistant Registrar, is prepared to help former servicemen and children of deceased veterans with their educational plans. Any requests for information concerning veterans' educational privileges should be forwarded to the Registrar's Office, Wingate Hall, University of Maine, Orono, Maine.

Former students of the University as well as prospective students should submit their applications for admission to the University to the Director of Admissions. Applications for a Certificate of Eligibility should be made at a Regional V.A. Office.

SPECIAL LIVING ARRANGEMENTS

Applications for residence in Colvin Hall, women's co-operative dormitory, and the University Cabins for men, should be included with the application for admission. The necessary forms (financial aid forms) may be obtained from the Director of Admissions.

ADMISSION

Unmarried freshman students shall live in one of the University housing units unless they can live at home. Exceptions to this rule are seldom considered by the University. Students requesting such exceptions must indicate this fact on the application card. In addition, the student must write a separate letter (to be sent along with the application) explaining in detail his housing plans and the reason for requesting an exception to the rule. Such requests will be carefully reviewed by the Dean of Women, or the Dean of Men.

FINANCIAL AID AND SCHOLARSHIPS

Applications for financial aid and loans under the National Defense Education Loan Plan may be obtained from the Director of Admissions. Parents of all applicants for financial aid are required to file a *Parents Confidential Statement* with the College Entrance Examination Board Scholarship Service. Forms and information are available in each local high school. Requests for aid will be reviewed by the Committee after the applicant has been formally notified of acceptance by the Director of Admissions. Applications should be filed prior to March 1.

Part-time work opportunities both on-campus and off-campus, are available for students. From applications filed each year, the Office of Student Aid refers students to suitable job openings as they are received. A satisfactory academic standing must be maintained during the working period. Freshman students, with the exception of a limited number of men assigned to cafeteria jobs, are not encouraged to undertake part-time jobs that require an excessive amount of time.

REQUIREMENTS FOR ADMISSION

COLLEGE OF AGRICULTURE

I. Agricultural Sciences, Agricultural Engineering, Biological Sciences, School of Forestry:

English	4 units
Algebra	2 units
Plane Geometry**	1 unit
Trigonometry (Agric. Engineering only)	½ unit or its equivalent
Science	2 units (one of which must be chemistry or physics)
History or Social Science	1 unit
Electives	5½-6 units
Total	16 units

**Recommended but not required for Agricultural Sciences.

II. School of Home Economics:

English	4 units
Mathematics	2 units (at least 1 yr. of algebra)
Science	1 unit (Chemistry recommended)
History or Social Science	1 unit
Electives	8 units
Total	16 units

III. Two-Year Course in Applied Agriculture:
Candidates for admission to the Two-Year Course must have graduated from high school and must complete the C.E.E.B. Scholastic Aptitude Test. In exceptional cases, mature individuals who are not high school graduates may be admitted by special permission. Students who contemplate transfer to the regular four-year curriculum must satisfy entrance requirements for the College of Agriculture.

COLLEGE OF ARTS AND SCIENCES

English	4 units
Foreign Language	2 units in one language
Algebra*	1 unit
Plane Geometry	1 unit
History or Social Science	1 unit
Electives†	7 units
Total	16 units

* Two units of Algebra are required in the curricula for Chemistry, Geology, Mathematics, Physics, Public Management, the School of Business Administration, Pre-Medical, Zoology, and recommended for the Business Economics curriculum.

† Chemistry is recommended as an elective for Science, Medical Technology and similar curricula, and required for the Nursing program.

COLLEGE OF EDUCATION

(Includes curriculum in Physical Education)

English	4 units
Three units from one and two units from another of the following:	
Foreign Languages Mathematics Natural Sciences Social Studies	5 units
Electives	7 units
Total	16 units

United States History, Natural Sciences, and two units of Mathematics are recommended.

COLLEGE OF TECHNOLOGY

English	4 units
Foreign Language	— — (Two or more units in one language recommended but not required)
Algebra	2 units
Trigonometry	½ unit or its equivalent
Plane Geometry	1 unit
Chemistry or Physics	1 unit
History or Social Science	1 unit
Electives	6½ units
Total	16 units

In addition to these course requirements, applicants must further qualify themselves by satisfactory performance on the Intermediate Mathematics Achievement Test administered by the College Entrance Examination Board and an acceptable grade in trigonometry or its equivalent.

ADMISSION OF SPECIAL AND SHORT COURSE STUDENTS

In exceptional cases, a mature person who presents satisfactory evidence of ability to benefit from work of a special college program may be admitted to the University as a special student. Such students are not candidates for degrees but will be registered in the College where the principal courses in their program are taught. Application forms may be obtained from the Director of Admissions.

FORMER STUDENTS

Former students who desire to return to the University must file an early application for re-admission with the Director of Admissions. The applicant must arrange for official transcripts and catalogs to be forwarded to the Director of Admissions from all schools and colleges attended since leaving the University of Maine. Application forms may be obtained from the Director of Admissions.

ADMISSION BY TRANSFER

A student desiring to transfer to the University of Maine from another college of recognized standing must file application with the Director of Admissions at least six weeks before the opening of the semester. This request must include a statement of the names and addresses of all high schools, preparatory schools, normal schools, junior colleges, colleges, and universities attended as well as information indicating the desired curriculum.

The applicant must arrange for official transcripts and catalogs to be forwarded from all previously attended normal schools, junior colleges, colleges, and universities to the Director of Admissions, University of Maine, Orono, Maine.

The evaluation of transcripts of academic work completed at institutions previously attended must be accepted as final at the time of admission.

NEW ENGLAND REGIONAL COOPERATION

New England's six state universities are working together to increase the number and variety of educational opportunities for the young people of the region. Under this new cooperative program, qualified New England residents are given preferential admission at other state universities in certain specialized programs not available at their own state university. Students accepted in these programs are also granted the benefit of in-state or resident tuition and fees which are considerably lower than those usually charged out-of-state students. This plan makes available to the residents of the region a wider variety of programs at low cost—without additional funds being spent to duplicate specialized staff and expensive facilities in each state.

Each university has designated which of its programs are to be offered on a regional basis and maintains control over its own courses and programs. A few of these programs begin at the freshman level. Other regional programs begin at the sophomore, junior, senior, or graduate level; that is, at the level where the specialized courses are first introduced. In most cases, a student will attend his own state university until he reaches the level at which the specialized courses begin.

Among the special fields covered in this plan are: University of Connecticut—law, anthropology, art education, insurance, physical therapy, social work, and pharmacy; University of Maine—agricultural engineering, forestry, wildlife management and conservation, physical education for women, pulp and paper technology, pulp and paper management, and entomology; University of Massachusetts—Dairy manufacturing, food technology, landscape architecture, public health, wildlife management and conservation, and industrial engineering; University of New Hampshire—art, art education, hotel administration, occupational therapy, and physical education for women; University of Rhode Island—marine biology, pharmacy, agricultural chemistry, biological laboratory technique, textile chemistry, and turf green management; University of Vermont—dairy manufacturing, medical technology, commercial education, secretarial science, nursing, and the classics, Latin and Greek.

Information and application forms may be obtained from the Director of Admissions.

FINANCIAL INFORMATION

STUDENT EXPENSES

The student expenses outlined in the following paragraphs are the anticipated charges for the academic year 1961-62. Changing costs may require an adjustment of these charges.

Tuition and Fees for the Academic Year*

	Residents of Maine	Non-Residents of Maine
Regular Students		
Tuition	$400.00	$800.00
Two-Year Applied Agriculture Students		
Tuition	$285.00	$555.00

Estimate of Student Expenses

A partial list of necessary expenses for a SEMESTER is indicated below. It includes only items which are fairly uniform for all students.

Rates for One Semester	Residents of Maine	Non-Residents of Maine
Tuition	$200.00	$400.00
Board and Room(University Dormitories)	350.00	350.00
	$550.00	$750.00

Textbooks, personal laboratory equipment, etc., are not furnished by the University and are estimated to cost from $90.00 to $160.00 per year.

Students in Chemistry and Chemical Engineering courses are required to pay for all apparatus broken or lost and for certain non-returnable supplies. Breakage cards at $3.00 each are obtainable at the Treasurer's Office. Unused portions will be refunded at the end of the semester on obtaining clearance at the Chemistry storeroom.

The activities of each of the four undergraduate classes are supported from dues paid by individual members. These dues, which range from $5.00 to $9.00 per year, are incorporated as part of the Spring Semester term bill.

The University has arranged to provide a student health and accident insurance plan on an optional basis for a premium of $12.00 for 12 months following fall registration. If insurance is requested, this item is added to the fall semester term bill.

Matriculation Fee.—This fee of $25.00 is required of all students registering for the first time who are candidates for a degree. It must be paid as part of the first term bill.

Payment of Bills.—All University bills including those for room and board in University buildings are due and payable on or before registration day for each semester. An academic year consists of two semesters, fall and spring.

Installment Program.—Students whose circumstances are such that payment of their semester bills in full at the time of registration would work a real hardship will be permitted to use the following schedule:

* Please see Catalog section on University of Maine in Portland for charges at that campus.

Fall Semester

½ the total semester charge at registration
⅙ the total semester charge on October 1
⅙ the total semester charge on November 1
⅙ the total semester charge on December 1

Spring Semester

½ the total semester charge at registration
⅙ the total semester charge on March 1
⅙ the total semester charge on April 1
⅙ the total semester charge on May 1

For the 1961-62 academic year no extra assessment will be made to students using the above deferment schedule, but if it is found that too many take advantage of its provisions it will become necessary in the future to make a service charge for its use.

Freshman Charges.—The following table shows the fixed charges for the fall semester for freshmen:

	Residents of Maine	Non-Residents of Maine
Tuition	$200.00	$400.00
Room and Board (University Dormitories)*	350.00	350.00
Freshman Orientation Period	9.00	9.00
	$559.00	$759.00

* See Statement under Room and Board.

For freshmen who do not room and board in University dormitories, the charge is $204.50 for residents of Maine and $404.50 for non-residents.

For students in the Two-Year Course in Applied Agriculture, the semester tuition charge is $142.50 for residents of Maine and $277.50 for non-residents.

For graduate students and students classified as "special," and for those registered for less than a normal program, the rate will be $16.00 ($32.00 for non-residents) per semester hour up to and including ten semester hours. *Full tuition is charged all students registered for more than ten semester hours.*

All students may avail themselves of the services provided by the University Health Service. Students registered for more than ten semester hours are admitted without charge to athletic events and the Concert Series. Generally students registered for ten or fewer hours may purchase tickets for these events.

Room and Board.—Due to the difficulty of estimating the cost of food, fuel, and services, it is impossible to guarantee the exact cost of room and board. The charge for room and board in the permanent dormitories for the fall semester, 1961, is $350.00. The charge for room and board in Hannibal Hamlin Hall for the fall semester, 1961, is $300.00. For students enrolled in the Two Year Course in Applied Agriculture the semester charge for room and board is $262.00.

In the Cooperative dormitory for women, the charge for room and board

is based upon student effort in management and operation, and is at less than regular rates.

All University dormitories are closed to students during scheduled recess periods.

Miscellaneous.—A fee of $10.00 is charged a student who registers after the prescribed day of registration.

The prescribed gymnasium uniform for women costs approximately $25.00. Information regarding the uniform and where it may be purchased will be sent to incoming students during the summer.

Tuition fees for work taken by Correspondence or Extension are at the rate of $16.00 per credit hour.

The fees for students registered in Applied Courses in Music are indicated in the catalog section on Music.

Deposits.—A deposit of $25.00 is due when the applicant is notified of acceptance by the Director of Admissions. If a dormitory room is required, an additional $25.00 is due. These deposits will be applied toward the student's account when he registers. (They should not be confused with the Matriculation Fee of $25.00, which is a non-refundable charge.)

If a freshman, transfer, or readmission applicant notifies the Director of Admissions of withdrawal prior to JUNE 15, the deposits will be refunded. *The deposits are forfeited in case of withdrawal after June 15.* (For Two-Year Applied Agriculture Students the date is October 1.)

Locks for gymnasium lockers may be secured from the Physical Education Department and must be returned at the end of the spring semester. No deposit is required, but a charge of $2.50 is made if the lock is not returned at the end of the year.

Refunds.—Students leaving the University before the end of a semester and who are using the Installment Program are not entitled to refunds of tuition and room payments because the timing of the installment payments is correlated with the charges. Those who have prepaid their semester charges will be refunded all the money they have prepaid in excess of the amounts specified by the Installment Plan.

Board payments for all students will be refunded on the basis of the number of full weeks remaining in the semester.

Summer Forestry Camp.—The charges for Summer Forestry Camp (Princeton, Maine) described in the catalog section on Forestry are:

	Resident	Non-Resident
Tuition	$128.00	$256.00

Room and Board and the Course Fee for Fy 19S are assessed in addition to the above charges.

Rules Governing Residence

A student is classified as a resident or a non-resident for tuition purposes at the time he is admitted to the University. The decision, to be made by the Treasurer, is based upon information furnished by the student, and all available relevant evidence. The tuition status as determined at the time of initial enrollment will, except in very unusual circumstances, prevail as long as the student remains in attendance, regardless of any change that may subsequently occur in domicile, voting residence, or marital status. The University reserves the right to make the final decision as to resident status for tuition purposes.

Communications

Communications with reference to financial affairs of students should be addressed to the Treasurer of the University of Maine.

STUDENT AID

The student aid program is designed to help students with financial problems who have shown themselves able and willing to help themselves, who have done creditable academic work, who are of good character, and who can be expected to be a credit to themselves and their University.

The Student Aid Program is administered through the Office of Student Aid, and includes the following activities: 1) part-time employment; 2) student loans; 3) scholarships; 4) special living arrangements (University Cabins and Colvin Hall).

Part-Time Work.—Work opportunities, both on-campus and off-campus, are available for students. From applications filed each year, the Office of Student Aid refers students to suitable job openings as they are received. The actual acceptance of the student for employment is the responsibility of the employer, and the performance of the student in respect to efficiency, promptness, and general attitude will determine his or her continuance on the job. It is required, also, that a satisfactory academic standing be maintained during the working period. Students on academic probation will not be approved for employment. Freshman students, with the exception of a limited number of men assigned to cafeteria jobs, are not encouraged to undertake regular part-time jobs, at least during their first semester.

Student Loans.—Assistance from University Loan Funds is available to members of the Junior and Senior classes.

The record of the applicant in conduct, character, and academic scholarship is considered in granting loans. Evidence of financial need is essential.

Provision is also made for temporary loans, regardless of class, not to exceed $50 in amount, to meet unexpected emergencies. Such loans can be granted on short notice.

Applications for loans should be filed in the Office of Student Aid. The office will supply information on loan limits, interest rates, and terms of repayment.

National Defense Education Act Loan Program.—The University participates in the Loan Program established under the National Defense Education Act of 1958. Loans may be granted to students in the undergraduate or graduate programs in amounts up to $1000 per year. In the case of superior students, special consideration may be given to applicants who have expressed a desire to teach in elementary or secondary schools, or to applicants whose background indicates a superior capacity or preparation in science, mathematics, engineering, or a modern foreign language. Complete information concerning the program is available in the Office of Student Aid. Applications must be filed on or before May 1st for the next college year.

LOAN FUNDS

The American Institute of Electrical Engineers Loan Fund, now amounting to $470, was established by the University of Maine Branch in 1918 for the purpose of assisting needy students majoring in electrical engineering.

LOAN FUNDS

The Androscoggin County Alumni Loan Fund, now amounting to $6,852, is available to State of Maine students with first preference given to those who are residents of Androscoggin County. Loans are made by and through the usual methods in use at the University.

The Bangor Business and Professional Women's Loan Fund, now amounting to $1,872, was established for needy and deserving women students, preferably from Bangor and vicinity, who have been in attendance at least one year and who have maintained an average grade of "C" or better. Loans shall not exceed $250 per student.

The William E. Barrows Loan Fund of $1,146 was established in 1958 by William E. Barrows of the Class of 1902, head of the department of Electrical Engineering from 1912 to 1945. The fund is used to assist needy students in Electrical Engineering in good academic standing. Loans are limited to one-third the value of the fund for each individual and will be authorized by a committee made up of the head of the Department of Electrical Engineering and two ranking professors. Loans authorized by this committee shall then come under the jurisdiction of the Office of Student Aid.

The O. Merrill Bixby Loan Fund of $5,000 was established in 1959 through a bequest of the late Oscar Merrill Bixby, to be used for needy and worthy students who reside preferably in rural areas of the State of Maine.

The Boston Alumnae Fund, now amounting to $1,647, is available for women of high scholastic standing who have completed at least two years of college work. Loans shall in no case exceed $200.

The Carleton Orchard Fund originated in the gift to the State of Maine by James A. Gregory of one interest-bearing first mortgage bond for $1,000, the interest on which was to be used for the promotion of scientific orcharding in Maine. At first administered by the Maine Department of Agriculture, the income from this bond was transferred in 1925 to the College of Agriculture of the University "for the assistance of needy students who shall be residents of the State of Maine, majoring in horticulture at the said college of agriculture."

The Gordon L. Chapman Loan Fund of $722 was established in 1956 by friends of the late Gordon L. Chapman, Class of 1939, formerly a member of the University of Maine faculty. It is to be loaned to worthy students under such conditions as may be established by the University.

The Class of 1907 Loan Fund, amounting to $2,663, was established as a 50th reunion gift in 1957. Loans are to be made to needy and worthy students under such conditions as may be established by the University.

The Class of 1914 Loan Fund, now amounting to $1,550, is available for loans to needy upperclass students.

The Class of 1926 Loan Fund, now amounting to $2,508, is loaned to worthy students of good scholastic standing in their senior year. The maximum amount to be loaned is $500 per person.

The Class of 1931 Loan Fund, now amounting to $2,243, is to be used for loans to students of good character, satisfactory academic standing, who are in need of financial assistance.

The Class of 1933 Loan Fund, amounting to $2,742, was established as a 25th reunion gift in 1958. Loans are to be made to deserving students under University loan policies. Preference is to be given to sons and daughters or grandsons and granddaughters of the Class of 1933.

The Class of 1935 Loan Fund, amounting to $1,935, was established as a

25th reunion gift in 1960. Loans are to be made to worthy students under such conditions as may be established by the University.

The Class of 1936 Loan Fund, amounting to $4,523.45, was established as a 25th reunion gift in 1961. Loans are to be made to students who have demonstrated qualifying character, scholastic potential, and need of temporary financial assistance. Preference is to be given to descendants of members of the Class of 1936.

The Class of 1941 Memorial Fund, now amounting to $1,446, is to be used for students who have shown themselves able and willing to help themselves, who have done creditable work and who are of good character.

The Frederick W. Conlogue Loan Fund, established in September, 1960, by Frederick W. Conlogue, Class of 1910, supersedes a program established in 1950 under which $2,000 was awarded annually for scholarships. This fund is to be loaned to students enrolled at the University under such terms as the Office of Student Aid, with the approval of the President of the University, may establish, with the understanding, however, that loans shall be repaid within three years and that loans shall not be made to students who own or support an automobile, unless the car is considered by the Office of Student Aid to be essential to the student's attendance at the University.

The Cumberland County Alumni Association Student Loan Fund, now amounting to $2,125, was established by the Cumberland County Alumni Association to assist needy seniors whose scholarship presumes graduation with their class, preference to be given to students from Cumberland County. Loans are made by and through the usual methods in use at the University.

The Charles D. Darling, Jr. Memorial Fund, established in 1959 by his parents and friends, now amounts to $1,180. Loans are to be made to deserving students by and through the usual methods in use at the University.

The George P. Davenport Student Loan Fund of $6,500 was established in 1959 by the Trustees Under the Will of George P. Davenport. Loans are to be made to needy and deserving students who are residents of the State of Maine, preferably graduates of Morse High School, Bath, Maine. The notes are to be written with interest at not less than three per cent per annum. Interest collected on the notes is to be added to the principal amount of the fund.

The Delta Chi Alpha Loan Fund, now amounting to $1,104, is loaned to male members of the senior class whose average college grade has been "C" or better.

The Delta Delta Delta Loan Fund of $1,118 was established in 1954 by joint contributions from Alpha Kappa Chapter of Delta Delta Delta and the Bangor Alliance of Delta Delta Delta. This fund, both principal and income, shall be used for making loans to women students at the University of Maine who need and merit financial assistance. The loans shall be in such amounts and made under such terms as the University may determine.

The Robert W. DeWolfe Fund of $81,599 was established in 1957 through a bequest to the University of Maine Foundation by Robert W. DeWolfe, Class of 1907, of Portland, the income to be used for loans to University students under such conditions as may be established by the Office of Student Aid with first consideration to be given to students residing in Cumberland County.

The Drummond Fund of $1,215 was established in memory of Frank Hayden Drummond, of Bangor, by his widow and children. It is loaned to needy students of good character who have attained an average of "C" or better.

LOAN FUNDS

The Esther Eayres Chapter, Daughters of American Revolution Loan Fund, now amounting to $418, is a gift of the Orono Chapter of the D.A.R. and is to be loaned to women students who are juniors or seniors.

The Maine State Florists Association Loan Fund of $607 was established in 1950. Loans are available to juniors and seniors in ornamental horticulture.

The General Loan Fund, now amounting to $6,902, was donated by friends, students, and faculty of the University. The first donation was made in May, 1930, and has been increased at various periods since that time.

The Henry Fairfield Hamilton Loan Fund, now amounting to $5,475, was established in December, 1955 by Mrs. H. F. Hamilton of Winter Park, Florida, in memory of her husband, Henry Fairfield Hamilton, of the Class of 1876. Loans are made to needy and worthy students of the three upper classes, under such terms as the Board of Trustees may determine.

The Kappa Psi Loan Fund, now amounting to $411, was donated in the spring of 1933, to be used for the benefit of women students.

The Francis Gregory King Memorial Loan Fund of $1,000 was established, anonymously, in 1960 in memory of Francis Gregory King, Class of 1953. Loans are to be made to students whose major studies are in the field of history and government in such amounts, and under such terms, as the University may determine.

The Kittredge Fund, now amounting to $3,620, was established by Nehemiah Kittredge, of Bangor. It is in the control of the President and the Treasurer of the University, by whom it is loaned to needy students in the three upper classes. Individual loans are limited to $50.

The A. D. T. Libby Loan Fund, now amounting to $2,000, was established in 1959 by Dr. A. D. T. Libby of the Class of 1898. Loans are to be made to needy and worthy students under such conditions as may be established by the University.

The Philip W. Lown Loan Fund, amounting to $9,075, was established in 1954, by Mr. Philip W. Lown of the Class of 1918. Loans are made to needy and worthy students of the three upper classes under such terms as the Board of Trustees may determine.

The Maine Alumni Association of Boston Loan Fund, now amounting to $1,330, was established in 1940 and aims to be helpful particularly to male students whose homes are in Massachusetts, though any male student at the University is eligible for a loan. Loans are made on the basis of need, character, scholastic standing, personality, and leadership in extracurricular activities.

The Maine Alumni Teachers Association Loan Fund was established in 1945 by a contribution of $1,308 from the Maine Alumni Teachers Association. Loans are made to students in any department of the University who from the nature of their courses are training to become teachers. Satisfactory academic record, good character, and conduct shall be the basis for making the loans. While this fund is intended primarily for seniors, it may be used to assist juniors. Loans are made by and through the usual methods in use at the University.

The Maine Association of Engineers Loan Fund of $500, established in 1961 by contributions from the Past Presidents of the Association on the occasion of the 50th Anniversary of the founding of that organization, is to be used for loans to undergraduates enrolled in the College of Technology under such terms as the Trustees of the University may determine.

The Maine Campus Fund, now amounting to $1,153, is loaned to juniors and seniors whose conduct and scholarship are satisfactory; preference to be given,

first, to journalism major students, second, to students in the College of Arts and Sciences, and third, to any other student in the University. Loans otherwise to be made to needy students under such conditions as may be established by the University Administration.

The Charles H. Payson Loan Fund, now amounting to $9,360, was given by the late Mrs. Charles H. Payson, of Portland, Maine, in memory of her husband. It is to be loaned to needy students under such conditions as may be established by the University Administration.

The Pulp and Paper Foundation Loan Fund, amounting to $8,278, was established in 1951 by the University of Maine Pulp and Paper Foundation and is available to students who plan to enter the pulp and paper industry.

The Sigma Chi Loan Fund of $660 was established in 1961 by the Rho Rho Chapter of Sigma Chi Fraternity. Loans are to be made to male students who merit financial assistance, preference to be given to members of Rho Rho Chapter of Sigma Chi Fraternity.

The Mary S. Snow Memorial Loan Fund consisting of $1,158 from the Mary S. Snow Memorial Fund (see Endowed Scholarships) is used for granting loans to home economics students of such character and scholarship as give promise that the education thus made possible will be of genuine value to the students and to society. The control of this fund is by the Director of the School of Home Economics, the Dean of the College of Agriculture, and the President of the University.

The Bertha Joy Thompson Loan Fund of $10,360 was bequeathed, in trust, to the University of Maine by the late Mrs. Bertha Joy Thompson, of Ellsworth, Maine. The net income from the fund, now amounting to $12,333, is to be loaned to worthy, deserving, and needy students of the University of Maine under such terms and conditions as the Board of Trustees may determine.

The Ernest A. Turner Loan Fund, amounting to $5,407, was established in 1952 by Ernest A. Turner of Plattsburg, New York. Loans are to be made to needy and worthy students under such terms as the Board of Trustees may determine.

The Diong Diek Uong Loan Fund, established in 1956 by a gift of $1,107 to the University of Maine Pulp and Paper Foundation by Diong Diek Uong, Class of 1926, is used as a scholarship loan fund for foreign students of the following national origin: China, Korea, Japan and the Philippines. The fund is administered by the University of Maine Pulp and Paper Foundation Scholarship Committee. The maximum limit of the loan to one person is $500 per year.

The Women's Loan Fund, now amounting to $8,918, was established by the American Association of University Women, University of Maine Branch, in 1925. It provides for loans to undergraduate women of the University who have successfully completed one or more years of university work, and have been found by the University to be thoroughly satisfactory in regard to character, scholarship, and general ability, and to be in genuine need. Loans to one student shall not exceed $300 a year.

SCHOLARSHIPS

The Scholarship Program is administered by the Office of Student Aid, and financial assistance is granted to approved applicants on the basis of demonstrated financial need.

SCHOLARSHIPS

The University has scholarship funds available for both upper-class students and entering freshmen.

For upper-class awards applications must be filed at the Office of Student Aid each year. A stated application period—usually December and January—is announced for applications to be filed for the next academic year.

Scholarships will be approved by the office only for those students who have an accumulative academic average of 2.0 (C) or better *and* at least a 2.0 (C) average for the semester immediately preceding receipt of an award. The amount of each award will be determined after evaluation of the application and parent's financial statement, and will very rarely exceed the amount of one year's tuition. In the event that a student, already approved for a scholarship, subsequently qualifies for a larger award, the Office of Student Aid reserves the right to withdraw the smaller award in order to assist a greater number of persons.

Freshman Scholarships.—The Office of Student Aid considers written applications filed during the winter and spring preceding entrance. All freshman applications are obtained from and returned to the Director of Admissions. No application will be considered by the office until the applicant has been officially admitted to the University. Selection of recipients is based on the school record of the applicant, references from school and personal sources, community and school activities, and evidences of financial need as determined from the application and parent's financial statement. The amount of each award varies according to the need of the applicant and the availability of funds. Generally awards are made in amounts equal to half or full tuition.

Experimental Scholarship Program.—During the 1960-61 and 1961-62 academic years, the University established an Experimental Scholarship Program to assist qualified and needy students from the sixteen Maine counties. The scholarships have been awarded to incoming freshmen, and carried maximum amounts up to $1,000.

The program was financed by a group of businessmen. Its purpose has been to bring the opportunity for higher education within the reach of those students who have the academic potential to profit from such experience and who could not otherwise attend the University for financial reasons.

Selection of students for the awards was based upon the results of College Entrance Board examinations, personal recommendations from high school principals and guidance officers, and the students' scholastic records.

Plans for the third series of awards in 1962-63 have not been formulated.

Additional information may be obtained from the Director of Admissions.

Trustee Undergraduate Tuition Scholarships

The Merritt Caldwell Fernald Scholarship, a tuition credit of $400 established by the Trustees and named in honor of the first acting president of the University, is awarded to the student in the junior class, who, at the end of two and one-half years of study at the University, has attained the highest rank in his class.

The James Stacy Stevens Scholarship, a tuition credit of $400, established by the Trustees and named in honor of the first Dean of the College of Arts and Sciences, is awarded to the highest ranking student, resident of Maine, in the junior class in that college, the winner of the Fernald Scholarship being excepted.

The Harold Sherburne Boardman Scholarship, a tuition credit of $400, in Technology, in honor of the first Dean of the College of Technology and the Presi-

dent of the University from 1926 to 1934, is awarded on the same terms as the foregoing.

The Leon Stephen Merrill Scholarship, a tuition credit of $400, in Agriculture, in honor of the Dean of the College of Agriculture from 1911 to 1933, is awarded as are the foregoing.

The Charles Davidson Scholarship, a tuition credit of $400, in the College of Education, in honor of the first professor of education in the University, is awarded as are the foregoing.

The John Homer Huddilston Scholarship, a tuition credit of $400, in the College of Arts and Sciences in honor of the late Dr. John Homer Huddilston, Professor Emeritus of Ancient Civilization, who served the University as teacher of Classics, Art, and Ancient Civilization from 1899 to 1942, awarded on the same terms as the University Scholarships.

The Rising Lake Morrow Scholarship, a tuition credit of $400, in the College of Arts and Sciences, in memory of Doctor Morrow who was a member of the Department of History and Government from 1934 to 1944 and Acting Dean from 1942 to 1944, is awarded on the same terms as the University Scholarships.

The Maine Teacher Colleges and Normal School Scholarships, three of a tuition credit of $400 each, are awarded on a competitive basis to Maine teacher college and normal school students who, after two years of training for elementary teaching, desire to transfer to preparation at the University for secondary school teaching. Only those are eligible whose teacher college or normal school record places them in the highest decile of their class, whose principal recommends them as having personal qualities which indicate probable success in high school teaching and who enter the College of Education as juniors, *for two years* of preparation for that field.

The University Scholarships, thirteen, of a tuition credit of $400 each, established by the Trustees in 1935, are awarded annually to students of high scholastic standing and intellectual promise whose general record is also satisfactory and who are in need of financial assistance. Preference is given to students residing in the State of Maine.

The French Contest Scholarship, a tuition credit of $200, established by the Trustees in 1952, is awarded annually to a first, second, or third place winner in the Maine Secondary School Contest for Excellence in French, sponsored by the Maine Chapter of the American Association of Teachers of French. ($100 is available each semester.)

The Science Scholarship, a tuition credit of $200, established by the Trustees in 1955, is awarded annually by the Office of Student Aid to a Maine secondary school graduate named as a winner in the Maine Science Talent Search, a contest sponsored each spring by the University and the Maine Chapter of the Sigma Xi, the Honorary Society of research scientists. Only students who have competed in the National Science Talent Search conducted by Science Clubs of America for the Westinghouse Science Scholarships are eligible to compete in the state contest.

The State Science Fair Scholarship, a tuition credit of $100, established by the Trustees in 1955, is awarded to a first place winner in the State Science Fair sponsored by the State Principals Association.

Endowed Scholarships

The Appreciation Scholarship Fund was established in 1941 by R. H. West, of the Class of 1938. Further contributions have been made by others and the

fund now amounts to $1,657. Awards are made from income to needy and deserving students in the College of Agriculture by a committee appointed by the Dean.

The Robert I. Ashman Fund of approximately $3,010 was established in 1957 by the friends and students of Professor Emeritus Robert I. Ashman, a member of the University of Maine Faculty from 1930 to 1957. Income from this fund, not to exceed $100, shall be awarded annually to the outstanding senior in the School of Forestry as selected by the Forestry faculty and approved by the Dean of the College of Agriculture. The basis of award is excellent character, high moral standards, and devotion to the profession of forestry as exemplified by Professor Ashman. The recipient shall be selected at the start of his senior year, and shall be known (throughout his final year) as the *Robert I. Ashman Award Student.* The award shall be paid by the Treasurer of the University upon completion of all requirements for graduation by the student.

The disposition of all income beyond the amount of the award shall be at the judgment of the Forestry faculty, subject to the approval of the Dean of the College of Agriculture and the President of the University and may be used for loans, additions to the principal or other approved necessary disbursements to maintain the fund.

The Bancroft and Martin Scholarship Fund of $25,572 was established in 1957 by the Bancroft and Martin Rolling Mills Company of South Portland, Maine. The income only from this fund is to be used. The minimum objective shall be to provide a full tuition scholarship for a junior and a senior majoring in Civil Engineering at the University of Maine who are residents of Maine. If in any year the income exceeds the minimum requirements, one-half of the excess shall be added to the principal fund and one-half used for further objectives, each to be accomplished fully in the order below stated before the next is undertaken: (1) to provide full tuition to a member of the sophomore class majoring in Civil Engineering who is a resident of Maine; (2) to provide payment of laboratory and other required fees for the three students hereinbefore mentioned; (3) to provide necessary books and equipment for these students; (4) to provide the above benefits to one additional Maine resident member of each class majoring in Civil Engineering, beginning with the senior; (5) to provide similar benefits to children of employees of Bancroft and Martin Rolling Mills Company or its successor, regardless of course or year of study.

The students to receive the benefits as stated above shall be selected by the Office of Student Aid.

The Harold H. Beverage Award Fund of $3,437 was established in 1959 by friends and associates of Dr. Harold H. Beverage of the Class of 1915. The income from this fund is to be awarded in cash annually by the Office of Student Aid, upon recommendation of the Electrical Engineering Faculty, to a student, undergraduate or graduate, who has excelled in communications studies at the University of Maine.

William Bingham, 2nd, Scholarships, established in 1956 by an annual grant of $1,000 from the "Betterment Fund" created by the will of the late William Bingham, 2nd, of Bethel, Oxford County, Maine, were placed on a permanent basis by a gift of $25,000 from the Trustees of the Betterment Fund in 1961. Awards are to be made from the income of the fund by the Office of Student Aid after consultation with the Headmaster of Gould Academy in the Town of Bethel, preference to be given to acceptable candidates (in the following order) from the

Town of Bethel, from other towns in Oxford County, or from elsewhere in the State of Maine.

The William E. Bowler Scholarship Fund of $1,000 was established in 1955 by Marie Z. Bowler in memory of her husband, William E. Bowler, a graduate of the University in the Class of 1915. The income from this fund is to be awarded annually to a deserving student enrolled in the College of Technology at the University of Maine.

The Geraldine Brewster Scholarship Endowment Fund was established in 1957 through a bequest of $4,287.50 by Miss Geraldine Brewster of Downingtown, Pennsylvania, a former resident of Owls Head, Maine. The income from this fund is used for the assistance of students whose character, ability, promise and financial need make them worthy of scholarship aid.

The Adelaide G. Bunker Educational Fund of $5,000 was established in 1959 through a bequest of the late Adelaide G. Bunker. The net income from this fund shall from time to time be used toward the payment of regular tuition fees of students, male or female, from the Town of Franklin, Maine, who are attending the University of Maine who may be recommended by the Superintendent of Schools and Chairman of the Board of the Superintending School Committee of the Town of Franklin. In the event there are no students from the Town of Franklin attending the University of Maine, the income from this fund may be used "for some students who are least pecuniarily able to pay their tuition and who are morally, mentally, and physically worth and competent and who may be attending said University."

The Class of 1905 Scholarship, the income from a fund of $1,079, donated by members of the Class of 1905, is awarded to a man of the freshman class pursuing a regular curriculum, whose deportment is satisfactory, and who attains the highest rank in the mid-year examinations.

The Class of 1943 Student Aid Fund, the income of a gift of $1,000 made by the Class at the time of their graduation, is to be used by the President of the University at his discretion, with eventual preference to be given to students who are sons and daughters of the Class of 1943.

The Class of 1954 Scholarship, the income from a fund of $2,000, donated by members of the Class of 1954, is awarded annually to a senior student of good character who is in need of financial assistance during his last semester. In case of no award the income shall be added to the principal.

The Class of 1957 Scholarship, the income from a gift of $2,000 made by the members of the Class at the time of their graduation, is to be awarded in accordance with the following provisions: (1) The income is not to revert back to principal if not used in a given year. (2) The recipient of these scholarship awards are to be either male or female students. (3) The awards may be given to students entering the University as freshmen or to those enrolled. (4) The awards are not to exceed two semesters but may be renewed on recommendation of the scholarship committee of the class of 1957 and approval of the Office of Student Aid. (5) The awards may in no case exceed the amount of tuition and fees. (6) Awards shall be made on a basis of need, promise of academic success, and capacity and promise of leadership and success. (7) Preference shall be given to sons and daughters of members of the Class of 1957.

The Class of 1961 Scholarship, the income from a fund of $2,000 donated by members of the Class of 1961, is awarded annually to any worthy student in need of financial assistance.

SCHOLARSHIPS

The Albert D. Conley Fund was established in 1961 by Albert D. Conley, Class of 1911, through an initial gift of $2,500.

The income from this Fund is used annually to aid handicapped students at the University, with preference to be given to students with speech handicaps.

Administration of this aid program is to be conducted by proper officials of the University.

The Donald P. Corbett Fund had its beginning in 1956 when Donald P. Corbett of Winslow, Maine, a graduate of the College of Agriculture in the class of 1934, made an initial contribution of $1,000, and now amounts to $3,000. The intent is to add to this fund from time to time.

The income from this fund is to be used for scholarships or for loans to students in the College of Agriculture. The awards shall be on the basis of character, need, and satisfactory scholarship, in the order given and under such other conditions as prescribed. A committee shall be appointed annually by the Dean of the College of Agriculture to recommend the amounts, nature of the award and select the recipients.

The Walter Joseph Creamer Fund of $1,801 was established in 1961 by former students of the Department of Electrical Engineering to honor Professor Creamer. The income from this fund is awarded at various intervals to worthy students in Electrical Engineering.

The Oliver Crosby Scholarship Fund of $10,000 was established in 1954 by Mrs. Ernest Trowbridge Paine of Prospect Harbor, Maine, and Schenectady, New York, in memory of her father, Oliver Crosby, B.S. in Mechanical Engineering, Class of 1876. The income of the fund provides a scholarship for a deserving student in Mechanical Engineering, preferably a student whose home is in the State of Maine.

The Mabel and Mary Daveis Fund of $5,000 was established in 1955 by the Trustees of the Mabel and Mary Daveis Charitable Fund. The income of this fund is to be used for scholarships to needy and deserving students.

The Arthur Lowell Deering Fund of $3,000 was established in 1955 by a gift to the University from Dean Arthur L. Deering, Class of 1912, and Mrs. Deering. The income from this fund (and such amounts as may subsequently be added to it) is to be used: (1) for scholarships, or (2) for loans to assist students in the College of Agriculture. Students are to be selected on the basis of character, financial need, and satisfactory scholastic attainment. A committee shall be appointed annually by the Dean of the College of Agriculture to recommend the amounts and nature of the awards.

The Charles Alexius Dickinson Scholarship Fund of $2,122 was established in 1950 by Sigma Mu Sigma, honorary psychology society, in honor of Dr. Charles Alexius Dickinson, Professor of Psychology from 1926 to 1950. This fund includes a gift of $1,100 from Dr. Louise Bates Ames, '30. The income is awarded annually by Sigma Mu Sigma to a member of the current sophomore or junior class who has completed at least a semester and a half of the course in General Psychology on the basis of proficiency, interest, and general promise in the field of Psychology. Nominations are made to the president of the society by the instructors in the course during the spring semester, and the scholarship becomes available upon the student's return to the University the following semester.

The Fred S. N. Erskine Scholarship Fund was established in 1960 by a bequest of $7,533.49 under the will of the late Georgetta A. Erskine of Boston,

Massachusetts, in memory of her brother, Fred S. N. Erskine, Class of '07. The income from this fund is to be awarded annually by the Office of Student Aid to a student who needs and merits financial assistance.

The Joseph Rider Farrington Scholarship, the income from a fund of $1,078, a gift of Arthur M., Edward H., Oliver C., Horace P. and Wallace R. Farrington, all graduates of the University of Maine and sons of Mr. and Mrs. Joseph Rider Farrington, is awarded annually in honor of their parents, in the following order of preference: (a) Any direct descendant of Joseph Rider and Ellen Holyoke Farrington, or anyone whom three of such descendants may select; (b) Any student bearing the surname of Farrington or Holyoke; (c) A high-ranking student in the College of Agriculture of good character and personality who, in the judgment of the Office of Student Aid, is most deserving of the award.

The Edward Files Scholarship Fund was established in 1948 through a bequest of $5,000 by the late Esther Files of Salem, Massachusetts. The income of this fund is to be used to provide scholarships for worthy students.

The Deacon Ephraim Flint Scholarship Fund is provided from a fund established in 1880 by descendants of Deacon Ephraim Flint of Baldwin, Maine. The Trustees of that Fund gave $10,000 to the University of Maine in 1952 to establish the Deacon Ephraim Flint Scholarship Fund, the income of which shall be awarded to students enrolled at the University of Maine in the following order of priority: (a) To descendants of the late Deacon Ephraim Flint of Baldwin, Maine; (b) To a boy or girl who was born in and still maintains legal residence in Baldwin, Maine; (c) To a boy or girl who was born in and still maintains legal residence in Dover-Foxcroft, Maine, and who is a graduate of Foxcroft Academy.

In each case the entire amount of the income shall be awarded to the individual who meets University minimum academic requirements in scholarship and also who meets good citizenship requirements. The amount of the award, however, shall not exceed the total cost of tuition, board and room, text books and other essential class room and laboratory equipment and supplies.

If more than one descendant applies concurrently for the award, the University's Office of Student Aid shall determine the amount of the award which shall be made to each.

Any unused balance at the close of each college year shall be added to the principal of the fund, which now amounts to $11,494.

Should the fund grow to provide more than one scholarship, each additional scholarship shall be handled in the manner described for the first.

The Fort Kent Future Farmers Scholarship Fund of $2,000 was established in 1948 by the Fort Kent Chapter of Future Farmers of America. The income from this fund is awarded annually to a male student majoring in agriculture who is a graduate of Fort Kent High School, on the basis of character, financial need, and qualities of leadership. The Dean of the College of Agriculture, the Head of the Department of Agricultural Education, and one other selected by them shall constitute the committee on award.

The Ella Somerville Foster Scholarship was established in 1946 through a bequest of $1,000 by the late Ella Somerville Foster. The income of this fund is to be devoted to assisting a deserving Canadian or Newfoundland student.

The Salomie and Eulalia Gardner Fund was established in 1953 through a bequest of $6,000 by Randall D. Gardner of Belmont, Massachusetts, in memory

of his mother Salomie Gardner and his sister Eulalia. The income of this fund is to be used to aid students attending the University of Maine from the town of Pembroke, Washington County, Maine. If such students are not found the income may be applied to the aid of needy students from said Washington County.

The Fred H. and Alice V. Gould Scholarship Fund of $1,000 was established in 1957 by a bequest of Gladys M. Gould, Class of 1922. The income is to be used for a worthy student in Home Economics. The Committee on awards shall be the Director of the School of Home Economics and the Dean of the College of Agriculture.

The Henry L. Griffin Scholarship Fund was established in 1950 through a bequest of $6,500 by the late Lucy F. Griffin in memory of her late husband, Henry L. Griffin of Bangor, Maine. The income of this fund is to be used annually for the benefit of a graduate of Bangor High School during his or her first year at the University and who, in the opinion of the President and Board of Trustees, on the basis of character and scholarship, is the most deserving to receive such benefit.

The Eugene Hale Scholarship Fund of $1,542 was established by Mrs. Eugene Hale and her two sons, Frederick Hale and Chandler Hale, in honor of the late United States Senator, Eugene Hale. The income is utilized in awarding one scholarship yearly to a boy or girl entering the College of Agriculture who is or has been a 4-H club member. The award is to be based on his or her record as a 4-H club member, on scholarship, character, and qualities of leadership. The award will be made by a committee appointed by the Dean of the College of Agriculture.

The Helen C. Hardison Scholarship Fund of approximately $3,000 was established in 1961 through a bequest under the will of the late Helen C. Hardison. The income of this fund is to be used "to establish, support and maintain a scholarship for the study of English." The amount and conditions of the award are to be determined from time to time by a scholarship committee designated by the governing board of said University.

The Philip R. Hathorne Scholarship was established in 1936 through a bequest of $5,000 by the late David Ernest Hathorne, of Woolwich, Maine, and an additional gift of $2,000 by Mrs. Carrie E. Hathorne, as a memorial to their son, Philip R. Hathorne, of the Class of 1923. The income is used to help needy students in the Civil Engineering curriculum, preference to be given to natives of Maine.

The Helen B. Hemingway Memorial Fund of $169,165 was established in 1950 through the Edward D. and Helen B. Hemingway Trust. The income of this fund is to be used for granting scholarships at the University of Maine to worthy and needy students under such regulations as may apply to the award of scholarships.

The Lillie C. Hemphill Scholarship Fund was established in 1949 through a bequest of $4,000 by the late Mrs. Lillie C. Hemphill of Houlton and Portland, Maine. The income of this fund is to be used for the assistance of students whose character, ability, promise, and financial need make them worthy of scholarship aid.

The Benjamin Higer Memorial Scholarship Fund of $15,000 was established in 1953 by the friends and associates of the late Benjamin Higer of Belfast, Maine. The income from this fund to a maximum of the normal tuition and fee charges is to be awarded to a freshman from Waldo County, Maine, who is

entering the College of Agriculture to study poultry science. In the absence of suitable candidate from Waldo County, the award shall be made to an entering freshman from any section of Maine who enrolls in the College of Agriculture intending to study poultry science. The basis for the award is scholarship, character, leadership potentialities, and need. If the income from the fund exceeds the amount needed for the freshman scholarship, the balance is to be awarded to junior students majoring in poultry who meet the above qualifications. The committee on award consists of the Dean of the College of Agriculture, the Head of the Department of Poultry Science, and one other selected by these two preferably from the Maine poultry industry.

The Frederick W. and Marianne Hill Scholarships. Part of the income of the Frederick W. and Marianne Hill Fund bequeathed to the University by the late Frederick W. Hill of Bangor, in 1922, is available for scholarship aid. Recipients are chosen by the Office of Student Aid.

The David Dunlap Holmes Scholarship Fund of $6,000 was established in 1958 by Mrs. Emily B. Holmes of Topsham, Maine, mother of David Dunlap Holmes of the Class of 1946. The income of this fund is to be awarded annually to a needy and worthy student in the Department of Electrical Engineering. In any year that an award is not made, the income will be added to the principal of the Fund.

The Hovey Memorial Scholarships, made available by a fund of $6,800 established in 1932 by the Stone and Webster Corporation and its employees in honor of the late Francis J. Hovey, are awarded to students in the College of Technology, on the basis of scholastic attainment, character, and general promise. A scholastic standing of at least 3.00 must be attained to be eligible, and must be maintained during tenure. Award is made by the Dean and the heads of the departments in the College, subject to the approval of the President, with preference given to students residing in the State of Maine.

The Will R. Howard Scholarship Fund, amounting to $1,847, was established in 1954 through the bequest of Will R. Howard of the Class of 1882. The income is to be used for deserving students whose homes are in Belfast, and who are in need of financial assistance.

The Carrol C. Jones Scholarship, the net income from a fund of $1,073 bequeathed by Minnie E. Jones, of Solon, Maine, in memory of her son, Carrol C. Jones, of the Class of 1914, is awarded annually to the student who makes the greatest improvement in his or her college work during the freshman year.

The Kidder Scholarship, $30, endowed in 1890 by Dr. Frank E. Kidder, of Denver, Colorado, a graduate of the University in the Class of 1879, is awarded by the Office of Student Aid, with the approval of the President, to a student whose rank excels in his junior year.

The Charles E. Knowlton Fund of $177,656 was established in 1957 through a bequest by the late Charles E. Knowlton of Belfast, Maine. The income is to be used to assist boys and girls born in Maine who are attending the University of Maine and who are in need of assistance in obtaining an education, preference to be given to boys and girls born in Belfast.

The Limestone Future Farmers Scholarship Fund of $4,200 was established in 1947 by the Limestone Chapter of Future Farmers of America. The income from this fund is awarded annually to a male student majoring in agriculture who is a graduate of Limestone High School, on the basis of character, financial need, and qualities of leadership. The Dean of the College of Agri-

culture, the Head of the Department of Agricultural Education, and one other selected by them shall constitute the committee on awards.

The Maine Extension Association Scholarship Fund, the income from a fund of $3,663, is awarded annually to a junior or senior student, resident of Maine, in the College of Agriculture, on a basis of character, scholarship, financial need, and qualities of leadership. The Dean of the College of Agriculture, the Secretary of the Maine Extension Association, and the Accountant of the University constitute the committee on award.

The Thomas G. Mangan Scholarship Fund of $4,200 was established in 1959 by friends and associates of Thomas G. Mangan. The income from the fund shall be awarded annually by the Office of Student Aid to one or more freshman students who are graduates of Jay or Livermore Falls High Schools (alternating between graduates of these schools insofar as this is possible) and who have satisfactorily completed the first semester and who need and merit financial aid, with preference to be given to students who are majoring in engineering or science. If there are no freshmen who qualify for the awards, the awards may be made on the basis of need and merit to upperclassmen who are graduates of Jay or Livermore Falls High Schools. In case no award is made in any year, the income shall be added to the principal of the fund, which now amounts to $4,443.

The Philip I. Milliken Fund of $1,000 was established in 1957 by Philip I. Milliken, who served for many years as treasurer of Portland Junior College. The income of the fund is to be used for scholarship awards as the Office of Student Aid shall determine.

The Calvin H. Nealley Scholarships were established in 1942 through a gift of $5,000 by Calvin H. Nealley, of the Class of 1892. The net income of the fund is to be used for scholarships for needy men students of the University whose homes are in Maine; whose character, industry, and promise make them worthy of assistance in obtaining their education.

The Gilbert Crosby Paine Scholarship, amounting to about $475 a year, was established by Ernest T. and Louise Crosby Paine of Prospect Harbor in memory of their son, Lieutenant (j.g.) Gilbert Crosby Paine, who was cited by the Navy and awarded the Silver Star (posthumous) for conspicuous gallantry when the U. S. Destroyer Callaghan was sunk by a Japanese suicide plane off Okinawa, July 29, 1945. This scholarship is awarded annually to a male student of high scholastic attainment and otherwise deserving, preference being given to students from Hancock County, Maine. Failing such candidates, other male students whose homes are in Maine will be considered for the award.

The Edward E. Palmer Scholarship Fund of approximately $3,000 was established in 1956 by Edward E. Palmer of Braintree, Massachusetts, Class of 1899. The income is to be awarded annually to a student enrolled in the College of Technology.

The Perley Burnham Palmer Scholarship Fund of $1,500 was established in 1946 by Mrs. Perley B. Palmer in memory of her late husband. The income from this fund is to be used for a scholarship to be awarded annually to a needy and deserving student in the College of Technology.

The William Emery Parker Scholarship, the income from a fund of $1,200 donated by the late Hosea B. Buck, of the Class of 1893, in memory of William Emery Parker, of the Class of 1912, is awarded annually to that male student of the sophomore or junior class who, in addition to being above the average rank

scholastically, shows most clearly those qualities of manliness, honesty, and constructive effort which characterized the college career of the alumnus in whose memory the scholarship is given.

The William N. Patten Scholarship Fund of $20,000 was established in 1952 by William N. Patten, Class of 1891, of Salem, Massachusetts. The income of the fund is to be expended annually if there is occasion therefor, in the discretion of the Trustees of said University, as a scholarship for the benefit of residents of Cherryfield, Maine, who shall have graduated with satisfactory rank at Cherryfield Academy, in the manner best calculated to aid such pupils. Applicants for scholarship benefits shall be of good moral character and be recommended by the Academy Principal and the University of Maine. If in any year there is no eligible Cherryfield student as above described, said income may be applied in the discretion of the Trustees of said University to aid any worthy student who is a resident of Washington County, Maine.

The Charles H. Payson Scholarships were established in 1935 through a gift of $20,000 made by the late Mrs. Charles H. Payson, of Portland, Maine, in memory of her husband. The principal of the fund was increased by $26,000 through a contribution received from Mrs. Payson in 1945. These scholarships are awarded to students in the University whose homes are in Maine and whose high character, qualities of leadership, creditable academic record, and financial need make them worthy of scholarship aid, or to entering students of outstanding merit who without financial assistance could not attend the University.

The Ralph H. Pearson Fund was established in 1951 through a bequest of $1,000 by the late Richard D. Pearson, of Guilford, Maine, in memory of his brother Ralph H. Pearson. The income of this fund is to be used to provide a scholarship for a worthy student, preference to be given to a resident of the State of Maine.

The Stanley Plummer Scholarship, the income from $1,036, the bequest of Colonel Stanley Plummer, of Dexter, Maine, is used for the assistance of a needy and deserving student selected by the Office of Student Aid. Students born in Dexter, Maine, shall have preference.

The Portland Junior College Fund of $2,581 was established in 1957. This fund was created by using the surplus of anonymous gifts which had been made to Portland Junior College before it became the University of Maine in Portland. The income of this fund shall be used for scholarship awards to be made to needy and deserving students of good character and satisfactory academic record.

The Frank P. Preti Scholarship Fund of $5,000 was established in 1949 by Frank P. Preti, Class of 1917, of Portland, Maine. The income is to be used for a scholarship to be awarded annually by the Office of Student Aid to a male student on the basis of need, promise of academic success, physical ability, and capacity and promise of leadership and future success.

The Henri Raffy Memorial Fund was established in 1956 by a gift of $5,400 to the University from Mrs. Katherine Foote Raffy in memory of her husband, Henri Raffy. The income from this fund is to be used: (1) for scholarships, or (2) for loans to assist students in the School of Forestry. Students are to be selected on the basis of character, financial need and satisfactory scholastic attainment. Awards are to be made by the Office of Student Aid.

The Leroy C. Smith Scholarship Fund of $66,234.65, named in memory of Leroy C. Smith, a graduate of the University, Class of 1904, was established in 1957 through a bequest by his widow, the late Reba Morehouse Smith of

Tangerine, Florida. The income from this fund is used for scholarship awards to entering or upperclass students whose character and satisfactory academic records make them worthy of the benefits of the University and of financial aid.

The Mary S. Snow Memorial Fund. now amounting to $13,030, was established by students and friends of Mary S. Snow, one-time superintendent of schools in Bangor, Maine, and later a leader in home economics education, as a tribute to her memory. From the total of the fund, approximately $11,884 is set up as a scholarship fund, with one or more annual scholarships being awarded from the income to earnest and deserving students in home economics. The committee on awards consists of the Director of the School of Home Economics, the Dean of the College of Agriculture and the President of the University.

The Anne E. Stodder Scholarship Fund was established in 1943 through a bequest of $50,000 by the late Mrs. Anne E. Stodder, of Bangor, Maine. The net income of the fund is to be used for the assistance of needy and deserving students in obtaining their education under such University regulations as may apply to the award of scholarships.

The Bertha Joy Thompson Scholarship Fund was established in 1935 through a bequest of $15,000 by the late Mrs. Bertha Joy Thompson of Ellsworth, Maine. The income of this fund is awarded to students whose qualities of character, scholarship, initiative, and need make them worthy of financial assistance.

The James E. Totman Fund of $50,160 was established in 1952 by James E. Totman of Baltimore, Maryland, a graduate of the College of Agriculture in the class of 1916. The income from this fund is to be used for: (1) scholarship assistance to superior men and women students in the College of Agriculture and to freshmen entering the College of Agriculture, (2) financial aid in sponsoring agricultural research by graduate assistants under the supervision of the Agricultural Experiment Station, and (3) loan assistance to outstanding men and women who are seniors in the College of Agriculture and who are in need of additional funds to complete their college program.

A committee shall be appointed annually by the Dean of Agriculture to recommend the amounts and nature of the awards.

The Nathan Pratt Towne Scholarship Fund of $15,947 was established in 1949 through a bequest by the late Mrs. Eugene Towne Vail of Philadelphia, Pennsylvania, in memory of her father, the late Nathan Pratt Towne of Augusta, Maine. The income of this fund is to be used for a scholarship in mechanical engineering; "Wherever possible preference is to be given to a boy (1) from Augusta, Maine; (2) from the State of Maine."

The University Store Company Scholarship Fund of $15,263 was established in 1949 by the University Store Company. The income of this fund is to be used annually for three scholarships to be awarded to a senior, a junior, and a sophomore on the basis of character, scholarship, service, financial need, qualities of leadership and personality. A student shall not be eligible for a second University Store Company Scholarship award.

The Mary Maxfield Valentine Memorial Scholarship was established in 1953 by William A. Valentine, Class of 1891, in memory of his wife, Mary Maxfield Valentine. The income from the fund of $500 is to be used for an annual award to a worthy woman student in the junior or senior class.

The Sergeant Walter McClymonds Wales Scholarship Fund of $25,000 was established at the request of the late Sergeant Walter McClymonds Wales, of the First Infantry Division, A.U.S., before he left for service overseas in 1942,

because of his love for and interest in Northport, Maine. The annual income from the fund is used for scholarship aid for students whose character and promise make them worthy of financial assistance in obtaining their education. Preference shall always be given to prospective or enrolled students from Northport, Maine, but if, in any year, available income from the fund is not needed for Northport students, it may be used to assist worthy students whose homes are in other Maine communities. Especially meritorious young men and women from Northport who have completed their undergraduate education at the University of Maine may be given grants in aid from the income of the fund for graduate or professional study at the University or at other institutions. Awards shall be made by the University committee responsible for the granting of scholarships and aid, subject to the approval of the President of the University.

The Donald S. Walker Scholarship Fund of $15,700 was established by the late Donald S. Walker of Liberty, Maine, and New York City in 1953. The income of this fund is to be used annually, in the discretion of the Trustees of the University, to provide scholarship aid for one or more worthy students who are residents of Liberty, Appleton, Montville, Palermo or Searsmont, Maine, with preference to be given residents of Liberty.

The Mott F. Wilson Scholarship Fund was established in 1946 through a bequest of $4,300 by the late Mott F. Wilson of Bangor, Maine. The net annual income is to be awarded to a deserving male student of the University whose home is located in Maine, and whose character, industry, and promise make him worthy of financial assistance.

The Gerald E. Wing Scholarship Fund of $1,500 was established in 1957 by friends and associates of the late Gerald E. Wing, Class of 1926, an executive in the Scott Paper Company. The income from this fund is awarded annually to a deserving and promising freshman in the School of Forestry for use during his sophomore year in the School of Forestry. The award is made by the Office of Student Aid.

The Charles F. Woodman Fund, amounting to $17,419, was established in 1939 through a bequest by the late Charles F. Woodman, of Auburn, Maine. The net income is to be used annually under the direction of the President and Trustees of the University for the assistance of deserving and needy students, "especially poor boys who are desirous and willing to work and earn an education."

Annual Scholarships

The Elizabeth Abbott Balentine Scholarship, $75, the gift of the Gamma Chapter of Alpha Omicron Pi, is awarded by the Office of Student Aid to a woman student, on recommendation of the Chapter with the approval of the President, on a basis of scholarship and individual need.

The Bates and Rogers Foundation Scholarships were established in 1957. One scholarship is awarded each year to a sophomore and shall provide $400 for the sophomore year, $400 for the junior year, and $500 for the senior year, each yearly amount to be disbursed in equal installments following term registration.

Awards shall be made to students enrolled in the Department of Civil Engineering possessing the following qualifications: (a) initiative; (b) good character; (c) willingnes to assume responsibilities outside the classroom; (d) be in the upper third of his class and (e) deserving of scholarship aid.

The Office of Student Aid shall weigh these factors about equally and shall have discretion within reasonable limits.

The Fred C. Boyce Student Award of $200, established by the Paper Industry Management Association (PIMA) in 1961, is to be awarded annually to an outstanding member of the Junior Class at the University of Maine who has indicated his intention to major in the field of Pulp and Paper Technology, the selection of the recipient to be made by the faculty of the Chemical Engineering Department in collaboration with the Office of Student Aid at the University.

The Louis Calder Foundation Scholarships were established in 1961 by Louis Calder, a native of New York City, who has been active in the pulp and paper business for more than sixty years. Each award carries a $1,000 grant.

One scholarship will be awarded for the 1961-62 college year, two the following year, three the next year, four each during the 1964-65 and 1965-66 years, three in 1966-67, two in 1967-68 and one in 1968-69.

First preference is given to students from the Kennebec Watershed and to students whose major interest is pulp and paper technology or chemical engineering and who indicate a desire to enter the paper-making field.

The Ciba Company, Inc., Scholarship of $500 is awarded annually to a junior engaged in the study of paper processing, to be chosen by the University, who shall be not only financially deserving but also a person of promise in his field, whose character and integrity justify assistance in the furtherance of his career.

The Charles M. Cox Trust Fund Scholarship of $300 is awarded to a student or students in the College of Agriculture on the basis of need, character, and scholarship ability. Preferably the scholarships will be awarded to undergraduate majors in dairy science or poultry science. The recipients will be selected by the Office of Student Aid.

The George P. Davenport Scholarship Fund of $1,500 was established in 1959 by the Trustees Under the Will of George P. Davenport. Awards from this fund are to be made by the Office of Student Aid to needy and deserving students who are residents of the State of Maine, preferably graduates of Morse High School, Bath, Maine.

The Delta Delta Delta Scholarship is awarded to any woman student whose qualities of character, scholarship, and leadership make her worthy of financial assistance.

The Eastern Association of University of Maine Women Scholarship of $100, the gift of the Eastern Association of University of Maine Women, is awarded to a needy and deserving student.

The General Motors Scholarship is awarded annually to a freshman upon the recommendation of the Office of Student Aid and with the approval of the General Motors Corporation Committee. The amount of the scholarship may range from $200 up to an amount sufficient to cover all regular college expenses.

The Harry Goldman Scholarships, two of $350 each, contributed by H. Goldman and Sons of Philadelphia in memory of the late Harry Goldman. The scholarships are awarded annually by the scholarship committee of the University of Maine Pulp and Paper Foundation to students of the three upper classes who plan to enter the pulp and paper industry. Preference is given to qualified applicants who are relatives of employees or who are recommended by the West Virginia Pulp and Paper Company and the Union Bag and Paper Corporation.

The Stanley D. Gray Scholarship Fund. The University receives from the

Trustee u/w of the late Stanley D. Gray, the annual income from a trust fund established under the will of the late Mr. Gray. Scholarship awards are made under the following terms: "The entire income shall be used each year in such way as most effectively to aid in securing a liberal education to such students, male or female, whose father or mother was a Gray descended from one of the name who settled in what is now Hancock Co., Maine, prior to the year eighteen hundred, as may be decided upon as most worthy of aid. Any superintendent of schools of any town in said County of Hancock may recommend students for such aid."

The Great Atlantic and Pacific Tea Company Scholarship, three scholarships of $100 each, are available to students in Home Economics on the basis of character, financial need, promise of leadership, and scholarship, with special consideration to needs of entering students. Four scholarships of $100 each are available to juniors and seniors majoring in Agricultural Economics and Farm Management, on the basis of character, scholarship, qualities of leadership and interest in distribution and marketing. Awards are made by a committee comprising the Dean of the College of Agriculture, the head of the department concerned, and one or more members appointed by the Dean.

The Martin Hagopian Scholarship, established in 1950 by the Undergraduate "M" Club, is awarded annually to a male student on recommendation of the Scholarship Committee of the Club by the Office of Student Aid. The award may not exceed the amount of tuition and fees and is granted on the basis of need, promise of academic success, physical ability, and capacity and promise of leadership and success.

The Homelite Forestry Scholarship of $500, contributed annually by the Homelite Corporation of Port Chester, New York, is awarded to junior or senior students enrolled in the School of Forestry. Recipients are selected by a committee of the faculty of the School of Forestry on the basis of promise, competency and need.

The Charles H. Hood Dairy Foundation Scholarship, six, of $250 each, are available to men and women four-year students of the College of Agriculture whose intention is to promote farming as a life opportunity, and five of $100, are available to second year students of the Two-Year Course in Agriculture whose ultimate objective is employment on or operation of a commercial dairy farm. They are awarded by a committee comprising the Dean of the College of Agriculture, the head of the Department of Animal Science, and the Treasurer of the University. The four-year scholarships are distributed as follows: Two sophomore and two junior scholarships are granted to students whose scholastic standing for the previous year places them in the upper half of their class; and two senior scholarships are granted to students whose scholastic standing for the previous year places them in the upper third of the class. The junior and senior scholarships are further restricted to students specializing in some phase of dairy industry promotion.

The Maine Farmer and Homemaker Scholarship of $100, established in 1953, is awarded annually to a member of the senior class in the College of Agriculture for use during the student's final undergraduate semester. The recipient shall have demonstrated high qualities of character, leadership, and scholarship. The committee on award shall consist of the Dean of the College of Agriculture, the Secretary of the Maine Extension Association, and one other selected by them.

SCHOLARSHIPS

The Maine Hoo-Hoo Club Scholarship of $200, established in 1954, is awarded annually to a male resident of Maine who is entering his senior year in Forestry, on the basis of need, scholarship, and intent to make a career of forestry or the lumber industry. The selection is made by the Office of Student Aid in consultation with the director of the School of Forestry.

The Maine Managers' Scholarship, of $200, established in 1957 by the Town and City Managers' Association of Maine, is awarded annually to a Public Management student in Arts or Technology on the basis of scholarship, financial need, character, and sincere interest in the profession of manager. The award is made by a committee of the Maine Town and City Managers' Association.

The Maine Poultry Improvement Association Scholarship of $200, established in 1953, is awarded annually to one or more juniors or seniors majoring in poultry science. The award is to be made on the basis of high moral character, scholastic achievement, quality of leadership, and financial need. The committee on award consists of the Dean of the College of Agriculture, the Head of the Department of Poultry Science, and one other appointed by the Dean.

The Monsanto Chemical Company Scholarship of $500 is awarded on consideration of demonstrated ability, personality and need, to an outstanding junior in the department of Chemical Engineering or Chemistry. The recipient is selected by a committee of the faculty of the College of Technology.

The National Plant Food Institute Scholarship of $200, established in 1951, is available to an outstanding junior or senior student majoring in the Department of Agronomy, who is in the upper quarter of his class in the College of Agriculture and shows promise of advancing or promoting knowledge of the principles of sound soil fertility maintenance. The award is to be made annually in the fall semester by a committee consisting of the Dean of the College of Agriculture, the Head of the Agronomy Department, and one other member appointed by the Dean.

The Ober Award, a scholarship contributed by the Scott Paper Company of Chester, Pennsylvania, and named in honor of John Larcom Ober, '13, provides stipends of $1,000 in the fourth and fifth years of the Five-Year Pulp and Paper Program, and is awarded to an outstanding student, selected on consideration of leadership, personality, and ability. The selection is made in the spring semester of the junior year. The award includes an offer of summer employment with the Scott Paper Company.

The Paper Trade Journal Scholarship of $750, established in 1957 by the *Paper Trade Journal* of New York, is awarded annually to an entering freshman who plans to enter the pulp and paper industry and who, because of financial need, might not otherwise enroll at the University. Awards shall be made by the Office of Student Aid on the basis of interest in and plans to enter the pulp and paper industry, academic record, and financial need. The scholarship will be continued for the sophomore year if the recipient meets or continues to meet the above requirements.

The Pennsylvania, New Jersey, and Delaware Division of the Paper Industry Management Association Annual Scholarship Award of $300 is awarded about February 1 to a man who has satisfactorily completed the first semester of his fifth year of the pulp and paper technology curriculum and who has displayed outstanding qualifications scholastically, as well as for personality, cooperation, and qualities of leadership, and in need of financial assistance. A special committee made up of the instructional staff of the Chemical Engineering

Department in collaboration with the Director of Student Aid shall select the recipient.

The Barbara Bosworth Scholarship of Phi Mu, $100, established in 1951 by the Pi Chapter of Phi Mu Fraternity, is awarded annually to a woman student of the sophomore or junior class on the basis of satisfactory scholastic record, financial need, and qualities of leadership, on the recommendation of the Chapter.

The Pi Beta Phi Scholarship, $100, is awarded annually by the Office of Student Aid to a deserving undergraduate woman student.

The Pulp and Paper Foundation Scholarships are available in two categories from the University of Maine Pulp and Paper Foundation:

(a) Tuition scholarships to qualified junior and senior students, in the Forestry curriculum and all curricula in the College of Technology, who plan to enter the pulp and paper industry, or allied companies, following graduation. Applications should be made through the Office of the Dean of the College of Technology.

(b) Grants of $1,200 each to qualified students enrolled in the fifth year of the Pulp and Paper Management options offered in the College of Technology. Applications should be made through the Office of the Dean of the College of Technology.

The Ralston Purina Scholarship of $500, contributed annually by the Ralston Purina Company of St. Louis, Missouri, is awarded to a senior in agriculture. The recipient is selected by a committee of the faculty of the College of Agriculture on the basis of promise and financial need.

The Retail Lumber Dealers Association of Maine Scholarship, $100, established in 1956 by that Association is awarded annually to a senior majoring in Forestry at the discretion of the faculty of the School of Forestry.

The Rice and Miller Company Scholarship Fund was established in 1958 by the Company with an initial gift of $500. The Office of Student Aid shall make an award annually to a student (or students) who needs and merits financial assistance. First consideration shall be given to sons and daughters of persons who are employed by Rice and Miller Company at the time the application is filed.

The Sears-Roebuck Agricultural Foundation Scholarships, seven, of $300 each, established in 1940, are available to Maine farm boys entering as freshmen in the four-year course in agriculture. The award is made by a committee comprising the Dean of the College of Agriculture and such others as he may designate. The awards are to be based on character, scholarship, qualities of leadership, and financial need. An additional scholarship of $250 is to be awarded to that sophomore who as one of the winners of the Freshman Scholarships achieves the most satisfactory record and is considered to be the most deserving from the standpoint of financial need and otherwise by the committee on awards.

Two scholarships of $200 each, established in 1951, are available to girls entering Home Economics as freshmen. These awards, available to natives of Maine, are made on the basis of high school and community activities, scholarship, character, and financial need. The selection is made by a committee consisting of the Dean of the College of Agriculture, Director of the School of Home Economics, and one other appointed by the Dean.

The Senior Skull Scholarship of $100 is awarded annually to a male student in the second semester of his sophomore year, to be used by him during his junior year. The recipient of the award is chosen by the Office of Student Aid

on the basis of qualities of leadership, campus citizenship, creditable scholastic attainment, or a 2.00 minimum accumulative point average, and financial need.

The Carl R. and Laura Smith Scholarship of full tuition credit for one year, established in 1960, is contributed annually by the Bangor and Aroostook Railroad in honor of Mr. and Mrs. Carl R. Smith of Exeter, Maine on the occasion of their fiftieth wedding anniversary. The scholarship is awarded to that freshman entering the College of Agriculture from Aroostook, Penobscot, Piscataquis, or Waldo county who most clearly demonstrates serious financial need together with high moral character and promise of successful scholarship in a degree program. The award is to be made annually by the Office of Student Aid in consultation with the Dean of the College of Agriculture.

The Joel J. and Annie H. Walker Scholarships were established by the late Donald S. Walker and his sister the late Madge H. Walker in honor of their parents. The University will receive annually from a trust fund, beginning in 1959, approximately $17,000 which is to be administered by the Office of Student Aid for graduate and undergraduate students who have been residents of the Townships of Liberty, Appleton, Montville, Palermo, Searsmont, and Washington in the State of Maine. In order to be eligible, an applicant must have been a resident of one of these towns for at least three years immediately preceding the receipt of the award. Selection of recipients by the Office is based upon ability, character, financial need, and academic standing.

The Stanley M. Wallace Scholarship, established in 1956 by the Intramural Athletic Association of the University of Maine, is awarded annually by the Office of Student Aid to an entering male student on the basis of a good academic record, need, qualities of leadership, and physical ability, with the understanding that the Intramural Athletic Association may select the recipients of this award from names recommended by the Office of Student Aid. The amount of the award may range from $100 as a minimum to the cost of tuition and fees as a maximum.

A Western Electric Company Scholarship, amounting to from $400 to $800, is awarded annually to an undergraduate student in the College of Technology. The selection is made by the Office of Student Aid upon the basis of need and ability in a field of study related to the Company's operations.

The Westinghouse Achievement Scholarship of $500, established by the Westinghouse Educational Foundation in 1954, is awarded to a junior in electrical engineering, mechanical engineering or engineering physics on the basis of achievement in his academic work and demonstrated qualities of leadership. The recipient is selected by a committee of the faculty of the College of Technology.

The Beatrice Batchelder Wright Scholarship, a tuition credit of $400, was established in 1961 by the Maine Branch of the Woman's National Farm and Garden Association. This scholarship is awarded annually by the Office of Student Aid to a worthy student, man or woman, who is already registered for or about to enter the University of Maine for a major course in Agriculture, Animal Science, Horticulture, Landscape Gardening, Forestry, Wildlife Conservation, or other related fields.

The York County Poultry Improvement Association Scholarship of $100, established in 1958, is awarded annually to a boy or girl, preferably from York County, who is majoring in Poultry Husbandry or intends to major in Poultry Husbandry. In the absence of a satisfactory candidate from York County, the

award may be made to a deserving student from another county who is studying or intends to study Poultry Husbandry. The basis of the award shall be need, scholarship, and potential for making a contribution to the poultry industry. The selection is made by the Office of Student Aid in consultation with the head of the department of Poultry Husbandry.

The Zonta Club of Bangor Scholarship of $300 was established in 1959. This annual award is made to a worthy girl who has completed the first year in the University School of Nursing, the recipient to be chosen by a committee from that school in collaboration with the Office of Student Aid with the first consideration to be given to a student from the Bangor-Brewer area.

Alumni Scholarships

The Eastern Pennsylvania Alumni Association Scholarship, $50, established in 1935, is awarded annually to some needy and deserving student, with preference given to the vicinity of Philadelphia.

The Northern Connecticut Alumni Association Scholarship, $50, established in 1935, is awarded annually to a needy and deserving student, with preference given to students from Northern Connecticut.

The North Shore (Massachusetts) University of Maine Alumni Association Scholarship, $100, established in 1956, is awarded to a student of good character, promise of academic success, and in need of financial assistance, with preference being given to the Massachusetts North Shore Area.

The Portland Alumnae Association Scholarship, $100, established in 1938, is awarded annually to a deserving upperclass woman whose home is in Cumberland County. The award is made upon the basis of need of financial assistance, satisfactory record and conduct, and evidence of qualities of leadership and of scholastic attainment.

The Western Pennsylvania Alumni Association Scholarship, $100, established in 1905, is awarded annually to a member of the junior class in the College of Technology whose ability and need justify the award.

The Worcester County, Massachusetts, Alumni Association Scholarship, $50, established in 1935, is awarded annually to a worthy student from Worcester County, preferably an entering freshman.

UNIVERSITY OF MAINE FOUNDATION FUNDS

The Maria S. Appleton Fund was established in 1939 through a bequest of $5,000 by the late Maria S. Appleton, of Bangor, Maine, to the University of Maine Foundation. The income of this fund is to be used for scholarships to be awarded anually to deserving and needy students.

The Hosea B. Buck Memorial Scholarships, the income from a fund of $3,900 raised through the University of Maine Foundation, of which Mr. Buck was a charter member, were established in 1938 by friends and alumni of the University, in memory of Hosea B. Buck, of the Class of 1893. One or more scholarships are awarded annually to students whose high character, qualities of leadership, creditable academic record, and financial need make them worthy of scholarship aid.

The Ava H. Chadbourne Fund was established in 1954 by a gift of $5,000 to the University of Maine Foundation by Professor Emerita Ava H. Chadbourne,

Class of 1915. The income from this fund, up to the amount of the room rent, is awarded annually to a woman student residing in Chadbourne Hall who is a native born and life long resident of the State of Maine. Preference is to be given to applicants in the following order: (1) a member of the Chadbourne family (the Maine residence requirement does not apply to applicants in this category), (2) a graduate of Mattawamkeag High School, (3) a graduate of Lee Academy, and (4) a student who lives near Mattawamkeag. When there is more than one applicant, the Office of Student Aid will apply its own criteria of scholarship and need as the basis for the award.

The James W. Clarkson Fund was established in 1958 by an initial, unrestricted gift of $1,500 by Robert N. Haskell, Class of 1925, to the University of Maine Foundation. By vote of the Directors of the Foundation, the income of this fund is to be awarded annually to a needy and deserving student, with first consideration to be given to a student who is majoring in Wildlife Management.

The Class of 1909 Scholarship, the income from a fund of $7,036 presented to the University of Maine Foundation by the members of the Class of 1909, is used for scholarship awards to worthy students in need of financial aid.

The Class of 1910 Scholarship, the income from a fund of $5,200 given without restrictions to the University of Maine Foundation in 1946, is awarded annually to a student of good character and ability who needs and merits financial aid.

The Class of 1911 Scholarship, the income from a fund of $19,119.11 donated to the University of Maine Foundation, is awarded annually to an upperclass student of good character and satisfactory conduct and rank, who possesses qualities of leadership and who needs and merits financial aid. Special consideration is given to sons and daughters of members of the Class.

The Class of 1915 Student Aid Fund, the income from a fund of $7,015 given in trust to the University of Maine Foundation, is to be used by the President of the University at his discretion for assisting needy students in such manner and amounts as he deems expedient.

The Class of 1916 Scholarship, the income from a fund of $1,775 donated to the University of Maine Foundation in 1941, is awarded annually to a student of good character who needs and merits financial aid.

The Class of 1917 Scholarship, the income from a fund of $6,041 presented to the University of Maine Foundation in 1942, is awarded annually to an upperclass student of good character and satisfactory rank, who possesses qualities of leadership and who needs and merits financial aid. Special consideration is given to sons and daughters of members of the Class of 1917.

The Class of 1919 Fund, the income from a gift of $2,655 presented to the University of Maine Foundation in 1944, is to be used for a scholarship to be awarded annually to a student of good character who needs and merits financial aid.

The Class of 1920 Scholarship, the income from a fund of $8,238 donated to the University of Maine Foundation in 1945, is awarded annually on a basis of need, promise of academic success, physical ability and capacity and promise of leadership and success.

The Class of 1921 Scholarship, the income from $2,000, established with the University of Maine Foundation in 1946, is awarded without restrictions for scholarship purposes.

The Class of 1923 Scholarship, the income from $420 donated to the University of Maine Foundation in 1953, is to be awarded to a student of good character, satisfactory scholastic record, and who needs financial aid.

The Class of 1924 Scholarship, the income from a fund of $2,555 presented to the University of Maine Foundation by the members of the Class of 1924, is awarded annually to a deserving student, with particular consideration to be given to character, general ability, and financial need.

The Class of 1925 Scholarship, the income from a fund of about $3,791 presented to the University of Maine Foundation in 1955, is awarded annually on such basis as the University may determine.

The Class of 1927 Scholarship, the income of $1,710 presented to the University of Maine Foundation in 1953, is to be awarded annually to a worthy student attending the University.

The Class of 1928 Fund was established in 1953 by the gift of $1,988 to the University of Maine Foundation by the members of that class. The income from this fund is awarded annually to a student of good character who has made a satisfactory academic record at the University and who needs and merits financial assistance.

The Class of 1929 Student Aid Fund, the income from $2,500, presented to the University of Maine Foundation by members of that class, is to be awarded annually by the Student Aid Committee to assist needy and deserving students, who will not be obligated to repay these grants.

The Class of 1930 Fund, established in 1955 by an unrestricted gift of $2,555 with the suggestion that the income be used to assist deserving students.

The Class of 1953 Grant-in-Aid Fund, established in 1953 by a gift of $1,450 to the University of Maine Foundation by members of that class, the income and/or principal in the amount of $50, to be given each year to a senior man or woman, who shows pressing financial need and is fulfilling the requirements for graduation.

The Class of 1958 Scholarship, the income from a fund of $1,800 donated to the University of Maine in 1958, is awarded annually to an upperclass student who needs and merits financial aid. Special consideration is given to sons and daughters of members of the class.

The Eugene Danforth Scholarship Fund was established in 1957 through a bequest of $10,739 to the University of Maine Foundation by Agnes H. Danforth of Bangor. The income is to be awarded to deserving students who are legal residents of Maine and who are majoring in forestry, forest products, pulp and paper, or other courses related to the scientific and industrial development of the wood products industries.

The Emma Jane Eaton Scholarship Fund was established in 1946 through a bequest of $10,000 to the University of Maine Foundation by the late Emma Jane Eaton of Calais, Maine. The income from this fund is awarded annually to students whose character, academic record, qualities of leadership, and need make them worthy of aid. First consideration is given to graduates of Calais Memorial High School, and if there are no eligible recipients from that school, awards may then be made to other students who are natives of Washington County. Entering students who have made an outstanding secondary school record, and who need and merit financial aid, shall be eligible for Eaton scholarships.

The James Adrian Gannett Scholarship, the income from a fund of $2,623 presented to the University of Maine Foundation by members of the Class of 1908

in honor of their classmate, is awarded annually to a worthy student who needs financial support.

The Charles E. Gilbert Scholarship of $200, established in 1953 through a bequest to the University of Maine Foundation by Charles E. Gilbert, Class of 1894, available for the fall semester in each year in such amount and upon such terms and conditions and for such worthy and needy student or students as the Maine Beta Upsilon Chapter of Alpha Tau Omega may determine. The award is made in accordance with University scholarship policies, and is administred by the Office of Student Aid.

The Lucy F. Griffin Fund was established in 1950 through a bequest of $10,000 to the University of Maine Foundation by the late Jane B. Pickering, of Bangor, in memory of her sister. The income of this fund is to be used, with the approval of the Office of Student Aid and the President of the University, for the benefit of needy students who have successfully passed their examinations during the Freshman year and indicate by their general standing in the institution an earnest desire to acquire an education.

The Robert C. Hamlet Prize, established in 1935, through a bequest to the University of Maine Foundation in accordance with the will of Mr. Hamlet, a graduate of the University in the Class of 1925, the income from a fund of $1,300, is awarded annually to that student in the University who shall have written the best original one-act play during the year. The judges are the Dean of the College of Arts and Sciences, the head of the Department of English, and the president of the Maine Masque.

The George O. Hamlin Scholarship Fund of $1,500 was established in 1937 by George Otis Hamlin, Class of 1900. The income from this fund is awarded annually on a basis of satisfactory academic record and conduct, qualities of leadership and financial need to a student who is a resident of Lincoln County.

The James Norris Hart Scholarships, the income from a fund of $7,469 raised through the University of Maine Foundation in 1937 by alumni, faculty, and friends, in honor of the late Dean Emeritus James Norris Hart, are awarded annually to entering students, or upperclassmen who have made satisfactory scholastic records, who have been leaders in extracurricular activities, and who merit and need financial aid.

The Arthur A. Hauck Fund was established in 1944 by a fund of $10,658 raised by alumni and friends on the occasion of Doctor Hauck's tenth anniversary as president of the University of Maine. This fund is held in trust by the University of Maine Foundation and the income may be used by the President for any University need.

The President Hauck Scholarship Fund was established in 1949 by a gift of $2,800 to the University of Maine Foundation from the classes of 1949, 1950, 1951, and 1952. The income from this fund is to be used by the President of the University for assisting needy students in such manner and amounts as he deems expedient.

The Thelma Louise Kellogg Fund was established in 1949 through a bequest of $25,094 by the late Thelma Louise Kellogg, Class of 1918, to the University of Maine Foundation. The income of this fund is to be used for scholarships to be awarded to students whose academic record and conduct are satisfactory and who need and merit financial aid.

The Benjamin C. Kent Fund of $6,068 was established in 1951 by gifts of

alumni and friends of the University of Maine Foundation as a scholarship fund in memory of the late Benjamin C. Kent, Class of 1912, and for many years a member of the University faculty. The income from this fund is to be awarded annually to male students, either entering freshmen or upperclassmen, on a basis of need, promise of academic success, character, physical ability, capacity and promise of leadership and success.

The Harriet S. Kilby Scholarship of $100, established with the University of Maine Foundation in 1954, is to be awarded annually to a student in home economics whose academic record is satisfactory and who needs and is worthy of financial aid.

The Harland A. Ladd Scholarship Fund was established in 1955 by a gift of $2,800 to the University of Maine Foundation in memory of Harland A. Ladd of the Class of 1925. The income is to be awarded to students who are training to become teachers and who are residents of Maine.

The Nathan Levitan Scholarship Fund was established in 1959 by Dr. Leon B. Levitan, Class of 1938, in memory of his father by a gift of $5,000 to the University of Maine Foundation. The income from this fund shall be awarded annually to a graduate or undergraduate student or students in the field of social, theoretical, or historical (but not applied) Economics who need financial assistance and whose scholastic standing indicates promise of high academic success. If in any year no student qualifies for the award, the income shall be added to the principal of the fund.

The Alfred B. Lingley Scholarship Fund of $4,700 was established in 1952 by Alfred B. Lingley '20, the income to be awarded to a male student at the University or to an entering freshman on a basis of need, promise of academic success, physical ability, and capacity and promise of leadership.

The Harold P. Marsh Scholarship Fund was established in 1958 through a bequest of $111,010 to the University of Maine Foundation by the late Harold P. Marsh, Class of 1909, the income to be used for scholarship awards for the benefit of deserving and needy students at the University under such terms as the officers of the Foundation may determine

The Frank P. Morison Fund was established in 1952 through a bequest of $5,000 to the University of Maine Foundation by the late Frank P. Morison. The income from this fund is to be used for one or more scholarships awarded on a basis of good character, satisfactory academic record and financial need.

The Greater New York Alumni Association Scholarship, now amounting of $4,654, was established in 1955 by an initial gift of $2,000 to the University of Maine Foundation. The income is to be awarded to any student, entering or enrolled, on a basis of general all-round qualifications with special consideration to be given to leadership. First preference shall be given to students who reside in the Greater New York area.

The Penobscot County Alumni Association Scholarship, $50, was established in 1920 and endowed by creating a gift of a fund of $1,250 to the University of Maine Foundation in 1940. This scholarship is awarded by the President of the University, the Executive Director of the General Alumni Association and the Office of Student Aid, to a male student whose home is in Penobscot County, who is found to be needy and deserving, and whose scholarship and conduct are satisfactory.

The John Reed '89 Scholarship Fund was established in 1958 through a bequest of $33,999.37 to the University of Maine Foundation by the late Elizabeth

H. Reed in memory of her husband, the income to be awarded annually to some worthy student or students enrolled in the College of Technology, the scholarships to be known as the John Reed '89 Scholarships.

The Rhode Island Alumni Association Scholarship, $50, established in 1935 and endowed in 1945 by a gift of $1,500 to the University fo Maine Foundation, is awarded to a male student from Rhode Island or that portion of Massachusetts included in that Association, whose personal and scholastic record is satisfactory and who has been prominent in extracurricular activities.

The Senior Alumni Scholarship Fund, now amounting to $7,742, was established in 1947 by the University of Maine Senior Alumni as a gift to the University of Maine Foundation. Three scholarships of $150 each are awarded annually to worthy students selected by the President of the University and the Office of Student Aid.

The Anna Strickland Fund was established in 1951 through a bequest of approximately $14,700 by the late Mary R. Strickland, of Bangor, Maine, to the University of Maine Foundation in memory of her daughter who taught music at the Northern Conservatory and the University. The income from this fund is to be used for scholarships to be awarded annually to needy and deserving students, with special consideration to be given to those majoring in music.

The William Jordan Sweetser Fund was established in 1958 through a bequest of $1,000 by Elizabeth N. Sweetser to the University of Maine Foundation in memory of her husband, William Jordan Sweetser, who was for many years professor and head of the department of mechanical engineering at the University of Maine, the income to be used for a scholarship to be awarded to a student enrolled in mechanical engineering.

The Chestina Blaisdell Urann Fund was established in 1947 through a gift of $10,000 to the University of Maine Foundation by Marcus L. Urann of the Class of 1897 in memory of his mother. The net income of this fund is to be used for scholarships to be awarded to students of superior ability, high ideals, and excellent character who need and merit financial assistance in obtaining their education at the University.

The Alburney E. Webber, Jr. Scholarship was established by a gift of $1,000 to the University of Maine Foundation in 1956 from the estate of Alburney E. Webber in memory of his son who was a member of the Class of 1933 at the University. The income from this fund is to be awarded annually to a needy and deserving student of good character and satisfactory academic record.

The Ralph Whittier Fund of $5,000 was established in 1950, through a bequest of the late Ralph Whittier, Class of 1902, to the University of Maine Foundation. The income from this fund is to be used for scholarships for needy and deserving students, chosen on the basis of good character and satisfactory academic record.

PRIZES

Endowed Prizes and Awards

The Prize of the Class of 1873, the income from $1,220, the gift of Russell W. Eaton, of Brunswick, Maine, a member of the Class of 1873, is awarded annually to that student pursuing the basic course in mechanical drawing who shows the greatest improvement. It is expected that candidates for this prize shall have had no training in mechanical drawing previous to entering the University.

The Milton Ellis Prize, the income from a fund of $1,075 contributed by friends of the late Dr. Milton Ellis, is to be awarded annually to that senior English major who ranks highest in the comprehensive examinations.

The Claude Dewing Graton Prize, the income from a fund of $1,760, donated by Mr. Graton, of the Class of 1900, is awarded annually to a regularly enrolled undergraduate student who shall have written the best essay on some current constitutional question, in accordance with rules announced by the Professor of the course in The American Constitution.

The Henry L. Griffin Prize in English Composition, the income from a fund of $250, established in honor of the late Rev. Henry L. Griffin, of Bangor, Maine, is awarded by the Department of English for excellence in the freshman course in composition. The chief basis of the award is a competition in writing he'd during the month of April.

The Maine Hardwood Association Award, the income from a fund of $1,766, established in 1939, is awarded annually to the senior student in the School of Forestry who shall have achieved the highest rating in the courses in wood utilization and technology and the basic sciences leading to this field. The Director of the School of Forestry will appoint a committee and act as chairman of that committee to determine the specifications on which the rating is based, and to select the recipient.

The John M. Oak Scholarship Prizes, the income from a fund of $1,630, established in 1935 by the estate of Mr. Oak, a graduate of the Class of 1873 and a Trustee of the University from 1908 to 1915, for the advancement of the art of public speaking in the University, are awarded annually to those upperclass students who deliver the best speeches of the persuasive type in a contest held for that purpose, open to men and women, except that no student who has already won the first prize shall be eligible to compete

Annual Prizes and Awards

The Alpha Omicron Pi Alumnae Prize, $10, given by the Bangor Alumnae Chapter, is awarded annually to the woman student showing the greatest improvement in her work during her freshman year. The record at the Registrar's office, showing the comparison of grades of the fall semester with those of the spring semester, shall furnish the basis of award.

The Chi Omega Prize, $25, is offered annually by the Chi Omega Sorority in accordance with its national policy, to the highest ranking woman of the junior or senior class who is majoring in sociology, business, psychology or political science, with special consideration given to a student whose interest lies in the field of political science. General deportment and interest in further study in one of these fields may be considered in making the award.

The Dorothy Stone Clark Memorial Prize, $25, the gift of Chi Omega Sorority, is awarded annually to the highest ranking sophomore majoring in Home Economics. The prize will be given to the girl who has the highest accumulative average for two semesters of the freshman year and the fall semester of the sophomore year.

The Frank H. Dalton Award in Bacteriology, $25, the gift of Mrs. Frank H. Dalton in memory of her late husband, is presented to any sophomore or junior who has completed the course in General Bacteriology. The award is made to that student who has demonstrated exceptional interest and ability in Bacteriology

during his or her initial course. The Committee of Award shall consist of the head of the department of Bacteriology and the staff members who teach the general course.

The Delta Zeta Prize in English, $10, given by the Bangor Alumnae Club of Delta Zeta, is awarded to the freshman woman who does the best work in the first semester of Freshman English, especially in her writing.

The Freshman Algebra Prizes, $25, $15, and $10, were established in 1953 by Thomas Buck of the Class of 1901. These are awarded to the three freshmen who rank highest in an examination in algebra given by the department of Mathematics early in the second semester.

The Helen A. Lengyel Award, established in 1951 by the Women's Athletic Association in honor of Professor Emerita Helen A. Lengyel, Head of the Women's Division, Department of Physical Education from 1924 to 1949, is awarded each year to a woman student on the basis of high moral character, scholastic achievement, financial need, and high standing in the Association. The Committee of Award includes the members of the senior class on the Women's Athletic Council, the Faculty Adviser, and the Head of the Women's Division, Department of Physical Education.

The A. D. T. Libby Fishery Award, $100, will be awarded annually to the University of Maine student submitting an article which, in the opinion of the Committee of Award, does the most to stimulate further research in the marine and/or the fresh water fishery resources of Maine. The Committee of Award shall be appointed by the President of the University.

The Maine Association of Engineers Honor Award, $100 in cash, together with a Certificate of Award, is presented to a member of the senior class in the College of Technology, who shall be unanimously selected by the Committee of Award on the basis of high moral character, scholastic achievement, and qualities of leadership throughout his college coreer. The Committee of Award shall be composed of the Chairman of the University Committee on Student Aid, the Dean of the College of Technology, and the President of the Maine Association of Engineers, or such other members of the Association as he may designate. All senior students in the College of Technology, whether graduating in February or June, who are enrolled in a course leading to a degree in Chemical, Civil, Electrical, or Mechanical Engineering, and who are residents of the State of Maine, shall be eligible for consideration by the Committee of Award.

The Carl Whitcomb Meinecke Award, $25, the gift of Mrs. Carl W. Meinecke in memory of her late husband, is presented to a junior or senior majoring in the Department of Civil Engineering. The award is made on the basis of character, scholarship, and promise by the Dean of the College of Technology and the head of the Department of Civil Engineering.

The Mu Alpha Epsilon Scholarships, two or more, established in 1946, are awarded annually to deserving students who by audition qualify for a scholarship of one year's tuition in Applied Music, voice or instrumental. Musicianship, talent, future use and need are considered in making the awards.

The Panhellenic Scholarship Award. Each spring the Panhellenic Council recognizes the achievement of the sorority which has the highest scholastic average for the preceding two semesters. The award consists of a certificate of recognition plus the custodianship of the Panhellenic Scholarship Silver Plate for a year.

The Sigma Chi Foundation Scholarship Cup, donated in 1947 by Mr. Raymond Fogler of the Class of 1915 through the Sigma Chi Foundation, is awarded semi-annually to the fraternity whose active members attain the highest standing in scholarship for the preceding semester. The cup will become the permanent property of the fraternity to which it is awarded the greatest number of times during a fifteen-year period. If two or more fraternities win the cup the same number of times, the cup shall be awarded to the tying fraternity having the highest cumulative scholastic standing for the entire fifteen-year period.

The Interfraternity Singing Contest Cup. The Interfraternity Sing was initiated in 1942 and has been a yearly event since that time, with the exception of the war years 1944-46. Two trophies have been presented during this interval, as well as individual silver plates which are retained by the winning fraternities. The first trophy (a sliver loving cup) given by the Cleveland Alumni, was retired by Sigma Alpha Epsilon in 1948. The second was given by the Ohio Alumni Association (a silver platter) and retired in 1953 by Theta Chi.

In 1954 a new ten-year trophy was inaugurated. The trophy was donated by Colonel Joseph A. McCusker, '17. The fraternity being judged the winner the greatest number of times during the ten years of competition will be given permanent possession of the trophy.

The Charles Rice Cup, presented in 1921 by the Kappa Sigma Fraternity in honor of Charles Anthony Rice, of the Class of 1917, who was killed in service, is held for one year by the team winning the Intramural Track Championship.

The Intramural Plaques are presented each year by the Intramural Athletic Association to the fraternities making the best showing in each major intramural sport, and an all-point plaque is given to that fraternity which makes the best performance in all the sports.

The Washington Alumni Association Watch is presented annually by the Alumni Association of Washington, D. C., to the male member of the graduating class who, in the opinion of the students and the University administration, has done the most for the University during his course. This award is made as the result of a secret ballot by the students, passed upon by the President and the Deans.

The Portland Alumnae Memorial Watch is presented annually by the Portland Club of University of Maine Women to the woman member of the graduating class who, in the opinion of the students and the University administration, has done the most for the University during her course. This award is made as a result of a secret ballot by the students, passed upon by the President and the Deans.

Top: A student views children in play at the home economics nursery school through "one-way" glass.
Bottom: A home economics student at work as a dietetic intern.

COLLEGE OF AGRICULTURE

WINTHROP C. LIBBY, DEAN

COLLEGE OF AGRICULTURE

The College of Agriculture is composed of the School of Forestry, the School of Home Economics, and the departments of Agricultural Economics and Farm Management, Agricultural Education, Agricultural Engineering, Agronomy, Animal Science, Animal Pathology, Bacteriology, Biochemistry, Botany and Plant Pathology, Entomology, Horticulture, and Poultry Science.

While considerable variation in program requirements exists among units of the College, all have as common objectives: proficiency in a professional, subject-matter field and broad, liberal training for effective citizenship.

The College offers programs leading to the Bachelor of Science degree in the following fields:

1. **Agricultural Sciences**
2. **Agricultural Engineering** (Jointly with College of Technology)
3. **Biological Sciences**
4. **Forestry and Wildlife Management**
5. **Home Economics**

In addition to the above, special programs in Dairy Manufacturing, and Food Processing are offered as part of the New England Board of Higher Education plan for regional cooperation. This agreement permits students to complete two-year preparatory programs at the University of Maine and transfer to the University of Vermont for a final two-year training in Dairy Manufacturing or to the University of Massachusetts for a final two-year training in Food Processing.

A two-year Pre-veterinary curriculum is provided for those who wish to qualify for entrance into a regular college of veterinary medicine.

The **two-year course in agriculture** offers a non-degree, vocational type training to young men and women interested in farming or related technical employment.

A special two-year curriculum, the **Associate Program in Agriculture,** provides opportunity for qualified candidates who are unable to plan for a four-year degree program to arrange a sequence of courses selected from the regular four-year course offerings.

DEPARTMENTS OF INSTRUCTION

Courses numbered 1-99 are for undergraduates; courses numbered 200 and above are primarily for graduates. If a student, on approval of the graduate faculty, takes a course numbered under 100 for graduate credit he shall register for the course by adding 100 to the catalog number.

One number is used for a course which is given both fall and spring.

When a dash is used between the two numbers (e.g., 1-2), both semesters must be taken to obtain credit; when a semicolon is used (e.g., 1; 2), the first semester may be taken by itself, but the second cannot be taken unless the first is taken previously; when a period is used (e.g., 1. 2), either semester may be taken for credit.

Courses offered in 1962-63 and alternate years are indicated by the sign (‡) placed before the number of the course; courses offered in 1961-62 and alternate years are indicated by the sign (†) placed before the number of the course.

AGRICULTURAL SCIENCES

The educational programs in the College of Agriculture designated as the Agricultural Sciences encompass the offerings of the following departments:

Agricultural Economics and Farm Management
Agricultural Education
Agronomy
Animal Science
Horticulture
Poultry Science

Each department has developed courses of study which enable a prospective student interested in a given area to develop a broad or technical program in any of the several areas represented by that department. Several such programs are outlined in this catalog.

The programs permit considerable flexibility and may be adjusted to suit the student's educational objectives. They are designed to provide a sound basic education with emphasis on the sciences. Students are encouraged to develop a specialty field within a subject matter area.

The Agricultural Science curriculum leads to the degree of Bachelor of Science in Agriculture. Requirements for this degree include satisfactory completion of at least 132 degree hours exclusive of basic military science at an accumulative grade point average of not less than 1.80.

Minimum Requirements for the B.S. in Agriculture Degree:

		Degree Hours Required
(1)	*Orientation*	0
(2)	*Basic Sciences*—Courses selected from the following fields: Bacteriology, Biochemistry, Botany, Zoology, Chemistry, Entomology and Physics, with not over twelve hours from any one field.	25
(3)	*Communications*—Freshman Composition, Technical Composition, and Speech.	10
(4)	*Agricultural Sciences*—At least three hours must be taken from each of three different departmental fields other than the one of major interest.	56
(5)	*Humanities and Social Sciences*—Not less than two hours from each of the following groups: a. Literature, Philosophy, and Fine Arts b. Economics, Sociology, and Psychology c. History and Government	10
(6)	*Electives:* Any course in the University which the student is prepared to take and which will help provide a balanced program.	31
	Total	132

COLLEGE OF AGRICULTURE

Freshman Year

The freshman year program includes basic courses intended to provide a foundation for upperclass curricula. It further provides the individual an opportunity to explore the many subject matter fields in order to help select areas of specialization within the agricultural science major. The following is the schedule of courses for the freshman year:

FALL SEMESTER				SPRING SEMESTER			
		Subject	Credit Hours			Subject	Credit Hours
Agr	1	Orientation	0	Ch	2	Gen. Chemistry	4
Ch	1	Gen. Chemistry	4	Eh	2	Freshman Composition	3
Eh	1	Freshman Composition	3	Mt	2	Basic Military Science	1
Mt	1	Basic Military Science	1	Pe	2	Physical Education	0
Pe	1	Physical Education	0			Electives*	7-11
		Electives*	7-11				

* Selection of electives is to be guided by the following:

1) The freshman year must include a minimum of four credit hours selected from the following group of basic sciences:
   a) Bt 1, Gen. Botany—(Cr 4)
   b) Ms 1, Trigonometry—(Cr 2)
   c) Ms 3, College Algebra—(Cr 2)
   d) Ms 5, 6, Elements of College Math—(Cr 3 each)
   e) Ps 6, Essentials of Physics—(Cr 5)
   f) Zo 1, Gen. Zoology—(Cr 4)
   g) Zo 3, 4, Animal Biology—(Cr 4 each)
2) The freshman year must include a minimum of six credit hours selected from the following group of agricultural sciences:
   a) Ag 2, Soils—(Cr 3)
   b) An 5, Dairy Science—(Cr 3)
   c) An 6, Gen. Dairying—(Cr 3)
   d) Fm 48, Agric. Economics—(Cr 3)
   e) Ht 2, Horticulture—(Cr 3)
   f) Ph 1, Poultry Science—(Cr 3)

Upperclass Programs of Study

Prior to the end of the freshman year the student will select an upperclass adviser to assist in planning a program of study. The adviser will normally be selected from the subject matter field of major interest. The following course patterns indicate the general upperclass programs which are recommended for I) Agricultural Economics, II) Plant Sciences, and III) Animal Sciences.

I) AGRICULTURAL ECONOMICS

A. Basic Sciences—These should include in addition to Ch 1 and 2, General Chemistry, a minimum of 17 credit hours selected from the following:

Bt	1	General Botany
By	21	Introduction to Bacteriology

Gy 3, 4	Descriptive Geology
Gy 22	Economic Geography
Ms 1	Trigonometry
Ms 3	College Algebra
Ms 5, 6	Elements of College Math
Ps 3	Descriptive Physics
Zo 1	General Zoology

B. Communications—Refer to agricultural science degree requirements, page 71. Jr 22, Introduction to Journalism is also recommended.

C. Agricultural Sciences—The minimum of 56 credit hours in this category should include the following:

Fm 24	Rural Sociology
Fm 47	Agricultural Accounting
Fm 48	Agricultural Economics
Fm 74	Farm Management
Fm 75	Agricultural Statistics
Fm 76	Agricultural Marketing
Fm 79	Agricultural Business Management
Fm 87	Agricultural Prices
Fm 93. 94	Seminar
Fm 96	Agricultural Public Policy

D. Humanities and Social Sciences—Refer to agricultural science degree requirements, page 71.

E. Electives—The minimum of 31 hours in this category should include at least 15 credit hours selected from the offerings of the Department of Business and Economics. These should specifically include Be 1-2, Principles of Economics, and Be 49, Business Economics.

II) ANIMAL SCIENCES

A. Basic Sciences—These should include in addition to Ch 1 and 2, General Chemistry, a minimum of 17 credit hours selected from the following:

Bc 1, 2	Organic and Biochemistry
By 27	General Bacteriology
Bt 45 or Zo 63	Genetics
Ch 51, 52	Organic Chemistry
En 26	General Entomology
Gy 3, 4	Descriptive Geology
Ms 1	Trigonometry
Ms 3	College Algebra
Ps 6	Essentials of Physics
Zo 3, 4	Animal Biology
Zo 8	Anatomy and Physiology
Zo 77	Animal Physiology

B. Communications—Refer to the agricultural science degree requirements on page 71.

C. Agricultural Sciences—The minimum of 56 credit hours in this category should include the following:

1) At least 20 credit hours of course work in Animal Science or Poultry Science depending upon the area of specialization
2) At least 6 credit hours from the course offerings of the Department of Animal Pathology
3) At least 3 credit hours selected from each of two departmental areas other than the field of specialization

D. Humanities and Social Sciences—Refer to agricultural science degree requirements on page 71.

III) PLANT SCIENCES

A. Basic Sciences—It is recommended that in addition to Ch 1 and 2, General Chemistry, the program should include the following:

Bt 1	General Botany
By 27	General Bacteriology
En 26	General Entomology
Bc 1 or	
Ch 51	Organic Chemistry

An additional six credit hours should be selected from the following:

Bt 53	Plant Physiology
Bc 2	Biochemistry
Ch 40	Quantitative Analysis
Ch 52	Organic Chemistry

B. Communications—Refer to the agricultural science degree requirements on page 71.

C. Agricultural Sciences—The minimum of 56 credit hours in this category should include the following:

1) At least 20 credit hours of course work in Agronomy or Horticulture, depending upon the area of specialization.
2) At least six credit hours selected from each of three departmental areas other than the field of specialization

D. Humanities and Social Sciences—Refer to the agricultural science degree requirements on page 71.

AGRICULTURAL ECONOMICS AND FARM MANAGEMENT

PROFESSORS MERCHANT, METZGER, PERRY, PULLEN; ASSOCIATE PROFESSORS PLOCH, TUTHILL; ASSISTANT PROFESSOR JEWETT

An educational program in Agricultural Economics prepares for many different employment opportunities in the general fields of agricultural services, sales, business administration, research, and public service. Employing agencies include agricultural businesses such as feed, fertilizer, farm supply and farm product distributors, federal and state governments, colleges and universities, marketing cooperatives, and various types of credit agencies.

Courses in Agricultural Economics

47. Agricultural Accounting.—Basic principles of accounting applied to important types of agriculture and to various kinds of forestry operations. One laboratory each for agricultural and forestry students. *Rec* 2, *Lab* 2, *Cr* 3.

MR. METZGER, MR. PULLEN

48. Agricultural Economics.—Principles of economics as applied to agri-

culture. Consideration is given to the development of commercial agriculture, price-making forces, production factors, policy, foreign trade, taxation, credit, marketing, and farm management. *Rec* 3, *Cr* 3. MR. TUTHILL

70. Agricultural Finance.—A study of the need for and sources of credit for farmers and the management of owned and borrowed funds with special reference to Maine agriculture. Consideration is given to credit instruments and agricultural credit institutions and their operations. *Rec* 3, *Cr* 3. MR. PULLEN

74 (174). Farm Management.—Managing the farm business, decisions as to size of business, production rates, combination of enterprises, labor efficiency, use of machinery; and organization and management of specific farms. *Rec* 3, *Lab* 2, *Cr* 4. MR. PULLEN

75 (175). Agricultural Statistics.—Practical problems in statistical measurements such as averages, trends, seasonal variations, cycles, index numbers, linear and nonlinear correlations, and errors. *Rec* 2, *Lab* 2, *Cr* 3. MR. MERCHANT

76 (176). Agricultural Marketing.—Economic principles of marketing agricultural products, with special reference to products produced in the northeast. *Rec* 3, *Cr* 3. MR. PERRY

79 (179). Agricultural Business Management.—Organization, finance, taxation, management, business analysis, and employee, customer, membership, and public relations for private, partnerships, cooperative and corporate agricultural businesses. *Rec* 2, *Lab* 2, *Cr* 3. MR. PULLEN

83 (183). Retail Food Distribution and Merchandising.—Trends in food consumption; processing, market structure, organization and retail food distribution; consumer services, buying habits, motivations, advertising and merchandising of food through retail outlets. *Rec* 2, *Lab* 2, *Cr* 3. MR. MERCHANT

87 (187). Agricultural Prices.—Economic factors underlying the price structure for agricultural commodities, determination of demand and price forecasting. *Rec* 3, *Cr* 3. MR. TUTHILL

93 (193). 94 (194). Seminar.—Discussion of current economic problems. *Rec* 1, *Cr* 1. STAFF

96 (196). Agricultural Public Policy.—State, national, and international problems affecting farmers' economic and political life. Special consideration given to surpluses, price support programs, conservation measures, credit agencies, social security, and the development of an agricultural program. *Rec* 3, *Cr* 3. MR. MERCHANT

99. Thesis.—A report on a subject in agricultural economics, farm management, agricultural marketing, agricultural finance, land utilization, farm taxation, agricultural prices, or rural sociology. Prerequisite, permission to register. *Cr, Ar.* STAFF

202. Advanced Agricultural Statistics.—Partial and multiple correlation, linear and curvilinear relationships, measures of significant differences, analysis of variance. Graduate students. *Rec* 2, *Lab* 2, *Cr* 3. MR. MERCHANT

203. Advanced Farm Management.—Special emphasis on decision making in the organization and operation of farms. Use of various systems of budget analysis; determination of costs of production under various economic conditions. Graduate students. *Rec* 3, *Cr* 3. MR. PULLEN

204. Advanced Agricultural Marketing.—Advanced work in the marketing of potatoes, apples, poultry, eggs, and dairy products. Graduate students. *Rec* 3, *Cr* 3. MR. METZGER

299. Graduate Thesis.—*Cr, Ar.* STAFF

Rural Sociology

24. Rural Sociology.—Sociological impacts of suburbanization and migration on farming and on the rural community; and the significances of changes in the institutions of family, religion, education, and stratification. Course same as Sy 24. *Rec* 3, *Cr* 3. MR. PLOCH

29 (129). The Individual and the Community.—Analysis of group processes, program planning, and leadership in small towns and communities. Training in and application of, social research methods. Course same as Sy 29. Prerequisite, Fm/Sy 24 or Sy 26 or permission of instructor. *Rec* 3, *Cr* 3. MR. PLOCH

30 (130). Rural Community Analysis.—Intensive analysis of the problems of smaller communities. Case studies and student analysis of real community situations. Course same as Sy 30. Prerequisite, Fm/Sy 29 or permission of instructor. *Rec* 2, *Lab* 2, *Cr* 3. MR. PLOCH

AGRICULTURAL EDUCATION

PROFESSOR ELLIOTT

All courses in Agricultural Education will be scheduled during the student's senior year. Near the end of the freshman year, students desiring to certify to teach Vocational Agriculture will, in consultation with their adviser, plan a program to include 15 hours in Agricultural Education and 13 hours in Agricultural Engineering. All academic work must be completed by the end of the fall semester of the senior year, other than the courses required of students, during the spring semester, in the Agricultural Education Sequence. One-half of the spring semester will be devoted to directed teaching in secondary schools.

3. Agricultural Education.—An introduction to vocational education, with emphasis on the development and importance of agricultural education; State and Federal legislation, administration, planning and organizing local programs. *Rec* 3, *Cr* 3. MR. ELLIOTT

4. Teaching Vocational Agriculture.—The techniques of instructional planning, including farm mechanics, and individual farming programs; conducting young farmer programs, providing on-farm instruction, and program evaluation. Prerequisite, Course 3. *Rec* 3, *Lab* 2, *Cr* 4. MR. ELLIOTT

8. Directed Teaching.—Introduction to teaching including observation and participation in the classroom and shop; supervised farm practice, administration, and extracurricular activities. Prerequisite, Course 4. *Cr* 8-10. MR. ELLIOTT

AGRONOMY

PROFESSORS STRUCHTEMEYER, BROWN, GAUSMAN; ASSOCIATE PROFESSORS BLACKMON, MURPHY, TREVETT; ASSISTANT PROFESSOR HUTCHINSON

Agronomy is the study of crops and soils. The subjects offered in this area provide the basic education for many of the job opportunities in the Food and Fiber Industry.

Students interested in crops and/or soils can follow either a general course, which provides adequate training for most employment opportunities, or a technical curriculum which provides preparation for graduate study.

Some of the employment opportunities available upon completion of the

course in Agronomy include the Soil Conservation Service, fertilizer industry, inspection service, farm cooperatives, agricultural chemical industry, farming as owner or operator, private business, teaching of vocational agriculture or science in high school, County Agricultural or 4-H Club Agent, seed companies, and land appraising.

Soils

2. Soils.—Origin, types, physical and chemical properties of soils. *Rec* 3, *Cr* 3. MR. STRUCHTEMEYER

3. Forest Soils.—Origin, types, physical and chemical properties of soils as related to forests. *Rec* 2, *Lab* 2, *Cr* 3. MR. STRUCHTEMEYER

5. Soils Laboratory.—Physical and chemical properties of soils. Special emphasis on standard soils laboratory techniques. Prerequisite, Course 2. *Lab* 4, *Cr* 2. MR. MURPHY

8. Soil Management and Conservation.—Improvement and maintenance of soil fertility through use of various fertilizers, cropping and soil conservation practices. Prerequisite, Course 2 or 3. *Rec* 3, *Cr* 3. MR. HUTCHINSON

‡54 (154). Chemistry of Soils and Fertilizers.—Chemical properties of soils and fertilizers with principles and methods of analysis. Prerequisite, Courses 2 and 5, or permission of instructor. *Rec* 2, *Lab* 3, *Cr* 3.

†56 (156). Soil Physics.—Physical properties of the soil. Prerequisite, Courses 2, 5, and Physics 3, or permission of instructor. *Rec* 2, *Lab* 3, *Cr* 3. MR. ————

‡57 (157). Soil Development and Classification.—Genesis, morphology, classification and mapping of soils. Prerequisite, Courses 2, 5, and Geology 1. *Rec* 2, *Lab* 3, *Cr* 3.

Crops

20. Forage and Grain Crops.—Field crop culture, particularly forage and grain varieties, seed, fertilization, tillage, pest control, harvesting and marketing. *Rec* 2, *Lab* 2, *Cr* 3. MR. BLACKMON

21. Potato Production.—Varieties, seed selection, preparation of land, planting, fertilization, spraying, harvesting, and storing. *Rec* 2, *Lab* 2, *Cr* 3. MR. MURPHY

†22. Sweet Corn, Peas, and Beans.—The production of sweet corn, peas, and beans for processing. *Rec* 2, *Lab* 2, *Cr* 3. MR. HUTCHINSON

64 (164). Hay and Pasture Management.—Production and preservation of hay, silage, and pasture crops. Varieties and seeding mixtures; use of lime, manures, fertilizers; cutting and grazing. Methods of storage and preservation. *Rec* 3, *Cr* 3. MR. BROWN

65 (166). Crop Breeding.—Plant introduction, hybridization, selection and inheritance studies. Methods, objectives, and results in developing new varieties of field crops. Prerequisite, Botany 45. *Rec* 3, *Cr* 3. MR. BLACKMON

69 (169). Principles of Weed Control.—Characteristics and control of weeds of the Northeast. Prerequisite, Course 20 and Botany 1. *Rec* 2, *Lab* 2, *Cr* 3. MR. TREVETT

General Courses

70 (170). Experimental Design.—Principles of research in the biological sciences, conduct of agronomic and related experiments, and statistical interpretation of data. *Rec* 3, *Lab* 2, *Cr* 4. MR. GAUSMAN

81. 82 (181. 182). Seminar.—Recent literature, problems and experiments pertaining to soils and crops. *Rec* 1, *Cr* 1. STAFF

83. 84 (183. 184). Special Problems in Agronomy.—*Cr, Ar.* STAFF

203. Radioisotopes in Biological Research.—Principles for radioisotope research, health physics, tracer techniques. Protective clothing required. Admittance by permission of instructor. *Rec* 2, *Lab* 3, *Cr* 3. MR. GAUSMAN

299. Graduate Thesis.—*Cr, Ar.* STAFF

ANIMAL SCIENCE

PROFESSORS POULTON, DICKEY; ASSOCIATE PROFESSORS BRUGMAN, LEONARD; ASSISTANT PROFESSORS LEWIS, ————

The Animal Science curriculum is designed to give the student a thorough understanding of the basic animal sciences including animal nutrition, animal physiology, and animal breeding.

Because a basic knowledge in the animal sciences is fundamental to successful work in many job situations, the curriculum offers a wide choice of electives so that students may adapt their course of study to meet their specific professional interests or needs. Through the proper use of electives, students can prepare for admission to graduate school, or veterinary college, teaching sciences in secondary schools, pursuing technical sales and service work in the animal industries, or developing animal production enterprises such as dairy farming or livestock farming.

Superior students should give consideration to continuing their studies at the graduate level. The Department of Animal Science offers the Master of Science degree in animal nutrition, animal physiology, and animal breeding. The Doctor of Philosophy degree can be earned in animal nutrition.

5. Dairy Science.—The dairy cattle breeds; the selection, breeding, and management of dairy cattle; providing feed and housing for the successful dairy herd. *Rec* 3, *Cr* 3. MR. POULTON

6. Milk and Milk Processing.—Milk composition, properties, quality, pasteurization, homogenization, and separation. Testing dairy products for fat (Babcock method), acidity, total solids, and common adulterations. *Rec* 2, *Lab* 2, *Cr* 3. MR. DICKEY, MR. LEONARD

19. Livestock Feeding.—The general principles of livestock feeding; livestock feeds and their values for the different classes of stock. *Rec* 3, *Cr* 3. MR. DICKEY

32. Dairy Cattle Selection.—A detailed study of the selection of dairy cattle based on type conformation with emphasis on the relation of type to longevity and milk production. *Lab* 4, *Cr* 2. MR. DICKEY

46. Dairy Cattle Management.—The application of breeding, feeding, housing, selection, care, records, breed association programs and recent research findings to herd management. The laboratory is devoted to problems in and techniques of dairy cattle management. *Rec* 3, *Lab* 2, *Cr* 4. MR. LEONARD

48. Livestock Management.—The selection, breeding, feeding, care, and management of beef cattle, sheep, and swine. *Rec* 3, *Lab* 2, *Cr* 4. MR. BRUGMAN

55 (155). Animal Nutrition.—Principles of nutrition, and the application of nutritional theories to practical feeding problems. *Rec* 3, *Cr* 3. MR. ————

56 (156). Advanced Animal Nutrition.—A study of the nutrient requirements of all classes of livestock. The nutritive value and characteristics of livestock feeds are studied as well as methods of formulating balanced nutrient intakes. Prerequisite, course An 55. *Rec* 2, *Lab* 2, *Cr* 3. MR. ————

57 (157). 58 (158). Problems in the Animal Sciences.—Special study of research problems within the animal science field. *Cr, Ar.*

MR. POULTON, MR. DICKEY, MR. BRUGMAN, MR. LEONARD, MR. LEWIS

60 (160). Animal Breeding.—The physiology of reproduction; the principles and theories of breeding as applied in the livestock industry; and the study of pedigrees and records in the herd books. *Rec* 2, *Lab* 3, *Cr* 3. MR. DICKEY

63 (163). 64 (164). Seminar.—Preparation and presentation of papers dealing with topics in the animal and dairy fields. *Rec* 1, *Cr* 1.

MR. POULTON AND STAFF

65. Meat Technology.—The handling and preparation of livestock for market. Farm and packing house methods of slaughter of animals, and cutting and curing of meats. *Rec* 1, *Lab* 4, *Cr* 3. MR. BRUGMAN

70 (170). Physiology of Lactation.—A detailed study of the development and function of the mammary gland. The biochemistry and physiology of milk secretion and udder evacuation. Prerequisite, Zo 1, Bc 2 or equivalent. *Rec* 3, *Cr* 3. MR. LEWIS

72 (172). Endrocrinology.—A detailed study of the animal endocrine system and functional relationships of each of the enrocrine glands to growth, reproduction, and lactation. Prerequisite, Zo 1, Bc 2 or equivalent. *Rec* 3, *Lab* 2, *Cr* 4. MR. POULTON

210. Research Methods in Animal Science.—Experimental procedures in animal research, laboratory techniques, principles of setting up experiments and methods of reporting results. Qualified seniors permitted. Permission of the instructor required. *Rec* 1, *Lab* 4, *Cr* 3. MR. ————

212. Advanced Ruminant Nutrition.—The nutrition of ruminants as contrasted to nonruminants; special emphasis on rumen physiology, nutrient absorption and the role of rumen microorganisms in feed utilization. Prerequisite An 55, An 56 or equivalent. *Rec* 4, *Cr* 4. MR. LEWIS

290. Graduate Research in Animal Science.—*Cr, Ar.* STAFF

299. Graduate Thesis.—*Cr, Ar.*

MR. POULTON, MR. DICKEY, MR. LEWIS

ANIMAL PATHOLOGY

PROFESSORS WITTER, CHUTE; ASSOCIATE PROFESSOR PAYNE

The Animal Pathology offerings serve primarily as supporting courses for studies in the Animal Sciences and in the Wildlife Management curriculum. They also serve as elective opportunities for other agricultural science and agricultural engineering students as well as for majors in the Department of Zoology.

This department also administers the Two-Year Pre-Veterinary curriculum.

35 (135). Anatomy of Domestic Animals.—Comparative anatomy of domestic mammals and birds, emphasizing histological features and those parts

of the body involved in meat cutting, judging livestock, and in common diseases. *Rec* 2, *Lab* 2, *Cr* 3. MR. WITTER, MR. CHUTE, MR. PAYNE

36 (136). Physiology of Domestic Animals.—Special emphasis is placed on comparative features, especially of the circulatory, respiratory, digestive, and urogenital systems of domestic animals and birds. *Rec* 2, *Lab* 2, *Cr* 3.
MR. PAYNE

37 (137). Animal Hygiene.—Principles of hygiene, sanitation, and immunology applied to the prevention and control of the common diseases of domestic animals. Special attention is given to the fundamentals of disease processes. *Rec* 3, *Cr* 3. MR. WITTER

38 (138). Parasitology of Domestic Animals.—The anatomy, pathology, epidemiology and control of important protozoan, helminth and arthropod parasites which affect the health of domestic animals or present public health hazards. Prerequisite, AnP37, or with permission. *Rec* 2, *Lab* 2, *Cr* 3. MR. PAYNE

40 (140). Poultry Diseases.—Principles of hygiene and sanitation applied to the prevention and control of the diseases of poultry, including a detailed consideration of the pathological processes involved in the common diseases. *Rec* 3, *Cr* 3. MR. CHUTE

42 (142). Physiology of Reproduction.—The comparative function of the organs of reproduction in domestic animals with special emphasis on the areas which are commonly associated with infertility and disease. Prerequisite, AnP35, AnP36, or with permission. *Rec* 2, *Lab* 2, *Cr* 3. MR. WITTER

44 (144). Disease and Parasite Control (in Wildlife).—Known infectious and parasitic diseases of game and fur-bearing animals, emphasizing preventive and control measures and practice in autopsy techniques. *Rec* 2, *Lab* 2, *Cr* 3. MR. WITTER

51 (151). 52 (152). Problems in Animal Pathology.—*Cr, Ar.*
MR. WITTER, MR. CHUTE, MR. PAYNE

200. Advanced Animal Pathology.—The gross and histopathology of the reaction of domestic animals to nutritional disorders and various etiologic agents, such as bacteria, viruses, fungi, parasites, poisons, and toxins. Prerequisite, AnP35, 36, Zo51, Bc60 or equivalent courses. *Rec* 2, *Lab* 2, *Cr* 3.
MR. CHUTE, MR. WITTER, MR. PAYNE

GENERAL AGRICULTURE

ASSISTANT DEAN HUNTINGTON

For Freshmen in All Agricultural Curricula

Agr. 1. Orientation.—Designed to acquaint freshmen with the University and the professional agricultural fields. *Rec* 1, *Cr* 0. MR. HUNTINGTON

HORTICULTURE

PROFESSOR EGGERT; ASSOCIATE PROFESSORS CLAPP, HEPLER; ASSISTANT PROFESSOR WHITTON

The course work in Horticulture is designed to provide a student with adequate training in floriculture, pomology, olericulture, or ornamentals. For the necessary background to supplement these courses, students should plan on courses in

agronomy, chemistry, botany, and entomology. Courses in each phase of horticulture should be taken so that students can gain a broad view of this field of study.

Proper selection of course work will allow graduates to qualify for careers in production of fruit, flowers, ornamentals, and vegetables. Students may also qualify for sales in industries associated with horticulture or they may train for employment as teachers or county agents. Those who are well qualified and entertain thoughts of research or advanced study should plan for this early in their college course. Advanced work at the Master's level is available and is encouraged for qualified individuals.

General Courses

2. Horticulture.—The fundamental principles and practices in the production of fruits, vegetables and flowers, and relating to ornamental horticulture. *Rec* 3, *Cr* 3. MR. EGGERT

61 (161). 62 (162). Seminar.—A review of the history of horticulture, trade papers and magazines, sources of information, and recent advances in horticultural research. Prerequisite, Courses 23, 30, and 51. Required of junior, senior and graduate students majoring in horticulture. *Rec* 1, *Cr* 1. STAFF

63 (163). 64 (164). Problems in Horticulture.—Open to juniors and seniors who have demonstrated a capacity for individual effort, and to graduate students. Written consent of instructor must be obtained before registration. *Cr, Ar.* STAFF

66 (166). Plant Propagation.—The principles and methods involved in the propagation of herbaceous and woody plants by seeds, division, layering, cutting, budding, and grafting. Prerequisite, Botany 53 and at least one of the following: Courses 23, 30, 51, or Agronomy 21. *Rec* 2, *Lab* 2, *Cr* 3. MR. WHITTON

299. Graduate Thesis.—*Cr, Ar.* STAFF

Pomology

51. Pomology.—Principles and practices in pomology as related to the basic sciences. The culture of all deciduous tree fruits with particular emphasis given to the apple. *Rec* 2, *Lab* 2, *Cr* 3. MR. EGGERT

54 (154). Advanced Pomology.—Further consideration of the principles and practices in pomology. A comprehensive survey of sources of information with special reference to application in commercial orchard management. Prerequisite, Course 51, Botany 53 and junior standing. *Rec* 2, *Lab* 2, *Cr* 3. MR. WHITTON

†55. Systematic Pomology.—A survey of species of fruits and nuts, emphasizing botanical status as well as horticultural classification, varieties, distribution and use. Prerequisite, Course 51 and junior standing. *Rec* 2, *Lab* 2, *Cr* 3. MR. WHITTON

†57 (157). Fruit Storage.—The harvesting, grading, packing, inspection, storage, and transportation of apples. The principles and practices of common, cold, and modified atmosphere storage. Prerequisite, Course 51 and Botany 53. *Rec* 2, *Lab* 2, *Cr* 3. MR. EGGERT

‡59. Small Fruits.—Varieties, cultural methods, and handling of blueberries, strawberries, raspberries, cranberries, grapes, and blackberries. Minor attention given to other bush-type, bramble, and dwarf fruits. Prerequisite, sophomore standing. *Rec* 3, *Cr* 3.

Vegetables

23. Vegetable Growing.—The important vegetable crops, emphasizing their characteristics and culture with consideration given their adaptation to local soil and climatic conditions. *Rec* 2, *Lab* 2, *Cr* 3. MR. HEPLER

24. Market Vegetable Production.—Organization and management in market vegetable production and the horticultural techniques practiced in commercial production. Field trip. Prerequisite, Course 23, Botany 53, junior standing, or permission of the instructor. *Rec* 3, *Cr* 3. MR. HEPLER

26 (126). Advanced Vegetable Crops.—The development, physiology, and improvement of vegetable crops. Prerequisite, Course 23, Botany 45, Botany 53, and permission of instructor. *Rec* 2, *Lab* 2, *Cr* 3. MR. HEPLER

Floriculture and Ornamental Horticulture

30. Ornamental Horticulture.—General practice in flower gardening and the care of woody plants. *Rec* 2, *Lab* 2, *Cr* 3. MR. CLAPP

31; 32. Commercial Floriculture.—The application of modern plant growing science to greenhouse practice and a brief study of greenhouse crops. Field trips. Prerequisite, Course 30. *Rec* 2, *Lab* 2, *Cr* 3. MR. CLAPP

‡43. Trees and Shrubs.—The identification and special characteristics of woody plants which make them important for landscape use; a detailed study of their culture. Prerequisite, junior or senior standing. *Rec* 2, *Lab* 2, *Cr* 3.

46. Home Landscaping.—Principles of landscape design with particular application to the home grounds. An all-day trip to Mt. Desert Island is required at the completion of the course. Prerequisite, Engineering Drawing 1. *Rec* 2 *Lab* 2, *Cr* 3. MR. CLAPP

POULTRY SCIENCE

PROFESSORS BIRD, GERRY; ASSISTANT PROFESSORS HARRIS, MCWARD

The offerings of the Poultry Science department represent a segment of the educational opportunities in the agricultural sciences. Students desiring to specialize in poultry science will select courses in accordance with the Animal Science sequence described on page 73. Students selecting this specialty will receive intensive training in poultry nutrition, physiology, and genetics and will have ample opportunity to select elective courses to prepare for a wide variety of career opportunities. Basic to the program is a strong foundation in the biological sciences.

Graduates find a wide choice of employment opportunities with the vast poultry industry in technical sales, service, and research positions. Superior students are encouraged to consider advanced study.

1. Poultry Science.—A general course in poultry production, incubation, brooding, housing, feeding, breeding and management. *Rec* 3, *Cr* 3. THE STAFF

45. Poultry Technology I.—The business of poultry farming; selection, housing, and management practices of commercial egg and hatching egg flocks. Prerequisite, Course 1. *Rec* 2, *Lab* 2, *Cr* 3. MR. HARRIS

46. Poultry Technology II.—Raising of replacements including incuba-

tion, brooding, and management of both layer replacements and broilers. Prerequisite, Course 1. *Rec* 2, *Lab* 2, *Cr* 3. MR. HARRIS

51 (151). 52 (152). Problems in Poultry Science.—*Cr, Ar.* MR. GERRY, MR. HARRIS

53 (153). 54 (154). Seminar.—A study of poultry organization and literature giving results of recent research work. Prerequisite, Course 1, 45, 46, 55, and 58. THE STAFF

55 (155). Poultry Nutrition.—Principles of nutrition as applied to poultry; poultry feeds; calculating rations; feeding methods and cost of feeding. Prerequisite, Course 1 and Biochemistry 1. *Rec* 3, *Cr* 3. MR. GERRY

‡56 (156). Avian Physiology.—Anatomy and physiology of the fowl with emphasis on the physiology of reproduction; special attention will be given to the current literature. Prerequisite Course 1, and AnP 36 or permission. *Rec* 2, *Lab* 2, *Cr* 3.

†58 (158). Poultry Genetics.—Principles of genetics as applied to poultry; systems of breeding, and study of pedigrees and breeding results. Prerequisite, Course 1, Bt 45 or Zo 63 or permission. *Rec* 3, *Cr* 3. MR. HARRIS

201. Population Genetics.—The study of quantitative rather than qualitative characteristics; methods of determining their heritability, and for changing their level of performance in a population. Prerequisite Bt 45 or Zo 63 and Ag 70 or Fm 75. *Rec* 3, *Cr* 3. MR. ————

299. Graduate Thesis.—*Cr, Ar.* STAFF

SPECIAL PRE-PROFESSIONAL PROGRAMS IN DAIRY MANUFACTURING, FOOD PROCESSING, AND PRE-VETERINARY

A. Dairy Manufacturing

A cooperative agreement with the University of Vermont offers an opportunity for students to secure training in dairy manufacturing. The first two years of a four-year course are offered at the University of Maine, the final two years are completed at the University of Vermont. Residents of Maine are admitted to the University of Vermont for the last two years of the course at the Vermont resident tuition rate. The first two years of this program at Maine are supervised by the department of Animal Science.

B. Food Processing

A cooperative agreement with the University of Massachusetts offers an opportunity for students to secure training in the field of food processing. A basic two-year program may be completed at the University of Maine and a final two years of specialized training completed at the University of Massachusetts. Residents of Maine are admitted to the University of Massachusetts for the last two years of the course at the Massachusetts resident tuition rate. The preparatory program at Maine is supervised by the department of Bacteriology.

C. Pre-Veterinary

The University of Maine does not offer a degree in Veterinary Medicine. However, a special two-year Pre-veterinary curriculum is provided for those

who wish to qualify for entrance into a regular college of veterinary medicine. This program is supervised by the department of Animal Pathology. Adjustments in the selection of courses can be made to fit special requirements of particular veterinary colleges. Pre-vet students who fail to qualify for veterinary college or who desire to change their course can transfer to degree curricula within the College.

Two Year Pre-Veterinary Curriculum

Freshman Year

FALL SEMESTER

Subject			Hours Rec	Lab	Cr
Agr	1	Orientation	1	0	0
An	5	Dairy Science			
		or	3	0	3
Ph	1	Poultry Science			
Ch	1	General Chemistry	3	3	4
Eh	1	Freshman Comp.	3	0	3
Mt	1	Military Science I	1	1	1
My	1	Modern Society			
		or	3	0	3
Sy	1	Anthropology			
Pe	1	Phy. Education	0	2	0
Zo	1	Gen. Zoology	2	4	4
					18

SPRING SEMESTER

Subject			Hours Rec	Lab	Cr
Bt	1	General Botany	2	4	4
Ch	2	Gen. Chemistry	3	3	4
Eh	2	Freshman Comp.	3	0	3
Mt	2	Military Science I	1	1	1
My	2	Modern Society			
		or	3	0	3
Sy	2	Anthropology			
Pe	2	Phy. Education	0	2	0
		Elective from Humanities (Hist., Music, Art, Lit., Phil.)			3
					18

Sophomore Year

			Rec	Lab	Cr
AnP	35	Anatomy of Domestic Animals	2	2	3
Bc	1	Organic Chemistry	3	2	4
Hy	3	U. S. History	3	0	3
Ms	3	College Algebra	2	0	2
Mt	3	Military Science II	2	1	2
Pe	3	Phy. Education	0	2	0
Ps	1a	Gen. Physics	2	4	4
Sh	1	Public Speaking	2	0	2
					20

			Rec	Lab	Cr
Bc	2	Biochemistry	3	2	4
Ch	41	Quant. Analysis	2	3	
		or			3
		Elective in Agri.	—	—	
Ms	1	Trigonometry	2	0	2
Mt	4	Military Science II	2	1	2
Pe	4	Phy. Education	0	2	0
Ps	2a	Gen. Physics	2	4	4
Sh	9	Parliamentary Procedure	1	0	1
		Elective from Humanities (Hist., Art, Lit., Phil.)			3
					19

AGRICULTURAL ENGINEERING

PROFESSORS BONDURANT, RHOADS; ASSOCIATE PROFESSOR CARPENTER; ASSISTANT PROFESSORS MILNE, ROWE; MR. SOULE

The curriculum in Agricultural Engineering is designed to give the student training in the fundamentals of engineering, basic agricultural subjects, and the application of this knowledge to agricultural problems. In general, agricultural engineering may be separated into four major phases of activity—electric power and processing, farm power and machinery, farm structures, and soil and water control.

This curriculum prepares students for many different types of positions which include: design, field testing, or sales and service with industrial or agricultural equipment concerns, building material manufacturers, electric power companies, trade associations, and food processing plants; research and development work with government agencies; teaching, research, and extension work with colleges and experiment stations; advisory and managerial posts in connection with mechanized agricultural development here and abroad; field engineers on large farm enterprises; private business such as a consulting practice, equipment dealer, or farm operator.

This degree requires satisfactory completion of at least 141 degree hours, exclusive of basic military training, at an accumulative grade point average of not less than 1.80 in a course of study which conforms to the following curriculum:

Freshman Year

FALL SEMESTER

Subject			Hours Rec	Lab	Cr
AE	79	Seminar	1	0	0
Agr	1	Orientation	1	0	0
Ch	1	General Chemistry	3	3	4
Eg	1	Eng. Drawing	0	4	2
Eh	1	Freshman Comp.	3	0	3
Fm	48	Agric. Economics	3	0	3
Ms	12	Anal. Geom. & Cal.	4	0	4
Mt	1	Military Science I	1	1	1
Pe	1	Phy. Education	0	2	0
					17

SPRING SEMESTER

Subject			Hours Rec	Lab	Cr
Ag	2	Soils	3	0	3
Ch	2	Gen. Chemistry	3	3	4
Eh	2	Freshman Comp.	3	0	3
Ms	27a	Anal. Geom. & Cal.	4	0	4
Mt	2	Military Science I	1	1	1
Pe	2	Phy. Education	0	2	0
Sh	1	Public Speaking	2	0	2
					17

Sophomore Year

			Rec	Lab	Cr
Ce	5	Surveying	2	3	3
Eg	3	Descriptive Geom.	0	4	2
Me	21	Eng. Mat. & Met'y	3	0	3
Ms	28a	Anal. Geom. & Cal.	4	0	4
Mt	3	Military Science II	2	1	2
Ps	1	General Physics	4	2	5
					19

			Rec	Lab	Cr
Bt	1	General Botany	2	4	4
Me	50	Applied Mechanics Statics	3	0	3
Ms	29	Cal. & Diff. Eq.	4	0	4
Mt	4	Military Science II	2	1	2
Ps	2	General Physics	4	2	5
					18

Junior Year

FALL SEMESTER

	Subject	Hours Rec	Lab	Cr
Ee 5	Elec. Circuits & Machines	2	2	3
Me 23	Kinematics	3	3	4
Me 43	Heat Engineering	3	0	3
Me 51	Strength of Mat.	4	0	4
†Me 59	Fluid Mechanics	3	0	3
	*Elective			2
				19

SPRING SEMESTER

	Subject	Hours Rec	Lab	Cr
AE 67	Agr. Power	3	3	4
Ce 52	Struct. Anal. & Des.	3	0	3
Ee 6	Elec. Cir. & Mach.	2	2	3
Eh 5	Tech. Composition	2	0	2
Me 41	Mech. Lab.	0	3	1½
Me 52	Applied Mechanics Dynamics	3	0	3
	*Elective			2½
				19

Senior Year

		Rec	Lab	Cr
AE 60	Agr. Machinery	3	3	4
AE 65	Soil Water Eng'g	3	3	4
AE 80	Seminar	1	0	1
AE 83	Spec. Problems in Agric. Engrg.			1
	*Elective			9
				19

		Rec	Lab	Cr
AE 63	Farm Structure Des.	2	3	3
AE 69	Agr. Processing	2	3	3
AE 84	Spec. Problems in Agric. Engrg.			1
	*Elective			12
				19

† Ce 26 Hydraulics may be substituted by special permission.

* 18 hours of elective credit must be in humanity-social science electives as specified for other engineering curricula except that 3 hours must be in FM/SY courses; sufficient additional elective credit must be in College of Agriculture subjects to make a total of 40 credits.

Graduate Work in Agricultural Engineering

The degree of Master of Science (Agricultural Engineering) is offered with options for specialization in soil and water engineering, farm structures, farm power and machinery, and electric power and processing.

Several research assistantships are available each year. Incumbents devote half time to research work on approved projects of the Agricultural Experiment Station.

Courses in Agricultural Engineering

20. Principles of Agricultural Mechanization.—Study of the principles involved in farm mechanization; measurement techniques, problem solving, functional analysis and principles of agricultural machines, structures and power sources. *Rec* 2, *Lab* 2, *Cr* 3. STAFF

31. Field Technology.—Functional requirements and development of systems for integrating farm field operations into food and fiber production; selection and utilization of machinery and application of power to these field operations. Prerequisite AE 20. *Rec* 2, *Lab* 2, *Cr* 3. MR. ROWE

32. Farmstead Technology.—Integration of materials and methods into efficient systems for the farmstead. Consideration of construction practices, materials handling, processing methods, environmental control, cost analysis and operational efficiency. Prerequisite AE 20. *Rec* 2, *Lab* 2, *Cr* 3. MR. CARPENTER

35. Soil Water Control.—Field surveying, planning, layout and construc-

tion of soil and water control structures such as farm ponds, drainage systems, irrigation systems and soil erosion control systems. *Rec* 2, *Lab* 3, *Cr* 3.
MR. RHOADS

36. Farm Power.—Application of power to agricultural operations. The construction, operation, selection and maintenance of tractors, internal combustion engines and related equipment. *Rec* 2, *Lab* 2, *Cr* 3. MR. RHOADS

44. School Shop.—Wood-tool fitting, woodworking, painting, concrete work, welding, cold metal work, forging, soldering, pipe fitting, wiring, use and care of electrical motors, power transmission and general farm construction and organization of farm and school shops. (8 weeks for Agricultural Education Majors only) *Rec* 5, *Lab* 15, *Cr* 5. STAFF

45. Engineering Shop.—Care and use of tools; wood construction; oxyacetylene and electric arc welding; cold metal work, soldering and pipe fitting. Consent of instructor. *Rec* 1, *Lab* 3, *Cr* 2. STAFF

Courses numbered 60 or above are designed primarily for the professional Agricultural Engineering curriculum.

60 (160*). Agricultural Machinery.—Principles of equipment design, elements of machinery construction, analysis of functional requirements, power requirements, capacity, and economics of machines used in crop production. Prerequisite, Ps 1 and 2, Me 23 and 50. *Rec* 2, *Lab* 4, *Cr* 4. MR. ROWE

63 (163*). Farm Structures Design.—Functional planning, structural design, environmental control, selection of materials and cost estimates of farm structures with consideration for integrating these factors into overall farmstead plans. Prerequisite Ce 52. *Rec* 2, *Lab* 3, *Cr* 3. MR. CARPENTER

64 (164). Instruments and Control Systems.—Theory and use of instruments for measuring and controlling such factors as temperature, moisture content, and fluid flow. Use of strain gages. Prerequisite, Ps 2 and Ms 28 or permission of instructor. *Rec* 2, *Lab* 2, *Cr* 4. MR. MILNE

65 (165*). Soil and Water Engineering.—Design of erosion control structures, small earth dams and farm reservoirs, drainage and irrigation systems. Study of flood control and land clearing techniques. Prerequisite, Ce 5 and 26. *Rec* 3, *Lab* 3, *Cr* 4. MR. BONDURANT

67 (167*). Agricultural Power.—Principles, construction, application, testing and rating of I. C. engines, electric motors, and other power sources used in Agriculture. Mechanics of tractor power application. Prerequisite, Me 3. *Rec* 3, *Lab* 3, *Cr* 4. STAFF

69 (169*). Agricultural Process Engineering.—Unit operations and their applications as related to agricultural processing and processing equipment. Prerequisite, Me 43, and Me 59 or Ce 26. *Rec* 2, *Lab* 3, *Cr* 3. MR. RHOADS

79. 80. 81. Seminar.—Recent literature, developments and problems in the field of Agricultural Engineering. *Rec* 1, *Cr* 1. STAFF

83. 84. Special Problems in Agricultural Engineering.—*Cr, Ar.* STAFF

280. Graduate Seminar.—*Rec* 1, *Cr* 1. STAFF

283. 284. Problems in Agricultural Engineering.—*Cr, Ar.* STAFF

299. Graduate Thesis.—*Cr, Ar.* STAFF

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* Except for major students in Agricultural Engineering.

BIOLOGICAL SCIENCES

The biological sciences are the basic sciences dealing with living things.

Bacteriology is the science that deals with microorganisms. Bacteriologists may be concerned with diseases of all kinds or with quality control in basic food, fiber, and related industries.

Biochemistry is the chemistry of living things. Biochemists are concerned with foods and nutrition, the utilization of food and fiber materials, the development of by-product uses for waste materials, the study of growth and growth stimulants, as well as the development and utilization of drugs, chemicals, and many other items.

Botany is the science of plant life. Professional botanists are concerned with problems such as diseases and growth of plants, control of weeds, and development of new varieties of plants for disease resistance, higher productivity, more desirable quality or other areas where plants are concerned.

Entomology is the science which deals with insects—their classification, structure, physiology, ecology, and nature with special emphasis on the chemical and biological control of harmful insects.

Zoology, the study of animal life, is administered by the College of Arts and Sciences and is described in the section of this catalog covering this college.

Bachelor of Science degrees are offered in Bacteriology, Biochemistry, Botany and Entomology. These require satisfactory completion of at least 132 degree hours exclusive of basic military training at an accumulative grade point average of not less than 1.80. Curricula for each of the degrees follow.

The freshman year program is common for all four specialized fields. At the end of the freshman year the student must decide on his major field.

Freshman Year

FALL SEMESTER						SPRING SEMESTER					
Subject			Hours			Subject			Hours		
			Rec	Lab	Cr				Rec	Lab	Cr
Agr	1	Orientation	1	0	0	Ch	2	Gen. Chemistry	3	3	4
Ch	1	General Chemistry	3	3	4	Eh	2	Freshman Comp.	3	0	3
Eh	1	Freshman Comp.	3	0	3	*Ms	12	Anal. Geom. & Cal.	4	0	4
*Ms	1	Trigonometry	2	0	2	Mt	2	Military Science I	1	1	1
*Ms	3	College Algebra	2	0	2	Pe	2	Phy. Education	0	2	0
Mt	1	Military Science I	1	1	1	Bt	1	Gen. Botany			
Pe	1	Phy. Education	0	2	0			or	2	4	4
Zo	1	Gen. Zoology				Zo	4	Animal Biology			
		or	2	4	4			Elective			2
Zo	3	Animal Biology									
		Elective			2						
					18						18

* Ms 5, 6, Elements of College Mathematics, may be substituted for Ms 1, 3 and 12 for those students who seek a degree in Botany.

BACTERIOLOGY

PROFESSOR WHITEHILL, ASSOCIATE PROFESSOR BUCK, ASSISTANT PROFESSOR BAIN, MRS. ACHORN

Curriculum Leading to a Bachelor of Science Degree in Bacteriology

Freshman Year. See page 88.

Sophomore Year

FALL SEMESTER

Subject			Hours Rec	Lab	Cr
By	27	Gen. Bacteriology	3	4	5
Ch	51	Organic Chemistry	3	4	5
Mt	3	Military Science II	2	1	2
Sh	1	Public Speaking	2	0	2
		Elective			3
					17

SPRING SEMESTER

Subject			Hours Rec	Lab	Cr
Ch	40	Quant. Analysis	2	6	4
Ch	52	Organic Chemistry	3	4	5
Mt	4	Military Science II	2	1	2
		Elective			6
					17

Junior Year

			Rec	Lab	Cr
Bc	60	Physiological Chem.	3	3	4
By	53	Bacterial Physiology	2	4	4
Ps	1a	Gen. Physics	2	4	4
		Elective			5
					17

			Rec	Lab	Cr
By	52	Pathogenic Bact.	2	4	4
By	56	Indust. Microbiology	2	4	4
Ps	2a	Gen. Physics	2	4	4
		Elective			5
					17

Senior Year

			Rec	Lab	Cr
Bc	57	Biological Colloids	2	4	4
By	71	Food Microbiology	2	4	4
By	81	Seminar in Bact.			1
Eh	5	Tech. Composition	2	0	2
		Elective			6
					17

			Rec	Lab	Cr
Bc	64	Biochem. Lab. Methods	0	6	3
By	76	Virology	2	4	4
By	82	Immunology	2	4	4
By	88	Seminar in Bact.			1
		Elective			5
					17

Courses in Bacteriology

21. Introduction to Bacteriology.—The basic principles of bacteriology and their application to agriculture, industry, sanitation, public health and disease. A descriptive and demonstration course for non-technical students. *Rec* 3, *Cr* 3. MR. BAIN

23. Bacteriology for Nurses (3 yr.).—An elementary course in bacteriology, as it applies to nursing. Emphasis on sanitation, infection, and resistance, and bacteriology of infectious diseases. *Rec* 2, *Lab* 2, *Cr* 3. MR. WHITEHILL

27. General Bacteriology.—Theoretical and laboratory study of the morphology, physiology, and classification of bacteria and other microorganisms, and their application to everyday processes. Prerequisite, Course Ch 51 or Bc 1 or taken in conjunction. *Rec* 3, *Lab* 4, *Cr* 5. MR. BUCK

30. Fundamentals of Public Health.—General consideration of the rela-

tionship between the health of the individual and environment. Prerequisite, Course 21 or 27. *Rec* 2, *Cr* 2. MR. BAIN

52 (152). Pathogenic Bacteriology.—The relationships and characteristics of microorganisms that cause disease in man and animals and the response of the latter to the invasion of the parasite. Prerequisite, Course 27. *Rec* 2, *Lab* 4, *Cr* 4. MR. BUCK

53 (153). Bacterial Physiology.—A study of the properties and behaviors of bacteria with respect to their chemical and physical requirements for life and reproduction. Prerequisite, Course 27. *Rec* 2, *Lab* 4, *Cr* 4. MR. BAIN

†55 (155). Soil Microbiology.—Theoretical and experimental consideration of the relationship of micoorganisms and soil fertility. Prerequisite, Course 27. *Rec* 2, *Lab* 4, *Cr* 4. MR. ————

56 (156). Industrial Microbiology.—Theory and practice in microbial fermentations of foods and industrial materials. Biochemistry of bacterial fermentations. Prerequisite, Course 27. *Rec* 2, *Lab* 4, *Cr* 4. MR. ————

†71 (171). Food Microbiology.—Relation of microorganisms to food production; role of bacteria in the preparation of food, methods of food preservation, and sanitation; control of food-borne diseases and intoxication. Prerequisite, Course 27. *Rec* 2, *Lab* 4, *Cr* 4. MR. ————

76 (176). Virology.—An introductory course in the study of viruses, emphasizing their nature, methods of cultivation, mode of transmission, and classification. Prerequisite, Course 52 or taken in conjunction. *Rec* 2, *Lab* 4, *Cr* 4. MR. BUCK

†82 (182). Immunology.—A study of immune responses of the host to infectious agents; emphasis is placed on serological techniques in measuring these responses. Prerequisite, Course 52. *Rec* 2, *Lab* 4, *Cr* 4. MR. ————

87 (187). 88 (188). Seminar.—Preparation and presentation of papers dealing with current researches and developments in the field of bacteriology. Cr 1. STAFF

92 (192). Problems in Bacteriology.—A laboratory and conference course for students desiring to pursue some particular line of bacteriological investigation. Open only to students who have necessary prerequisites or permission of instructor. *Cr, Ar.* STAFF

299. Graduate Thesis.—*Cr, Ar.* MR. BAIN, MR. BUCK, MR. WHITEHILL

BIOCHEMISTRY

PROFESSORS RADKE, PEDLOW; ASSISTANT PROFESSOR DEHAAS

Curriculum leading to a Bachelor of Science Degree in Biochemistry

Freshman Year. See page 88.

Sophomore Year

FALL SEMESTER

Subject			Hours Rec	Lab	Cr
Ch	31	Micro-Qual. Anal.	2	6	4
Ch	51	Organic Chemistry	3	4	5
Ms	27	Calculus	5	0	5
Mt	3	Military Science II	2	1	2
		Elective			2
					18

SPRING SEMESTER

Subject			Hours Rec	Lab	Cr
Ch	40	Quant. Anal.	2	6	4
Ch	52	Organic Chemistry	3	4	5
Mt	4	Military Science II	2	1	2
Sh	1	Public Speaking	2	0	2
		Elective			4
					17

Junior Year

FALL SEMESTER

Subject			Hours Rec	Lab	Cr
Bc	60	Physiol. Chem.	3	3	4
By	27	General Bacteriology	3	4	5
Ps	1	Gen. Physics	4	2	5
		Elective			3
					17

SPRING SEMESTER

Subject			Hours Rec	Lab	Cr
Bc	64	Biochem. Lab. Meth.	0	6	3
Eh	5	Tech. Composition	2	0	2
Ps	2	General Physics	4	2	5
		Elective			7
					17

Senior Year

			Rec	Lab	Cr
Bc	57	Biological Colloids	3	3	4
Bc	91	Biochem. Research	0	6	3
Bc	71	Seminar	1	0	1
		Elective			9
					17

			Rec	Lab	Cr
Bc	92	Biochem. Research	0	6	3
Bc	72	Seminar	1	0	1
		Elective			13
					17

Courses in Biochemistry

1. Organic Chemistry.—Hydrocarbons, alcohols, acids, ketones, aldehydes, esters, amines, and amides. *Rec* 3, *Lab* 2, *Cr* 4. MR. RADKE

2. Biochemistry.—H-ion concentration; the properties, digestion, metabolism, and excretion of carbohydrates, fats and proteins; enzymes, vitamins, soil, fertilizers, pesticides. Prerequisite, Course 1. *Lec* 3, *Lab* 2, *Cr* 4. MR. RADKE

7. Fundamentals of Chemistry.—A review of the essential material from Inorganic Chemistry followed by a study of the types and reactions of organic compounds. Prerequisite, one year of high school chemistry. *Rec* 3, *Lab* 2, *Cr* 4. MR. PEDLOW

8. Elementary Physiological Chemistry.—Carbohydrates, lipids, proteins, digestion, enzymes, metabolism, vitamins, hormones, blood and urine. Prerequisite, Bc 7 or the equivalent. *Rec* 3, *Lab* 2, *Cr* 4. MR. PEDLOW

54 (154). Agricultural Analysis.—Quantitative analysis of agricultural materials. Type of work will be adapted to the needs of the student. Prerequisite, Courses 1 and 2. *Lab* 6, *Cr* 3. MR. DEHAAS

57 (157). Biological Colloids.—Colloidal chemistry with application in biological systems. Open to junior, senior, and graduate students. Prerequisite, Courses 1 and 2 or 9, and Physics 3 or equivalent. *Rec* 3, *Lab* 3, *Cr* 4. MR. PEDLOW

60 (160). Physiological Chemistry.—The physiological utilization of the carbohydrates, fats, and proteins and the role of enzymes, hormones, and vitamins. Prerequisite, Chemistry 51 and 52. *Rec* 3, *Lab* 3, *Cr* 4. MR. DEHAAS

64 (164). Biochemical Laboratory Methods.—Chromatography, electrophoresis, tracer techniques, manometry, and other procedures employed in biological research. Prerequisite, Course 60 or instructor's permission. *Lab* 6, *Cr* 3. MR. DEHAAS

71 (171). 72 (172). Seminar.—Preparation and presentation of papers dealing with current research in the field of biochemistry. *Cr* 1. STAFF

91 (191). 92 (192). Biochemical Research.—Problems in biological or agricultural chemistry. A comprehensive report is required. Seniors and graduate students only. *Cr, Ar.* STAFF

‡***220. Carbohydrates and Lipids.***—The chemistry and metabolism of carbohydrates and lipids as they characterize different biological forms. Prerequisite, Course 60. *Rec* 3, *Cr* 3.

‡***225. Proteins and Enzymes.***—A comprehensive study of the structure and properties of proteins with special emphasis on their catalytic activity. Prerequisite, Course 60. *Rec* 3, *Cr* 3.

†***231. Vitamins and Hormones.***—The chemistry and biological activity of the regulators of living systems. Prerequisite, Course 60. *Rec* 3, *Cr* 3.

MR. DEHAAS

†***236. Bioenergetics.***—A quantitative study of the processes of living systems. Prerequisite, Courses 57 and 60. *Rec* 3, *Cr* 3. MR. PEDLOW

299. Graduate Thesis.—*Cr, Ar.* MR. DEHAAS, MR. RADKE, MR. PEDLOW

BOTANY AND PLANT PATHOLOGY

PROFESSORS CAMPANA, COOPER, HYLAND; ASSOCIATE PROFESSORS RICHARDS, ROSINSKI, WOODWELL*; ASSISTANT PROFESSOR EASTON; MRS. ANTONITIS, MR. CAMERON

The curriculum leading to a Bachelor of Science degree in Botany is designed to afford the widest latitude for majors preparing for teaching and research in one or more of the biological sciences at all levels. Majors interested in graduate study in plant physiology, plant pathology, or genetics should take mathematics through calculus (Ms 12), organic and/or biochemistry through Ch 52 or Bc 2, German and statistics. Botany majors interested in general biology should take Animal Biology (Zo 3 & 4), Comparative Anatomy (Zo 33) and Animal Physiology (Zo 77) as electives.

Freshman Year. See page 88.

Sophomore Year

FALL SEMESTER

Subject			Hours Rec	Lab	Cr
Bt	35	Plant Anatomy	2	3	3
†Be	1	Prin. of Economics	3	0	3
Bc	1	Organic Chem.	3	2	4
		or			
Ch	51	Organic Chem.	3	4	5
†Gm	1	El. German	5	0	4
Mt	3	Military Science II	2	1	2
					16 or 17

SPRING SEMESTER

Subject			Hours Rec	Lab	Cr
Ag	2	Soils	3	0	3
†Be	2	Prin. of Economics	3	0	3
Bt	54	Taxonomy of Vascular Plants	2	4	4
†Gm	2	El. German	5	0	4
Mt	4	Military Science II	2	1	2
		Elective			2
					18

Junior Year

			Rec	Lab	Cr
Bt	43	Genetics	3	0	3
En	26	Gen. Entomology	2	4	4
Eh	7	Sec. Yr. Comp.	3	0	3
Ps	1a	Gen. Physics	2	4	4
†Gm	3	Intermed. German	3	0	3
					17

			Rec	Lab	Cr
†Bt	30	Ecology	2	2	3
†Ag	70	Exp. Design	3	2	4
Eh	8	Sec. Yr. Comp.	3	0	3
Ps	2a	Gen. Physics	2	4	4
†Gm	4	Intermed. German	3	0	3
					17

* On leave of absence 1961-62.

Senior Year

FALL SEMESTER						SPRING SEMESTER					
Subject			Hours			Subject			Hours		
			Rec	Lab	Cr				Rec	Lab	Cr
Bt	53	Plant Physiology	2	4	4	†Bt	56	Plant Pathology	2	4	4
By	27	Gen. Bacteriology	3	4	5	†Pl	35	Logic	3	0	3
†Bt	59	Gen. Mycology	2	4	4	†Gt	1	Amer. Government	3	0	3
†Py	1	Gen. Psychology	2	2	3	†Py	2	Gen. Psychology	2	2	3
†Bt	61	Botany Seminar	1	0	1	†Bt	62	Botany Seminar	1	0	1
								Elective			3
					17						17

† Suggested electives; other courses may be substituted at discretion of student and adviser.

Courses in Botany

1. General Botany.—An introduction to the structure, function and ecology of plants with a brief study of plant evolution. Open to students of all colleges. *Rec* 2, *Lab* 4, *Cr* 4. STAFF

30 (130). Plant Ecology.—Concepts and principles of plant community study with a brief survey of the vegetation of North America. Laboratory and field exercises stress systematic observations for quantitative analysis. Open to juniors, seniors, and graduates. Prerequisite, Course 1 and permission of instructor. *Rec* 2, *Lab* 2, *Cr* 3. STAFF

33. Dendrology.—Classroom and field work on identification and classification of trees and native shrubs of North America. Prerequisite, Course 1. *Rec* 2, *Lab* 4, *Cr* 4. MR. HYLAND

35. Plant Anatomy.—Structure of woody and herbaceous plants. Prerequisite, Course 1. *Rec* 2, *Lab* 3, *Cr* 3. MR. HYLAND

43. Plants of Maine.—Identification of common Maine plants from the algae to the flowering plants. *Rec* 2, *Lab* 3, *Cr* 3. MR. RICHARDS

45 (145). Genetics.—Principles of genetics. Prerequisite, one year of biology. Open to juniors and seniors. *Rec* 3, *Cr* 3. MR. ROSINSKI

50 (150). Histological Technique.—Methods and technique in the preparation of microscopic sections of plant material. *Rec* 1, *Lab* 6, *Cr* 3. MR. HYLAND

53 (153). Plant Physiology.—Classroom and laboratory work on the physiology of plants. Prerequisite, Course 1 and one year of chemistry. *Rec* 2, *Lab* 4, *Cr* 4. MR. COOPER

53. Plant Physiology (Forestry).—Classroom and laboratory work on the physiology of plants. Prerequisite, Course 1 and one year of chemistry. *Rec* 2, *Lab* 3, *Cr* 3. MR. COOPER

54 (154). Taxonomy of Vascular Plants.—Identification and classification of flowering plants. Prerequisite, Course 1. *Rec* 2, *Lab* 4, *Cr* 4. MR. RICHARDS

55. Taxonomy (Wildlife).—Plants important as food and cover with emphasis on aquatic and marsh plants. Prerequisite, Course 1. *Rec* 2, *Lab* 4, *Cr* 4. MR. RICHARDS

56 (156). Plant Pathology.—Principles of plant disease. Open to juniors and seniors. Prerequisite, Course 1. *Rec* 2, *Lab* 4, *Cr* 4. MR. CAMPANA

56. Plant Pathology (Forestry).—Principles of plant disease. Open to juniors and seniors. Prerequisite, Course 1. *Rec* 2, *Lab* 3, *Cr* 3. MR. CAMPANA

58 (158). Advanced Plant Physiology.—Further study of the photosynthetic process, respiration, water relations, mineral nutrition and growth correlations of plants. Prerequisite, Course 53. *Rec* 2, *Lab* 4, *Cr* 4. MR. COOPER

59 (159). General Mycology.—Comparative Morphology, classification and identification of fungi plus investigation of unusual hereditary and physiological characteristics. Prerequisite, Course 1. *Rec* 2, *Lab* 4, *Cr* 4. MR. ROSINSKI

61. 62 (161. 162). Seminar.—Literature reviews. Techniques, procedures and results in botanical research. *Rec* 1, *Cr* 1. STAFF

Problems Courses

47. 48. Problems in Botany.—Open to juniors and seniors who have special interest and qualification in botany. The approval of the head of the department is required. *Cr, Ar.* STAFF

201. Research Methods in Plant Science.—Laboratory, greenhouse, and field technique involved in botanical research. Prerequisite, Courses 53 or 56 and permission of instructor. *Cr* 2-4, *Ar.* STAFF

207. 208. Problems in Botany.—*Cr, Ar.* STAFF

299. Graduate Thesis.—*Cr, Ar.* STAFF

ENTOMOLOGY

PROFESSOR SIMPSON, ASSOCIATE PROFESSOR BOULANGER, ASSISTANT PROFESSOR DIMOND

Curriculum Leading to a Bachelor of Science Dgree in Entomology

Freshman Year. See page 88.

Sophomore Year

FALL SEMESTER

		Subject	Hours Rec	Lab	Cr
Bc	1	Organic Chemistry	3	2	4
		or			
Ch	31	Micro-Qual. Anal.	2	6	4
Bt	1	Gen. Botany	2	4	4
En	26	Gen. Entomology	2	4	4
Mt	3	Military Science II	2	1	2
Eh	9	Modern Lit.	2	0	2
		Elective			1
					17

SPRING SEMESTER

		Subject	Hours Rec	Lab	Cr
Bc	2	Biochemistry	3	2	4
		or			
Ch	40	Quant. Anal.	2	6	
Bt	54	Taxonomy of Vasc. Plants	2	4	4
En	40	El. Tax. of Insects	2	4	4
Mt	4	Military Science II	2	1	2
		Elective			3
					17

Junior Year

			Rec	Lab	Cr
By	27	Bacteriology	3	4	5
En	51	Morph. of Insects			
		or	2	4	4
En	53	Adv. Taxon. of Insects			
Zo	53	Invertebrate Zoology	2	4	4
		Elective			4
					17

			Rec	Lab	Cr
Eh	5	Tech. Composition	2	0	2
Sh	1	Public Speaking	2	0	2
Zo	58	Parasitology	2	4	4
		Elective			9
					17

Senior Year

FALL SEMESTER

		Subject	Hours Rec	Lab	Cr
Bt	45	Genetics	3	0	3
En	51	Morph. of Insects or	2	4	4
En	53	Adv. Taxon. of Insects			
En	49	Economic Entom.	2	2	3
		Elective			7
					17

SPRING SEMESTER

		Subject	Hours Rec	Lab	Cr
Bt	56	Plant Pathology	2	4	4
En	48	Prob. in Entomology	0	4	2
		Elective			11
					17

Courses in Entomology

22. Forest Entomology.—Principles of insect life with special reference to forest and shade trees. Structure, metamorphosis, classification, and methods of control. *Rec* 2, *Lab* 4, *Cr* 4. MR. DIMOND

26. General Entomology.—Fundamental principles of insect life and the relations of insects to plants, animals and man. A study of structure, metamorphosis and classification. *Rec* 2, *Lab* 4, *Cr* 4. MR. DIMOND, STAFF

40. Elementary Taxonomy of Insects.—Study of insects with emphasis on classification of lower orders and the Coleoptera. Field trips, methods of collecting and identification. Prerequisite, Course 22 or 26. *Rec* 2, *Lab* 4, *Cr* 4. MR. DIMOND

43 (143). Forest Insect Ecology.—Study of factors which regulate the distribution and abundance of insects, particularly in the forest environment. Characteristics of outbreaks and methods of suppression are discussed. Prerequisite, Course 22 or 26. *Rec* 2, *Lab* 2, *Cr* 3. MR. DIMOND

49 (149). Economic Entomology.—Considerations of the various methods used in the control of important pests of orchard, garden and farm. Prerequisite, Course 26. *Rec* 2, *Lab* 2, *Cr* 3. MR. BOULANGER, MR. SIMPSON

†51 (151). Morphology of Insects.—External and internal anatomy of insects. Laboratory includes gross dissections of internal organs of a representative insect. Prerequisite, Course 22 or 26. *Rec* 2, *Lab* 4, *Cr* 4. MR. DIMOND

‡53 (153). Advanced Taxonomy of Insects.—Study of wing venation; classification of Diptera, Lepidoptera and Hymenoptera. Prerequisite, Course 22 or 26. *Rec* 2, *Lab* 4, *Cr* 4.

61. 62. Seminar.—A study of the literature and techniques of Entomology. *Rec* 1, *Cr* 1. STAFF

Problems Courses

47. 48. Problems in Entomology.—Open to juniors and seniors who have special interests and qualifications in entomology. The approval of the head of the department is required. *Cr, Ar.* STAFF

205. 206. Problems in Entomology.—*Cr, Ar.* STAFF

209. Graduate Thesis.—*Cr, Ar.* MR. SIMPSON

THE SCHOOL OF FORESTRY

DIRECTOR NUTTING; PROFESSORS BAKER, MENDALL, YOUNG; ASSOCIATE PROFESSORS BEYER, COULTER, GRIFFIN, PLUMMER, QUICK, RANDALL; ASSISTANT PROFESSOR BANASIAK

Two curricula with seven sequences are offered in the School of Forestry. They have a common freshman year. The objectives are: (1) to train students in the theories and techniques for positions in forest land management, forest product harvesting, manufacture and sale, and game management; (2) to prepare qualifying students for graduate work; (3) to provide a broad education for effective citizenship.

Graduation requirements in the School of Forestry are: (1) passing grades in all required courses; (2) successful completion of 132 degree hours plus summer camp (8 hours) and spring trips (1 hour) as required in the sequence selected, exclusive of basic military training; (3) an accumulative average of not less than 1.80.

FORESTRY

The five sequences in forestry offer students an opportunity to qualify for a degree in forestry, membership in the Society of American Foresters, and for civil service positions in public agencies and for positions with private industry employing professional foresters. Graduates of the School have been employed in about equal numbers by private indutsry and public agencies. Students with qualifying grades are encouraged to pursue graduate work. All sequences provide an opportunity for a broad education by requiring both cultural and scientific courses supplemented by several hours of electives.

The University Forest is managed by the School. This tract of 1,700 acres lies within two miles of the campus and is used extensively for field laboratory work and for research. The School assists the Maine Forest Service in the managemen of Indian Township in eastern Maine. This tract of 17,000 acres is the location of Camp Robert I. Ashman where the summer camp courses required of Forestry and Wildlife majors are given.

Field experience is essential to foresters. Students are urged to obtain summer woods employment.

Two off-campus training periods are required of Forestry students. (1) A week's field trip through New England in Silviculture or Utilization is required of all Forestry students at the completion of the junior year. (2) Immediately following the junior field trips, an eight weeks' camp at Princeton, Maine (Indian Township) is required.

Students are accepted for graduate work in the fields of Forest Management, Recreation, Silviculture, and Utilization, leading to the degree of Master of Science in Forestry.

WILDLIFE MANAGEMENT

The two sequences in Wildlife Management offer a broad training in the Natural Sciences. The management sequence is designed to train students for forestland and game habitat management. The Science sequence is designed for students with high grades who are most interested in wild animals and who plan

to do graduate work. Upon completion of the curriculum requirements the student is granted the degree of Bachelor of Science in Wildlife Management.

Off-campus training of eight weeks is required of all students in the Wildlife Management Sequence at the Forestry Summer Camp in Princeton.

Field experience is important to Wildlife Managers. Students are urged to obtain field summer employment.

Seniors and graduates are eligible for Civil Service examinations for positions with federal and state agencies that administer natural resources.

Students who major in Wildlife Management are advised to pursue graduate work in preparation for employment with federal and state agencies. A graduate program in Wildlife is offered by the University and a number of graduate courses are available to qualified students.

The Maine Cooperative Wildlife Research Unit provides for a cooperative wildlife program jointly sponsored and financed by the University, The Maine Department of Inland Fisheries and Game, The U. S. Fish and Wildlife Service, and the Wildlife Management Institute. The Director of the School is the University representative on the Coordinating Committee. The purpose of the Unit is to sponsor the advancement, organization, and operation of wildlife research, education, extension, and demonstration programs. Graduate students in Wildlife Management are under the direct supervision of the Unit leader.

SCHOOL OF FORESTRY

Curricula and Sequences

Students in forestry and wildlife have seven sequences from which to choose their program.

FORESTRY	WILDLIFE
Forest Management	Wildlife Science
Forest Utilization	Wildlife Management
Forest Science (Tree growing)	
Forest Science (Wood Technology)	
General Forestry	

COLLEGE OF AGRICULTURE

Basic Core: All students are required to take the following 64 credit hours of core courses:

	Hours Required	Fresh.	Soph.	Jr.	Senior
Chemistry Ch 1 & 2	8	8			
Botany Bt 1	4	4			
Dendrology Bt 33 or Taxonomy Bt 54	4		4		
Physics Ps 6	5		5		
Math Ms 1 & 3	4	4			
Zoology Zo 1	4	4			
Freshman Composition Eh 1 & 2	6	6			
Technical Composition Eh 5	2			2	
Speech Sh 1	2		2		
Literature or Fine Arts	2		2		
History or Government	2		2		
Economics Be 1 & 2	6		6		
Engineering Graphics Eg 1	2	2			
Surveying Ce 5	3		3		
Introduction to Forestry Fy 1 & 2	4	4			
Mensuration Fy 4 & 5	5		5		
Seminar Fy 60	1				1
Total	64	32	29	2	1

Additional Required Courses

All Forestry Sequences

			Credit Hours
Fy	7	Silvics	3
Fy	8	Silviculture	3
Fy	12	Wood Technology	2
Fy	35	Timber Management	3
En	22	Forest Entomology	4
Fy	44	Forest Economics	3
		Spring Trip	1
		Summer Camp	8
			27

All Wildlife Sequences

			Credit Hours
Fy	19	Wildlife Ecology	2
Zo	53	Invertebrate Zoology	4
Fy	27 & 28	Game Management	6
Ag	3	Forest Soils	3
Bt	30	Plant Ecology	3
Bt	54	Vascular Plants	4
			22

Forestry Sequences: Additional Required Courses

Forest Management Sequence

			Credit Hours
Eg	12	Forestry Drawing	2
Gy	1	Principles of Geology	4
Ag	3	Forest Soils	3
Bt	53	Plant Physiology	3
Fy	11	Forest Fire Control	2
Fy	10	Forest Planting	2
Fy	13	Harvesting Timber Crops	2
Fy	6	Forest Photogrammetry	3
Fm	47	Agricultural Accounting	3
Fy	20	Forest Administration	2
Fy	43	Forest Valuation	2
Bt	56	Forest Pathology	3
Fy	42	Forest Policy	2

Forest Utilization Sequence

			Credit Hours
Eg	12	Forestry Drawing	2
Fy	11	Fire Control	2
Bt	35	Anatomy	3
Fy	13	Timber Harvesting	2
Fy	16	Wood Identification	1
Fm	47 or Be 9	Accounting	3
Fy	20	Forest Administration	2
Fy	43	Forest Valuation	2
Fy	14	Forest Products	3
Fy	15	Lumber Mfg.	2
Be	61	Personnel Mgt.	3
Fy	42	Forest Policy	2

Forest Science—Forest Growth Sequence

			Credit Hours
Ps	2	Physics	5
Gy	1	Geology	3
Ms	12	Anal. & Calculus	4
Ag	3	Forest Soils	3
Bt	53	Plant Physiology	3
Fy	13	Harvesting	2
Fy	10	Seeding and Planting	2
Fy	14	Forest Products	3
Fy	20	Forest Administration	3
Fy	42	Forest Policy	3

Forest Science Wood Technology Sequence

			Credit Hours
Ps	2	Physics	5
Ms	12	Anal. and Calculus	4
Bt	35	Plant Anatomy	3
Fy	13	Harvesting	2
Fy	16	Wood Identification	1
Fy	14	Forest Products	3
Bt	56	Forest Pathology	3

General Forestry Sequence

	Credit Hours
Botany, Geology, Soils	6
Forestry	15

Wildlife Sequences—Additional Required Courses

Wildlife Management Sequence

			Credit Hours
En	26	Gen. Entomology	4
Zo	39	Mammalogy	3
Fy	8	Silviculture	3
Zo	32	Ichthyology	4
Zo	60	Ornithology	4
Fy	35	Timber Management	3
Fy	41s	Summer Camp	8
Zo	71	Fish Management	4
Fy	6	Photogrammetry	3
AnP	44	Disease & Parasite Cont.	3
Fy	44	Forest Economics	2
Fy	13	Harvesting Forest Crops	2

Wildlife Science Sequence

			Credit Hours
Gy	1	Principles of Geology	4
En	26	Gen. Entomology	4

COURSES IN THE SCHOOL OF FORESTRY

1. Introduction to Forestry.—Instruments and techniques for field measurements—orientation. Required of freshmen in the School of Forestry. *Rec* 1, *Lab* 3, *Cr* 2. STAFF

1A. Elements of Forestry.—Importance of forests and wildlife. The basic technical fields in Forestry and Wildlife Conservation and their relationship to the production of forest crops, water, and recreation. *Rec* 1, *Cr* 1. MR. BEYER

2. Introduction to Forestry.—A survey of the fields of Forestry and Wildlife conservation. Required of Freshman in the School of Forestry. *Rec* 2, *Cr* 2. STAFF

4. Forest Sampling Methods.—Graphical presentation of forestry data. Elementary statistical background for sampling in forest measurements. Use of calculating machines. Prerequisite, Mathematics 9 and 10. *Rec* 1, *Lab* 3, *Cr* 2. MR. YOUNG

5. Forest Mensuration.—Determination of volume of standing and felled timber. Construction of log rules, volume tables, and yield tables. Determination of growth and yield. Prerequisite, surveying. *Rec* 2, *Lab* 3, *Cr* 3. MR. YOUNG

6. Forest Photogrammetry.—Construction of planimetric and topographic maps by photogrammetric methods. Determination of forest types and stand com-

position by interpretation and measurements of air photos. *Rec* 2, *Lab* 3, *Cr* 3. MR. YOUNG

7. Silvics.—Biological principles and environmental factors governing the natural establishment and development of forest trees and stands. Prerequisite, Botany 33 and 34. *Rec* 2, *Lab* 3, *Cr* 3. MR. GRIFFIN

8. Silviculture.—Technical methods of controlling the composition, growth, quality, and regeneration of forest stands. Prerequisite, Course 7. *Rec* 3, *Lab* 3, *Cr* 4. MR. GRIFFIN

8s. Silviculture Trip.—One week is spent visiting public and private forests of the Northeast. Silvicultural problems and methods of managing important forest types of the region are studied. *Cr* 1. MR. GRIFFIN

9 (109). Regional Silviculture.—Applied silvicultural practices and results of current silvicultural research in important forest types of the United States. Prerequisite, Course 8. *Rec* 2, *Cr* 2. MR. GRIFFIN

10. Forest Planting.—The planting, care, and selection of stock in nursery and field plantings. Seed collecting and processing. Mechanical planting and field techniques. *Rec* 1, *Lab* 3, *Cr* 2. MR. PLUMMER

11. Forest Fire Control.—Forest fire behavior as influenced by fuels, weather, topography. Effects of fire. Methods of preventing and controlling fires. Use of fire in forest management. *Rec* 2, *Cr* 2. MR. RANDALL

12. Wood Technology.—The physical and mechanical properties of wood. The effect these properties have upon seasoning, machining, and use of wood. Prerequisite, Botany 33, 34, and 35. *Rec* 2, *Cr* 2. MR. BAKER

13. Harvesting of Forest Crops.—Harvesting methods in the various regions of the United States and Canada, with especial emphasis on the Northeast. Discussion of organization, costs, equipment, and trends. *Rec* 2, *Cr* 2. MR. PLUMMER

14. Forest Products.—Forest products other than logs and lumber. Importance, methods of manufacture, and utilization. Importance of forest industries, problems, and trends. *Rec* 2, *Lab* 3, *Cr* 3. MR. BEYER

15. Lumber Manufacture.—Milling and marketing problems of the lumber industry in America. *Rec* 2, *Cr* 2. MR. BAKER

16. Wood Identification.—Identification and classification of the commercial woods of the United States based on simple lens inspection and gross characters. *Lab* 2, *Cr* 1. MR. BAKER

17. Wood Preservation.—Causes of deterioration of wood in service; preservatives, preparation of material; wood preserving processes. *Rec* 2, *one-half semester*. *Cr* 1. MR. BAKER

19. Wildlife Ecology.—Geographic and ecologic distribution of game birds and mammals. Ecologic principles of game management. *Rec* 2, *Cr* 2. MR. QUICK

19s. Wildlife Ecology.—Field problems in forest-wildlife ecology. Recognition, measurement, analysis and interpretation of problems in forest-wildlife relationships. Forty-four hours at camp for one week. *Cr* 1. MR. QUICK

20. Forest Administration.—Problems in the administration of national, state, and private forests. Defining and attaining objectives. The personal element in forestry. Methods of organizing, staffing, and equipping forestry enterprises. *Rec* 2, *Cr* 2. MR. RANDALL

24. Range Management.—History and economic importance of the range livestock industry. Utilization and management of the forage resource; relation

to other land use. National and regional problems in grazing use; administration of public grazing lands. *Rec* 2, *Cr* 2. MR. RANDALL

25 (125). Forest Management.—The business management of forest properties for the continuous production of timber. Preparation of management plans. Financial problems and appraisals of values. *Rec* 4, *Cr* 4. MR. RANDALL

27 (127). Game Biology.—The principles of game biology and a consideration of the principles of game management based on the biological characteristics of wildlife. Seniors. *Rec* 2, *Lab* 3, *Cr* 3. MR. QUICK

28 (128). Game Management.—The principles of game management. A consideration of the technical methods of wildlife investigations in relation to land management. Seniors. *Rec* 2, *Lab* 3, *Cr* 3. MR. QUICK

30. Wildlife Law Enforcement.—The role of law enforcement in modern wildlife management. History and development of law and relationship to present policies. Description of organizations. Operations and duties of personnel. *Rec* 2, *Cr* 2. MR. QUICK

31. Woodlot Forestry.—Principles of forestry as applied to farm woodlands. Methods of growing, measuring, and protecting timber stands. Marketing woodlot products. *Rec* 2, *Lab* 3, *Cr* 3. MR. PLUMMER

32 (132). Forest Influences.—Effects of forest vegetation upon climatic factors, soil water, stream flow, floods, erosion, and soil productivity. Prerequisite, Course 7 and Agronomy 3. *Rec* 2, *Cr* 2. MR. GRIFFIN

34 (134). Timber Management.—The organization of forest properties for sustained yield of timber products. Calculation of the annual cut and preparation of timber management plans. Forestry juniors. *Rec* 3, *Cr* 3. MR. RANDALL

42 (142). Forest Policy.—Forest policy in selected countries in comparison with our own. Development of federal, state and private forest policies in U. S. Current problems of land ownership and use. Juniors and seniors. *Rec* 2, *Cr* 2. MR. RANDALL

43 (143). Forest Valuation.—Methods of appraising the value of standing timber, forest land and growing stock as a means of controlling the forestry investment. Damage appraisal and effects of taxation. Forestry seniors. *Rec* 2, *Cr* 2. MR. RANDALL

44 (144). Forest Economics.—Forest resources of U. S. and the world and prospects of meeting increased demand for forest products. Economic factors in forest production and use of economic analysis in making forest management decisions. Prerequisite, Be 1 & 2. *Rec* 2, *Lab* 2, *Cr* 3. MR. ————

45, 46. Special Problems.—Original investigation in advanced forestry and wildlife work, the subject to be chosen after consultation with the staff. Open to high-ranking juniors and seniors. *Cr, Ar.* STAFF

47 (147). Advanced Forest Mensuration.—Regression analysis background for construction of volume and yield tables, time studies, and research. Prerequisite, Course 4. *Rec* 2, Cr 2. MR. YOUNG

48. Natural Resources.—The characteristics, status, utilization, and management of natural resources. The social aspects of resource management. Open to juniors and seniors in the University. *Rec* 2, *Cr* 2.

MR. QUICK AND MEMBERS OF THE UNIVERSITY STAFF

52 (152). Policy and Economics.—Economic basis for forestry. Forest resources of U. S. and the world. Development of federal, state, and private forest policies. *Rec* 4, *Cr* 4. MR. RANDALL

60. Seminar.—Reviews of literature. Current problems in forestry and conservation. *Rec* 1, *Cr* 1. STAFF

201. 202. Forest Mensuration Problems.—*Cr, Ar.* MR. YOUNG

203. 204. Forest Management Problems.—*Cr, Ar.* MR. RANDALL

205. 206. Game Management Problems.—*Cr, Ar.* MR. COULTER, MR. MENDALL

207. 208. Silviculture Problems.—*Cr, Ar.* MR. GRIFFIN

299. Graduate Thesis.—*Cr, Ar.* MR. MENDALL, MR. RANDALL, MR. GRIFFIN

Forestry Summer Camp

41s. Practice of Forestry.—Field practice in methods and problems involved in the management of a large forestry property. Timber estimating and mapping; preparation of a management plan. Visits to woods operations and utilization plants. Prerequisite, Courses 5, 8. Forty-four hours a week for eight weeks. *Cr* 8. MR. RANDALL AND STAFF

Future scientists studying at Maine.

SCHOOL OF HOME ECONOMICS

PROFESSORS CROW, MILES; ASSOCIATE PROFESSORS BERRY, CHANTINY, MONROE, MUSGRAVE, SNYDER; ASSISTANT PROFESSORS MINOT, THORNBURY; MRS. MILLETT, MRS. WADLIN, MRS. DALTON

The unique aim of the School of Home Economics is to provide curricula which coordinate knowledge from all fields of learning that contribute to an understanding of human needs and how they may be met. This purpose emphasizes family living in all of its aspects—physical, social, economic, and esthetic. About one-half of the student's time is spent on courses in the arts, humanities, and sciences which are selected for their general educational value and which provide a foundation for the specialized subjects offered within the School.

Courses within the School consist of five subject matter groups: (1) Child Development and Family Relationships, (2) Clothing and Design, (3) Foods and Nutrition, (4) Home Economics Education, and (5) Home Management and Housing.

CURRICULA IN HOME ECONOMICS

All students majoring in the School complete a common basic curriculum which includes specified courses as follows:

Communication (English and Public Speaking)	8 hours
Social Sciences	12 hours
Natural Sciences	15 hours
Child Development and Family Relationships	9 hours
Clothing and Design	5 hours
Foods and Nutrition	6 hours
Home Management and Housing	10 hours
Specified Basic Requirements, total	65 hours

In addition, each student must elect at least 13 hours in science and humanities and complete an integrated sequence of 27 to 35 hours. 128 hours are required for graduation at an accumulative grade point average of 1.80. Professional sequences are available in Child Development and Family Relationships, Food and Nutrition, Home Economics Education, Consumer Services, and Applied Design. Special sequences to fit an individual's interest may be developed.

BASIC CURRICULUM IN HOME ECONOMICS

The basic curriculum in Home Economics is organized to include courses which continue the student's general education and lay the foundation for advanced work in Home Economics. Each student is expected to add one of the sequences outlined in the following pages or an individualized sequence of at least 27 hours of integrated courses.

The following is required of all students majoring in the School of Home Economics:

Freshman Year

FALL SEMESTER

Subject			Hours Rec	Lab	Cr
Eh	1	Freshman Comp.	3	0	3
My	1	Mod. Society	3	0	3
*Cf	2	Patterns Interper. Behav.	2	2	3
Bc	7	Fund. of Chemistry	3	2	4
Pe	1	Phy. Education	0	2	0
Fn	40	Introd. to Nutrition	2	2	3
		or			
		Elective			
He	1	Introd. to Home Econ.	1	0	1
					17

SPRING SEMESTER

Subject			Hours Rec	Lab	Cr
Eh	2	Freshman Comp.	3	0	3
My	2	Mod. Society	3	0	3
*Cd	31	Design Apprec.	2	2	3
Bc	8	El. Physiological Chem.	3	2	4
Pe	2	Phy. Education	0	2	0
Cd	21	Textiles, Dress, & Con. Behav.	1	2	2
		Electives			2
					17

Sophomore Year

			Rec	Lab	Cr
Py	1	Gen. Psychology	2	2	3
By	21	Intro. to Bact.	3	0	3
*Cf	3	The Pre-School Child	2	2	3
		or			
*Cf	4	The Young School Child			
Fn	42	Family Food Mgt.	1	4	3
		or			
Fn	40	Introd. to Nutrition	(2)	(2)	(3)
Pe	3	Phy. Education	0	2	0
		Sequence & Elective			4
					16

			Rec	Lab	Cr
Py	2	Gen. Psychology	2	2	3
Zo	8	Anat. & Physiology	3	2	4
*Sh	1	Public Speaking	2	0	2
		or			
*Sh	31	Voice and Diction			
Fn	42	Family Food Mgt.	(1)	(4)	(3)
		or			
		Elective			3
Pe	4	Phy. Education	0	2	0
		Sequence & Elective			4
					16

Junior Year

			Rec	Lab	Cr
Hm	81	Home Management	2	0	2
		Sequence & Elective			14
					16

			Rec	Lab	Cr
Hm	91	Housing	2	2	3
		Sequence & Elective			13
					16

Senior Year

			Rec	Lab	Cr
*Hm	82	Home Mgt. Residence	0	9	3
		Sequence & Elective			13
					16

			Rec	Lab	Cr
*Cf	11	Family Relationships	3	0	3
Hm	85	Family Economics	2	0	2
		Sequence & Elective			11
					16

* The semester the course is taken may vary.

PROFESSIONAL SEQUENCES

Educational Programs in Home Economics. 35 hours. This sequence provides two variations, one which meets the requirements of certification for teaching vocational or general home economics and one which prepares for work as a Home Demonstration or 4-H Club Agent.

Basic requirements in both educational variations:

Cd	22	Princ. of Clo. Constr.	3	Fn	43	Prin. of Food Prep.	4
Cd	23	Clo. Constr. Problems	2	Fn	52	Human Nutrition	3
		or		Fn	53	Applied Nutrition	2
Cd	24	Creativity in Clo. Constr.	(3)	He	71	Tech. in Teaching Home Econ.	3
Cd	28	Seminar: Dress in Hum. Dev.	3	Hm	93	Hsld. Equipment	3

Variation for Home Economics Teachers. In addition to the above:

Ed	C1	Sec. School Curriculum	2	He	75	Adv. Home Econ. Educ.	3
He	72	Methods in Home Econ. Ed.	3	He	77	Home Experience	0-2
He	73, 74	Superv. Stud. Teaching	6				

(Recommended: He 76—Adult Educ. in Home Econ. and Py 65—Educational Psychology)

Variation for Extension Agents. In addition to the basic requirements listed above:

He 76 Adult Education in Home Economics 2 Cr. and
10 hours of appropriate courses in sociology and speech.

Child Development and Family Relationships. 27 hours. This sequence is planned for students interested in work with children or families. Three variations prepare for nursery school teaching, teaching in the lower grades, and various types of social service work. A limited number of students in this sequence may arrange to spend one semester at the Merrill-Palmer School in Detroit, Michigan.

Courses taken by all students in the sequence:

Cf 3 The Pre-School Child 3 Cr. or
Cf 4 The Young Child 3 Cr.
(whichever was not chosen in the basic curriculum)
Cf 9 Spec. Problems in Child Development 1-3 Cr.

Nursery school or kindergarten teaching. It is recommended that students preparing for this profession spend one semester at the Eliot-Pearson School, an affiliate of Tufts University, in Massachusetts. Others may use courses in education, socoiology and psychology for a preprofessional sequence.

Elementary teaching. Appropriate courses in education and certain subject matter concentrations are planned to meet requirements for elementary certification.

Social service work. Appropriate courses in psychology and sociology are required.

Foods and Nutrition. 30 hours. This sequence provides three variations, one that meets requirements for entrance into an internship approved by the American Dietetics Association which should be taken by all who plan to be hospital dietitians and is recommended for all other prospective dietitians; a second which *may* be taken by those who wish to be school lunch or commercial food service managers and school or college dietitians; and a third which prepares for work as a nutritionist or laboratory research assistant in foods or nutrition.

Requirements for a dietetic internship:

Fn	43	Prin. of Food Prep.	4	Fn	64	Food Cost Control	2
Fn	52	Human Nutrition	3	Fn	69	Spec. Prob. in Food Ser. Mgt.	2
Fn	53	Applied Nutrition	2	Hm	93	Household Equip.	3
Fn	55	Nutr. in Abnormal Cond.	2	Py	65	Educ. Psychology	3
Fn	61	Quant. Food Ser.	3			or	
Fn	62	Inst. Food Mgt.	3	He	72	Methods in H. Econ. Educ.	(3)
Fn	63	Food Ser. Adm.	3	Py	51	Bus. & Ind. Psych.	2

Variation for other institutional dietitians and food service managers—

Additional hours in business, economics, food, and nutrition courses may be substituted for Py 65, Fn 55 and Fn 69.

Variation for nutritionists or research assistant in foods or nutrition—

Courses in chemistry, mathematics, and physics may be substituted for Fn courses numbered 61 and above, Py 65, and Hm 93.

Applied Design. 30 hours. This sequence is planned for students interested in art applied to clothing and home furnishings. Graduates who wish to work without further training usually enter the field of merchandising. Careers in fashion designing or interior design generally require post-graduate study.

Appropriate courses in clothing and design, art, history, and speech are required.

Consumer Services. 27 hours. This sequence is planned for students interested in business careers in merchandising, advertising, demonstrating, or testing of clothing and home furnishings or foods and equipment. Journalism may be emphasized.

Be	1,2	Prin. of Economics	3
Cd	22	Prin. Clo. Constr.	3
Hm	92	Home Furnishings	2-3

15 hours from:

Art
Business and Economics
Clothing and Design
Chemistry
Journalism

He	71	Tech. in Teaching Home Ec.
He	76	Adult Education
Ps	3	Descriptive Physics
Ps	31	Photography
Py	76	Social Psychology
Sh	21	Intr. to Radio & T.V.

Be	1, 2	Princ. of Econ.	3
Fn	43	Prin. Food Prep.	4
Hm	93	Hsld. Equipment	3

15 hours from:

Biochemistry
Business and Economics
Food and Nutrition
Journalism

He	71	Tech. in Teaching H. Ec.
He	76	Adult Education
Py	76	Social Psychology
Ps	3	Descriptive Physics
Ps	31	Photography
Sh	21	Intr. to Radio & T.V.

Special Sequences. 27 hours. For students who are interested in the general education and family life aspects of the home economics curriculum but are not attempting to qualify for any of the recognized home economics professions covered in other sequences, individualized sequences are available. These will consist either of selected advanced home economics courses and related sciences and arts, constituting a general home economics sequence, or of a concentration of non-home economics courses related to some central interest of the student.

COURSES IN THE SCHOOL OF HOME ECONOMICS

Child Development and Family Relationships (Cf)

2. ***Patterns of Interpersonal Behavior.***—Observations and study of interpersonal relations of young children are used as a basis for understanding human relations (and the "self"). Laboratory experience in the nursery school. *Rec* 2, *Lab* 2, *Cr* 3. Open to freshmen. MISS MILES

3. ***The Preschool Child.***—Development of children during the preschool years and factors affecting it with special emphasis on the role of the family. Laboratory experience in the nursery school. Prerequisite or parallel, Py 1. *Rec* 2, *Lab* 2, *Cr* 3. MISS MILES

4. ***The Young School Child.***—Developmental study of children of six

through 12 years of age. Influencing factors, especially home and school, are given special consideration. Laboratory observations in nursery school and public schools. Prerequisite or parallel, Py 1. *Rec* 2, *Lab* 2, *Cr* 3. MISS MILES

9 (109). Special Problems in Child Development.—*Cr* 1-3. Prerequisite or parallel, a Cf course or Py 67. MISS MILES

11 (111). Family Relationships.—Introduction to the study of family living with emphasis on factors affecting inter-relationships among family members. Prerequisite, Cf 3 or 4, or Py 2, and junior standing. *Cr* 3. MR. CHANTINY

Clothing and Design (Cd)

21. Textiles, Dress, and Consumer Behavior.—Integrative approach to economic, technical, personal, and social aspects of dress and textiles in relation to individual development and family welfare. *Rec* 1, *Lab* 2, *Cr* 2. MRS. BERRY

22. Principles of Clothing Construction.—Principles involved in clothing construction with application to garments; practice in communication of principles for teaching. Prerequisite or parallel Cd 21. *Rec* 1, *Lab* 4, *Cr* 3. MRS. BERRY

23 (123). Clothing Construction Problems.—Consumer analysis and alteration of manufactured garments. Survey of unfamiliar fabrics and construction processes. Problems based on background and professional needs of student. Prerequisite, Cd 22. *Lab* 4, *Cr* 2. MRS. BERRY

24 (124). Creativity in Clothing Construction.—Development of three dimensional form in tailored garments and flat pattern design in apparel. Prerequisite, Cd 22 or permission of instructor. *Rec* 1, *Lab* 4, *Cr* 3. MRS. BERRY

26. Economics of Fashion.—Fashion, retailing, and standards of clothing *Cr* 1. Offered upon demand. MRS. BERRY

27. Draping.—Draping fabric to work out problems in color, design, and texture in formal and informal dresses. Prerequisite, Cd 22, 31. *Lab* 4, *Cr* 2. Offered upon demand. MRS. BERRY

28 (128). Seminar: Dress in Human Development.—Dress as an aspect of our cultural heritage. Interaction of values, goals, and norms as evidenced in uses of dress throughout life. Prerequisite, Cd 21 and junior standing. MRS. BERRY

29 (129). Special Problems in Clothing and Textiles.—*Cr* 1 to 3. MRS. BERRY

31. Design Appreciation.—The application of the principles of design and color to clothing and home furnishings. *Rec* 2, *Lab* 2, *Cr* 3. MISS MUSGRAVE

32. Creative Design.—Composition in line, pattern, and color, using charcoal and tempera paint. *Lab* 4, *Cr* 2. Offered upon demand. MISS MUSGRAVE

33. Applied Design.—Application of design principles to such textile problems as block printing, batik, decorative needlework, and hand weaving. Prerequisite, Cd 31 or 32. *Lab* 4, *Cr* 2. Offered upon demand.

34. History of Costume.—The development of costume of men and women from antiquity to the present. *Rec* 2, *Cr* 2. Offered upon demand.

35. Costume Design.—Designing clothing in relation to coloring, personality, figure, and occasion. Prerequisite, Cd 32. *Rec* 1, *Lab* 4, *Cr* 3. Offered upon demand. MISS MUSGRAVE

38. Special Problems in Design.—*Cr* 1-3. MISS MUSGRAVE

39. Special Problems in History of Costume.—*Cr* 1-3. MISS MUSGRVE

Foods and Nutrition (Fn)

40. Introduction to Nutrition.—A study of the nutrients needed, how they are utilized, and how they may be provided with some consideration of emotional, social, and economic factors concerned with food. *Rec* 2, *Lab* 2, *Cr* 3.
MISS THORNBURY, MRS. SNYDER

41. Introduction to Foods and Nutrition.—Analysis of the criteria for making intelligent food choices. Nutritive quality, palatability, digestibility, sanitary quality, and economy of time and money. Application of these standards to the different food groups. *Rec* 3, *Cr* 3. MISS THORNBURY

42. Family Food Management.—Analysis of the criteria for making intelligent food choices. Application of those standards in the planning of family meals. Limited amount of food preparation and service. Prerequisite, Fn 40.
MRS. SNYDER

43. Principles of Food Preparation.—An experimental approach to the preparation of foods with emphasis on the scientific interpretation of results. Prerequisites, Fn 42 and Bc 8 or equivalent. *Rec* 1, *Lab* 4, *Cr* 4. MRS. SNYDER

49 (149). Special Problems in Foods.—Cr 1-3. STAFF

51. Nutrition for Nurses.—An elementary consideration of the principles of nutrition as applied to the feeding of normal individuals of all ages. *Rec* 2, *Lab* 2, *Cr* 3. MRS. MILLETT

52 (152). Human Nutrition.—Body metabolism and requirements for nutrients by normal individuals. Prerequisite, Bc 8, and Zo 8 or equivalent. *Rec* 3, *Cr* 3. MISS THORNBURY

53. Applied Nutrition.—Application of the principles of nutrition to the preparation of dietaries for normal individuals of all ages. Prerequisite, Bc 8 or equivalent and Fn 41 or 52. *Lab* 4, *Cr* 2. MRS. SNYDER

54. Nutrition of the Infant and Young Child.—The relation of nutrition to growth and development and the importance of adapting feeding practices to the child's individuality and stage of maturation. Prerequisite, Bc 8 and Fn 40. *Rec* 1-2, *Cr* 1-2. Offered upon demand. MRS. SNYDER

†55 (155). Nutrition in Abnormal Conditions.—The principles involved in adjusting diets in such diseases or other abnormal conditions as are benefited by variations from normal diets. Offered on demand. Prerequisite, Fn 52. *Rec* 2, *Cr* 2. MISS THORNBURY

58 (158) Seminar in Nutrition.—Reports and discussions of recent developments in nutrition and related fields with special attention to critical analysis. Prerequisite, Fn 52 or equivalent. Offered upon demand. *Rec* 1-2, *Cr* 1-2.
MISS THORNBURY

59 (159) Special Problems in Nutrition.—*Cr* 1-3. STAFF

61. Quantity Food Service.—A general survey of different types of group feeding. Problems in menu planning, food buying, storage and preparation of food, cost accounting, use of heavy duty equipment. Laboratory experience in Merrill Hall Tearoom. Prerequisite, Fn 43. *Rec* 1, *Lab* 6, *Cr* 3. MRS. MILLETT

62. Institutional Food Management.—Organization and management of quantity food services. Problems in personnel managemeent, general business procedures, and merchandizing of food. Prerequisite, Fn 61. *Rec* 1, *Lab* 3-6, *Cr* 2-3.
MRS. MILLETT

63. Food Service Administration.—Observation and participation in man-

agerial responsibilities in the Merrill Hall Tearoom. Prerequisite, Fn 62. *Rec* 1, *Lab* 3 *to* 6, *Cr* 2-3. MRS. MILLETT

64. Food Cost Control.—Methods of controlling food costs in quantity food services through standardization, use of records, management of personnel and purchasing practices for food and equipment. Prerequisite, Fn 62. *Rec* 1, *Lab* 2, *Cr* 2. Offered upon demand. MRS. MILLETT

69. Special Problems in Food Service Management.—*Cr* 1-3. MRS. MILLETT

200. Readings in Nutrition.—Critical review of the literature on topics selected from the major areas of nutrition—energy metabolism, proteins, lipids, minerals, and vitamins. Especial attention to the historical basis of present knowledge and to the interpretation and practical application of experimental data. Content will vary, and the course may be repeated with credit. Background in biochemistry and physiology required. *Cr* 2-3. MISS THORNBURY

Home Economics Education (He)

1. Introduction to Home Economics.—The scope and philosophy of college Home Economics and a survey of the professional fields open to its graduates. *Cr* 1. MISS CROW

70. Senior Seminar in Home Economics.—History, philosophy, present organization, and future development of professional Home Economics. *Cr* 1. STAFF

71. Techniques in Teaching Home Economics.—Selecting and using teaching aids. Demonstrations of specialized skills. Observation of high school classes. Prerequisite, Junior standing in Home Economics. *Rec* 1, *Lab* 2, *Cr* 2. MISS MINOT

72. Methods in Home Economics Education.—Curriculum planning and classroom procedures in setting up goals and evaluating progress in junior and senior high schools. Prerequisite, He 71. *Rec* 2, *Lab* 2, *Cr* 3. MISS MINOT

73, 74. Supervised Student Teaching.—Observation, participation, and teaching in a selected junior or senior high school in the state, under the immediate direction of the local teacher with supervision from the State Department of Education. *Cr* 3 each course. MISS MINOT

75. Advanced Home Economics Education.—Detailed development of selected units of work related to field teaching. Study of home experiences, selection and use of illustrative material, classroom management, and equipment. Prerequisite, He 72. *Cr* 3. STAFF

76 (176) Adult Education in Home Economics.—Need for and purposes of education to help homemakers adjust to changes in family living. Planning and organizing homemaking programs for adults. Using current means of instruction in various aspects of family living. *Rec* 2, *Cr* 2. MISS MINOT

77. Home Experience.—Preplanned and evaluated activity utilizing professional subject matter in a home environment. Minimum for certification 40 hours, *Cr* 0; 80 hours, *Cr* 1; 120 hours, *Cr* 2. STAFF

79 (179). Special Problems in Home Economics Education.—*Cr* 1-3. MISS MINOT

220. Seminar in Home Economics Education.—*Cr* 3. STAFF

290. Graduate Thesis.—*Cr, Ar.* STAFF

Home Management and Housing (Hm)

81. Home Management.—Analysis of the managerial process and its relationship to decision making. Emphasis is placed on the use of resources including time and energy to attain family goals. *Rec* 2, *Cr* 2.

82. Home Management Residence.—Planning and carrying out the activities of daily living in a group which includes an infant. Emphasis on managerial ability and the attitudes essential to satisfactory group living. Seniors, or juniors by permission. *Cr* 2, or 3.

85. Family Economics.—Management of family income and expenditures: budgeting, general buying practices, savings, and insurance. *Rec* 2, *Cr* 2.

MRS. DALTON

89. Special Problems in Home Management.—*Cr* 1-3.

91. Housing.—Analysis of housing needs at successive phases of the family cycle. Meeting these needs within the limits of available resources. *Rec* 2, *Lab* 2, *Cr* 3. MISS MONROE

92. House Furnishing.—Choice and arrangement of furniture and related materials to satisfy aesthetic and functional requirements. Prerequisite, Cd 31, Hm 91, or permission. *Rec* 1-2, *Lab* 2, *Cr* 2-3. MISS MUSGRAVE

93. Household Equipment.—Elementary principles of physics applied to the selection, operation, and care of electrical and other types of household equipment. *Rec* 2, *Lab* 2, *Cr* 3. MISS MONROE

99. Special Problems in Housing.—*Cr* 1-3. MISS MONROE

Studying for an examination.

TWO-YEAR COURSE IN AGRICULTURE

ASSISTANT DEAN—DAVID H. HUNTINGTON

The object of this program is to provide vocational training that will prepare young men to be better, more efficient farmers or agricultural service agents.

A basic core curriculum is required of all students. These basic courses are designed to foster the development of citizenship and leadership characteristics, as well as to develop basic knowledge and skills that will assist the student in understanding and applying the specialized agricultural courses.

At the time of registration, students must select a field of specialization from one of four subject matter fields:

1) Dairy Farming
2) Mechanized Farming
3) Potato Farming
4) Poultry Farming

A faculty adviser will be assigned and he will assist in the selection of courses to train the individual for his intended vocation and area of interest.

The semester period comprises twelve weeks of instruction. The fall semester commences late in October and the spring semester finishes early in May, enabling students to engage in farm work from the beginning of the planting season to the close of harvesting.

A two-year graduation certificate will be awarded upon satisfactory completion of a two-year curriculum with a minimum of 72 credit hours, and an accumulative average of not less than 1.80.

TWO-YEAR COURSE IN AGRICULTURE

Basic Curriculum—Required For All Students

First Year

FALL SEMESTER					SPRING SEMESTER				
Subject		Hours			Subject		Hours		
		Rec	Lab	Cr			Rec	Lab	Cr
1 AE	Farm Shop	0	4	2	2 AE	Farm Shop	0	4	2
13 AE	Agric. Arithmetic	2	0	2	1 Ag	General Soils	2	2	3
1 Agr	Orientation	1	0	1	2 Eh	English Comp.	3	0	3
1 Eh	English Comp.	3	0	3	*2 Gt	State & Local Gov't	—	—	—
				8					8

Second Year

		Rec	Lab	Cr			Rec	Lab	Cr
1 Sh	Public Speaking & Parl. Procedure	3	0	3	*2 Gt	State & Local Gov't	—	—	—
				3					0

* Offered in alternate years for both first and second year students.

SPECIMEN MAJOR CURRICULA

Dairy Farming

First Year

FALL SEMESTER

	Subject	Hours Rec	Lab	Cr
	Basic Req'd Courses			8
1 An	Dairy Cattle	2	2	3
3 An	Dairy Cattle Selection	1	3	2
5 An	Milk Comp. & Testing	2	2	3
	Elective			2
				18

SPRING SEMESTER

	Subject	Hours Rec	Lab	Cr
	Basic Req'd Courses			8
6 An	Livestock Feeding	2	2	3
	Elective			7
				18

Second Year

		Rec	Lab	Cr
	Basic Req'd Courses			3
3 Fm	Farm Management	2	2	3
4 An	Animal Breeding	2	3	3
5 AnP	Livestock Diseases	3	0	3
	Elective			6
				18

		Rec	Lab	Cr
	Basic Req'd Courses			0
3 Ag	Forage Crops	2	2	3
2 An	Beef, Sheep & Swine	2	2	3
12 An	Repr. & Breeding Mgt.	2	2	3
	Elective			9
				18

Mechanized Farming

First Year

		Rec	Lab	Cr
	Basic Req'd Courses			8
8 AE	Farm Machinery	2	2	3
	Elective			7
				18

		Rec	Lab	Cr
	Basic Req'd Courses			8
5 AE	Gas Engines & Tractors	2	2	3
6 AE	Agric. Drawing	0	4	2
7 AE	Applied Mechanics	2	0	2
	Elective			3
				18

Second Year

		Rec	Lab	Cr
	Basic Req'd Courses			3
3 Fm	Farm Management	2	2	3
10 AE	Farm Electrification	2	2	3
11 AE	Soil Water Mgt.	2	2	3
	Elective			6
				18

		Rec	Lab	Cr
	Basic Req'd Courses			0
9 AE	Farm Buildings	2	2	3
12 AE	Farm Utilities	1	2	2
14 AE	Farm Equip't Sales & Service	1	2	2
	Elective			11
				18

Potato Farming

First Year

FALL SEMESTER

	Subject	Hours Rec	Lab	Cr
	Basic Req'd Courses			8
*2 Ag	Small Grains	—	—	—
*4 Ag	Potato Production	2	2	3
	Elective			7
				18

SPRING SEMESTER

	Subject	Hours Rec	Lab	Cr
	Basic Req'd Courses			8
*2 Bt	Potato Diseases	—	—	—
1 En	Farm Insects	2	2	3
*5 Fm	Potato Marketing	3	0	3
	Elective			4
				18

Second Year

		Rec	Lab	Cr
	Basic Req'd Courses			3
3 Fm	Farm Management	2	2	3
11 AE	Soil Water Mgt.	2	2	3
*2 Ag	Small Grains	—	—	—
*4 Ag	Potato Production	2	2	3
5 Ag	Fertilizers	2	0	2
6 Ag	Weeds	2	0	2
	Elective			2
				18

		Rec	Lab	Cr
	Basic Req'd Courses			0
*5 Fm	Potato Marketing	3	0	3
*2 Bt	Potato Diseases	—	—	—
	Elective			15
				18

Poultry Farming

First Year

		Rec	Lab	Cr
	Basic Req'd Courses			8
1 Ph	Poultry Production	3	0	3
*7 Ph	Poultry Farm Mgt. I	—	—	—
*9 Ph	Poultry Farm Mgt. II	2	2	3
	Elective			4
				18

		Rec	Lab	Cr
	Basic Req'd Courses			8
*8 AnP	Poultry Diseases	3	0	3
*4 Ph	Poultry Feeding	3	0	3
*6 Ph	Poultry Breeding	—	—	—
	Elective			4
				18

Second Year

		Rec	Lab	Cr
	Basic Req'd Courses			3
*7 Ph	Poultry Farm Mgt. I	—	—	—
*9 Ph	Poultry Farm Mgt. II	2	2	3
	Elective			12
				18

		Rec	Lab	Cr
	Basic Req'd Courses			0
*8 AnP	Poultry Diseases	3	0	3
*4 Ph	Poultry Feeding	3	0	3
*6 Ph	Poultry Breeding	—	—	—
	Elective			12
				18

* Offered in alternate years for both first and second year students.

TWO-YEAR COURSE DESCRIPTIONS

AGRICULTURAL ECONOMICS AND FARM MANAGEMENT

2 Fm. Farm Economics.—Factors influencing type and location of commercial farming areas. Practical use and understanding of record keeping, taxation, credit, pricing and farm programs. *Rec* 3, *Cr* 3. MR. TUTHILL

3 Fm. Farm Management.—Managing the farm business for optimum returns; ways of getting started in farming; decisions as to size, production rates, labor and machinery, enterprise selection, and farm organization; application to specific farms. *Rec* 2, *Lab* 2, *Cr* 3. MR. PULLEN

4 Fm. Marketing Farm Products.—Economic principles involved in marketing agricultural products with special attention to those produced in New England. Time will be devoted to cooperative marketing. *Rec* 3, *Cr* 3. MR. ———

†5 Fm. Potato Marketing.—Varieties, market grades, maintenance of quality, containers, storage, transportation, consumer preferences, wholesale and retail sales of potatoes. *Rec* 3, *Cr* 3. MR. PERRY

6 Fm. Agricultural Business Analysis.—Analysis of agribusiness and general economic conditions. Contracts, ownership and transfer of farm property, credit instruments, insurance, social security and taxation. *Rec* 1, *Lab* 1, *Cr* 2. MR. TUTHILL

7 Fm. Community Leadership.—Working with groups, planning community programs. Problems and factors involved in obtaining group action. Current trends, programs and future developments affecting community organization and leadership. *Rec* 2, *Cr* 2. MR. PLOCH

AGRICULTURAL ENGINEERING

1 AE. Farm Shop.—Care, use and sharpening of metal working tools, cold metal work, soldering and sheet metal work, introduction to gas and electric arc welding. *Lab* 4, *Cr* 2. STAFF

2 AE. Farm Shop.—Care, use and fitting of carpentry tools; woodworking; painting and finishing; rope and beltwork; concrete work. *Lab* 4, *Cr* 2. STAFF

3 AE. Farm Shop.—Advanced welding practices and machinery repair, Prerequisite Course 1-AE. *Lab* 4, *Cr* 2. MR. SOULE

4. AE. Farm Shop.—Electric Wiring and installation of farm electric equipment; pipe fitting. *Lab* 4, *Cr* 2. STAFF

5 AE. Gas Engines and Tractors.—The construction, maintenance and repair of internal combustion engines, farm tractors and related equipment. The use of modern service shop techniques and tools. *Rec* 2, *Lab* 2, *Cr* 3. STAFF

6 AE. Agricultural Drawing.—Blueprint reading, preparing simple plans and bills of materials for structures commonly built on the farm. *Lab* 4, *Cr* 2. MR. CARPENTER

7 AE. Applied Mechanics.—Fundamental principles of mechanics as applied to power transmission components such as gears, belts, and pulleys. *Rec* 2, *Cr* 2. MR. SOULE

8 AE. Farm Machinery.—The principles, operation, adjustment, service, selection, and management of farm machinery. Laboratory work includes adjustment, test, and calibration of field machines. *Rec* 2, *Lab* 2, *Cr* 3. MR. ROWE

9 AE. Farm Buildings.—The determination of requirements, the planning of farm buildings for functional use and equipment control, the selection of materials for construction, and the consideration of methods for remodeling existing buildings. *Rec* 2, *Lab* 2, *Cr* 3. MR. CARPENTER

10 AE. Farm Electrification.—Electrical terms and circuits. Electrical equipment for heat and power. Basic wiring techniques, including planning of wiring system. *Rec* 2, *Lab* 2, *Cr* 3. MR. MILNE

11 AE. Soil and Water Management.—Elementary farm surveying. Application of soil and water structures such as farm ponds, drainage systems, irrigation systems, and soil erosion control systems. *Rec* 2, *Lab* 2, *Cr* 3. MR. RHOADS

12 AE. Farm Utilities.—Selection, care and use of farm water and sewage disposal systems. *Rec* 1, *Lab* 2, *Cr* 2. MR. RHOADS

13 AE. Agricultural Arithmetic.—Basic Arithmetic, averages, index numbers, areas, volumes and graphs as applied to agriculture. Compution of feed and fertilizer formulas. Problems involving mensuration and elementary mechanics. *Rec* 2, *Cr* 2. STAFF

14 AE. Farm Equipment Sales and Service.—Training for the management of farm equipment dealerships. Includes, advertising, sales promotion, parts management, business management, service management, accounting, financing, and collecting. *Rec* 1, *Lab* 2, *Cr* 2 MR. ROWE

AGRONOMY

1 Ag. General Soils.—Soil properties and their relation to crop production with special emphasis on management and land judging. *Rec* 2, *Lab* 2, *Cr* 3. MR. MURPHY

‡2 Ag. Small Grains.—Adaptation, culture, marketing, and identification of small grains commonly grown in Maine. *Rec* 2, *Cr* 2.

3 Ag. Forage Crops.—Management practices in the production of hay, silage and pasture crops. *Rec* 2, *Lab* 2. *Cr* 3. MR. BROWN

†4 Ag. Potato Production.—Growth and management of potatoes under Maine conditions. *Rec* 2, *Lab* 2, *Cr* 3. MR. MURPHY

5 Ag. Fertilizers.—The common carriers of plant nutrients. Consideration will be given to methods and rates of application. *Rec* 2, *Cr* 2. MR. BLACKMON

6 Ag. Weeds.—Identification and control of weeds commonly found in Maine crops. *Rec* 2, *Cr* 2. MR. TREVETT

7 Ag. Turf Management.—Care of lawns, golf courses and other turfed areas. Seeding, fertilizing, mowing, weeding and insect and disease control. *Rec* 2, *Cr* 2. MR. STRUCHTEMEYER

‡8 Ag. Processing Crops.—The growth and management of crops produced for processing in Maine; special emphasis is given to sweet corn, peas and beans. *Rec* 2, *Cr* 2.

ANIMAL SCIENCE

1 An. Dairy Cattle.—The practical application of care, herd records, breed association programs to herd management. The laboratory is devoted to practical problems in record keeping and management of a herd of dairy cattle. *Rec* 2, *Lab* 2, *Cr* 3. MR. LEONARD

2 An. Beef, Sheep and Swine.—Breeds and types of beef cattle, sheep and swine; their care, feed, and management. *Rec* 2, *Lab* 2, *Cr* 3. MR. BRUGMAN

3 An. Dairy Cattle Selection.—A study of the relationship of conformation in dairy cattle to milk production. *Rec* 1, *Lab* 3, *Cr* 2. MR. POULTON

4 An. Animal Breeding.—Principles of selecting and systems of breeding farm animals. *Rec* 2, *Lab* 3, *Cr* 3. MR. DICKEY

5 An. Milk Composition and Testing.—Composition and properties of milk; cream separation; Babcock testing of milk and cream. *Rec* 2, *Lab* 2, *Cr* 3. MR. ———

6 An. Livestock Feeding.—Principles for the practical feeding of farm animals. Study of feeds, their values, and the feed requirements of farm animals. *Rec* 2, *Lab* 2, *Cr* 3. MR. ———

8 An. Meat and Meat Products.—Methods of handling and preparing livestock for market; farm and packing house methods of slaughter animals; cutting and curing meats. *Rec* 1, *Lab* 4, *Cr* 3. MR. BRUGMAN

12 An. Reproduction and Breeding.—A practical course in dairy cattle breeding emphasizing the reproductive cycle, handling of semen, and management of the breeding program. *Rec* 2, *Lab* 2, *Cr* 3. MR. POULTON

HORTICULTURE

†3 Ht. Home Grounds Improvement.—Planning and planting the home grounds to make the home an interesting place in which to work and live. *Rec* 2, *Lab* 2, *Cr* 3. MR. CLAPP

†4 Ht. Fruit Growing.—The cultural management of orchard and small fruits, including apples, blueberries, red raspberries, and strawberries. *Rec* 2, *Lab* 2, *Cr* 3. MR. WHITTON, MR. EGGERT

‡5 Ht. Vegetable Growing.—Cultural practices for the major vegetable crops of both the home garden and the market garden. *Rec* 2, *Lab* 2, *Cr* 3.

POULTRY SCIENCE

1 Ph. Poultry Production.—The practical application of the principles of incubation, brooding, housing, feeding and management of poultry. *Rec* 3, *Cr* 3. MR. HARRIS

†4 Ph. Poultry Feeding.—The principles of nutrition as applied to poultry; poultry feeds; calculating rations; feeding methods and cost of feeding. *Rec* 3, *Cr* 3. MR. GERRY

‡6 Ph. Poultry Breeding.—The principles of inheritance and variations as applied to poultry. The practical application of these principles in breeding programs. *Rec* 3, *Cr* 3.

‡7 Ph. Poultry Farm Mangement I.—(Laying Flock)—Housing, selection and management of laying birds for both market and hatching eggs. *Rec* 2, *Lab* 2, *Cr* 3.

†9 Ph. Poultry Farm Management II.—(Broilers and Replacement pullets)—Incubation and brooding; housing and management of the broiler flock. *Rec* 2, *Lab* 2, *Cr* 3. MR. ———

10-11 Ph. Problems in Poultry Husbandry.—*Lab* 4, *Cr* 2. THE STAFF

SERVICE COURSES IN THE COLLEGE OF AGRICULTURE

1 Agr. Orientation.—Planned to acquaint first-year students with the policies and regulations of the University and to suggest ways to derive maximum benefit from training in the two-year agricultural program. *Rec* 1, *Cr* 1.

MR. HUNTINGTON

5 AnP. Livestock Diseases.—Anatomy, physiology, hygiene, and sanitation. The prevention and control of the common diseases of dairy cattle. *Rec* 3, *Cr* 3. MR. PAYNE

†8 AnP. Poultry Diseases.—Principles of hygiene and sanitation applied to the prevention and control of poultry diseases, with special emphasis on diseases most frequently found in New England. *Rec* 3, *Cr* 3. MR. PAYNE

‡2 Bt. Potato Diseases.—An objective course on diseases affecting production, marketing, and utilization of potatoes as food or seed stock. *Rec* 2, *Lab* 2, *Cr* 3.

1 En. Farm Insects.—Habits, life histories, and controls of the destructive insects common on farm crops and livestock. *Rec* 2, *Lab* 2, *Cr* 3.

MR. SIMPSON

1 Fy. Farm Forestry.—Establishment and care of farm woodlots. Tree identification. Methods of estimating volume of standing timber and measuring forest products. Measurement of forest land. *Rec* 2, *Lab* 3, *Cr* 3. MR. PLUMMER

SERVICE COURSES IN THE COLLEGE OF ARTS AND SCIENCES

1 Eh. English Composition.—A review of grammar and the principles of effective expression for the purpose of direct application in written reports of practical value. *Rec* 3, *Cr* 3. MRS. SLEEPER

2 Eh. English Composition.—A continuation of 1 Eh with particular emphasis given to expository writing. *Rec* 3, *Cr* 3. MRS. SLEEPER

‡2 Gt. State and Local Government.—Selected topics on the structure and operation of state, county, and town government, with emphasis on Maine problems of particular interest and significance to Maine Agriculture. *Rec* 3, *Cr* 3.

1 Sh. Public Speaking and Parliamentary Procedure.—Introduction to public speaking—choice of subject, selection of material, arrangement and presentation. Consideration of the principles and rules by which a group transacts its business. *Rec* 3, *Cr* 3. MR. COOK

Upper: Hitchner Hall, headquarters for Animal Pathology, Bacteriology, Biochemistry, and Poultry Science.
Lower: **Chadbourne Hall, a dormitory for women.**

COLLEGE OF ARTS AND SCIENCES

JOSEPH M. MURRAY, DEAN

COLLEGE OF ARTS AND SCIENCES

The College of Arts and Sciences endeavors to furnish opportunities for students to acquire knowledge and skill in a variety of fields wherein a cultural emphasis is prominent.

For purposes of administration, the College is divided into 14 departments, a School of Business Administration, and a School of Nursing. All students are required to take work in several of these departments, but, in general, the degree of specialization can vary widely to fit the needs of individuals. Thus some may desire to pursue studies in only a few of the major departments while others may prefer to take work of greater subject matter range. The College has prepared, for those who desire them, specific programs of study in many preprofessional and vocational fields (see the section on Specimen Curricula). Considerable flexibility is permitted the student within all these programs.

The College has as a major objective the desire to furnish its students with a general cultural background. Within the framework of this background the student will also find much that is of utilitarian value. The College seeks to train men and women in critical intelligence, broad and sympathic understanding of human needs, and determination of purpose.

Arts and Sciences students who are interested in taking subjects offered in one of the other colleges of the University may do so provided they have fulfilled the necessary prerequisites. In collaboration with the College of Education, this College offers specialized training to prospective teachers.

GENERAL INFORMATION

Admission. The specific requirements for admission are given in full elsewhere in the catalog (see page 27). All deficiencies in entrance requirements must be made up before registering for the junior year. Students who transfer from other colleges with advanced standing must satisfy all admission requirements within a year.

Transfer Credit. No transfer credit will be allowed for courses taken at another institution in which grades below C have been received. Evaluation of courses taken at another institution for which transfer credit is asked rests with the Director of Admissions and the Dean.

Graduation Requirements. The work of the College of Arts and Sciences leads to the degree of Bachelor of Arts (B.A.). Men students not excused from taking Military Science are required to complete 135 semester credit hours; all other students are required to complete 128 hours.

In addition, each student must accumulate a total of "grade points" equal to 1.8 times the number of credit hours in which he receives grades. In computing grade points, each credit hour of A is multiplied by 4, B by 3, C by 2, D by 1, and E by 0.

Specific course requirements are listed in the section, "The First Two Years."

The passing of a comprehensive examination is a requirement for the degree in certain departments.

Satisfactory work in written English is required throughout the college course.

Students who transfer to this College from another college of the University will be required to do two full years' work in the College of Arts and Sciences and satisfy all specific requirements before receiving the Bachelor of Arts degree, with

the exception that students from the College of Technology may transfer after the junior year and be graduated after one year's work as majors in the Departments of Physics, Chemistry, or Mathematics; and students from the College of Agriculture may similarly transfer and be graduated as majors in the Department of Zoology.

The First Two Years. The first two years of the student's college course constitute a unified period during which he studies, for the most part, basic courses in varied fields. The objective of these years is twofold: first, to enable the student to acquire knowledge over an extended area, and second, to prepare him to undertake studies of a distinctly advanced nature in some major subject or field.

In order to meet these objectives, the College has established specific course requirements for the first two years. With the consent of the adviser and the dean, not more than two of these requirements may be postponed until the junior year by any student whose interests are best served by variation from the usual program. Also, the student may be able to satisfy certain of these requirements by passing qualifying tests. These tests are ordinarily given during Freshman Week, and permission of the department concerned must be obtained by the student before he attempts the test.

The course requirements follow:

I. ENGLISH and SPEECH. All freshmen are required to complete Eh 1; 2, Freshman Composition, and Sh 1, Public Speaking.

II. FOREIGN LANGUAGE. All students are required to complete Intermediate French, German, Italian, Russian, Spanish, Greek, or Latin, or to pass a qualifying test in one of these languages. Ordinarily the intermediate course may be taken in the freshman year by those students who continue a language taken for at least three years in high school. Students who begin a language in College would normally take the intermediate course in the sophomore year.

III. SOCIAL SCIENCE.

a. Freshman Year. Students who have not completed a basic one-year high-school course in American History are required to take United States History (Hy 3. 4). Students who have completed such a course in high school should select one of the following year-courses: Hy 3. 4, United States History, Hy 5; 6, History of Western Europe, or My 1; 2, Modern Society.

b. Sophomore Year. Students are to select one of the following year-courses: Be 1; 2, Principles of Economics, Gt 1; 2, American Government, Py 1; 2, General Psychology, or Sy 1;2, Cultural Anthropology. For those students who have taken My 1; 2, Modern Society, during the freshman year, Hy 3. 4, United States History, and Hy 5; 6, History of Western Europe, also belong to this group. Hy 3. 4 and Hy 5; 6 may not be used in combination to satisfy this requirement.

IV. NATURAL SCIENCE AND MATHEMATICS. A minimum of two years of work in science is required of all students. One year of this work must be a basic year-course in laboratory science or mathematics, and work of the second year must be taken in a different subject-matter area. Two of the semester courses in descriptive science may be used to satisfy one year of this requirement. With the approval of the Dean certain other combinations may be allowed to fulfill the descriptive science combinations.

a. Basic year courses:

As 15; 16, General Astronomy
Ch 1; 2, General Chemistry

Gy 1; 2, Principles of Geology
Ms 1, 3; 12, Trigonometry, Algebra, Analytical Geometry and Calculus
Ms 5; 6, Elements of College Mathematics
Ps 1; 2 or Ps 1a; 2a, General Physics
Zo 3; 4, Animal Biology
Zo 1, Bt 1, General Zoology and Botany

b. Semester courses in descriptive science:
As 9, Descriptive Astronomy
Gy 3, Descriptive Geology, Physical
Gy 4, Descriptive Geology, Historical
Ps 3, Descriptive Physics

V. HUMANITIES. Sophomore students are to select a year-course from the following: Hy 1. 2, Classical and Medieval Civilization, Pl 1. 2, Philosophy and Modern Life, Eh 15. 16, Masterpieces of English and American Literature, and Cl 1. 2, Greek and Latin Literature in English Translation, and Hr 47. 48, Sophomore Honors for those students registered in the Honors Program.

VI. Women students are to take Physical Education during both the freshman and sophomore years; also, they are to take Healthful Living in the first semester of the freshman year. Healthful Living and one year of Physical Education are required of transfer students who are admitted as sophomores.

VII. Men are required to take two years of Basic Military Science and Physical Education.

For those students taking Basic Military Science, the maximum registration is seventeen credit hours *exclusive* of this subject; for others, the maximum registration is seventeen hours. The minimum is fourteen hours. Normally not more than six hours may be taken in one subject in either semester of the sophomore year.

During the first two years, a student must show evidence of ability to pursue advanced courses successfully. Work of C grade or above will be interpreted as satisfactory. *Students with records consistently below this standard will be advised to withdraw from the University at the end of their sophomore year.*

Throughout the freshman and sophomore years, the student is under the general supervision of the Dean of the College. The Dean is assisted by faculty advisers whose purpose is to give each student individual guidance in selection of courses and give advice concerning problems of personal adjustment.

The Last Two Years. On the completion of 56 degree hours, the student, in conference with his adviser and with the approval of the Dean, selects his major subject. The department in which the major subject chiefly falls becomes for administrative purposes the student's major department, and the head of that department is his major instructor. The latter is responsible for the student before the faculty and must approve the student's registration.

The major curriculum is the nucleus of related courses selected by the student as representing his chief field of interest or major subject. Normally much of the work will fall in one department. The minimum number of credit hours which will be acceptable for a major is set by the department. The maximum number of hours which a student may count for degree credit from any one department is forty-eight. In general, it is assumed that upperclass students will take courses of an advanced nature.

Selected students may take advanced courses in Military Science and Tactics

during their junior and senior years, for which a maximum of twelve credit hours may be received.

Comprehensive Examinations. Most departments of the College require comprehensive examinations of their senior major students. Certain departments also give basic or preparatory comprehensives in the spring semester of the junior year. The purpose of the comprehensive examination is to provide the student with an opportunity to demonstrate his knowledge of the salient features of his general field of study. It aims to make clear the unity of the field as a whole. It is, therefore, designed in such a way as to develop perspective and to encourage organization of materials as well as accuracy and range of knowledge. The student is thus able to evaluate his ability in the field of his major interest and to make a smooth transition to his professional and graduate work.

Honors Program. These tutorial courses seek to encourage exceptional ability by affording special opportunities for its exercise and to reward high achievement with appropriate recognition. The program aims especially at stimulating originality, intellectual curiosity, and resourcefulness, and demands a large measure of self-reliance. The student does his work under the supervision of a tutor, whom he meets in conference at regular intervals for informal discussion and advice. The formal recognition, the highest offered in the College of Arts and Sciences, is conferred following a successful completion of the Honors program, in the form of graduation Honors of three grades: Honors, High Honors, Highest Honors.

Professional Certificates for Teachers. Professional certification for secondary school teaching may be earned by students registered in the College of Arts and Sciences. Eighteen hours of basic work (Py 1; 2; Ed B2, B3, B4 and one special methods course) meets the professional subject requirements for the General Secondary Provisional Grade A Certificate, which must be renewed after five years. Practice teaching courses are available to students in the College of Arts and Sciences who desire additional professional preparation.

In addition to completing a major in one of the subjects commonly taught in secondary schools, candidates for a Certificate are expected to complete at least fifteen hours in a second subject field or twelve hours each in second and third subject fields.

Among the combinations of subject fields often expected of prospective teachers are mathematics and science, French and Latin, English and history, English and French, history and Latin, English and Latin, French and history, speech and English, and speech and history.

Medical Technology. This course has been developed in cooperation with the Eastern Maine General Hospital, Bangor, the Central Maine General Hospital, Lewiston, and the Maine Medical Center, Portland. Students electing the program spend three or more years at the University of Maine following which they undergo a period of twelve months in training at one of the above hospitals. Students receive the degree of Bachelor of Arts when they have satisfactorily completed the program (see page 126) and the certificate in Medical Technology when they have passed a special examination. The work at the University also meets the entrance requirements of schools of medical technology which are not affiliated with the University.

Public Management Curricula. These programs are designed to train men and women for governmental service in towns and cities.

Bangor Theological Seminary. Regularly enrolled students in the College

of Arts and Sciences may register for courses at the Bangor Theological Seminary, not to exceed five credit hours per semester, without payment of additional fees. The College of Arts and Sciences extends a like privilege to students regularly enrolled at the Bangor Theological Seminary. Such registrations must have the approval of the academic dean of both institutions and the instructors involved. Credit for courses so taken will be considered a part of the student's program at the institution where he is enrolled.

While enrolled at the Bangor Theological Seminary a student may, with the approval of his dean and the admissions officer of the University, also register as a Special Student in the College of Arts and Sciences on the established fee basis for such courses. Work so taken, if it does not substitute for or duplicate courses taken in the Seminary program, may be counted as advanced standing credit toward the degree in the event a student later registers for a degree program at the University.

Summer Session. Before students of the College of Arts and Sciences pursue Summer Session courses in any institution other than the University, they must secure the approval of the Dean in writing, if they expect degree credit for such work. A marked bulletin of the institution should be left at the Dean's Office with a note requesting such credit for the courses selected.

SPECIMEN CURRICULA

Preprofessional, vocational, and departmental curricula are available and may be obtained from the Director of Admissions on request. These curricula will provide the student with a general idea of the character of preparation recommended. All possible latitude is allowed in order to permit development of the student's own interests and aptitudes. A few representative curricula follow:

SPECIMEN CURRICULUM IN BUSINESS AND ECONOMICS

Be 1; 2, Principles of Economics, Be 9, Principles of Accounting I, Ms 19, Statistics, Eh 19, Expository Writing, and either Be 49, Business Economics *or* Be 73, Economic Analysis, are required of all majors. For the freshman year, My 1; 2, Modern Society and a year of basic mathematics are strongly recommended.

Freshman Year

Eh	1; 2	Freshman Composition
Mt	1. 2	1st Yr. Basic Military Science
My	1; 2	Modern Society
Pe	1. 2	Physical Education
Sh	1	Public Speaking
		Foreign Language (to be continued in Sophomore year if not completed)
Ms	5; 6 or	
Ms	1, 3; 12	Mathematics

Sophomore Year

Be	9	Principles of Accounting I
Eh	15. 16	Masterpieces of Literature, or Pl 1. 2, Philosophy and Modern Life
Be	1; 2	Principles of Economics
Ms	19	Statistics
Mt	3. 4	2nd Yr. Basic Military Science
Pe	3. 4	Physical Education
		Science or Mathematics

Junior and Senior Years

The student who majors in Business and Economics will establish, in cooperation with his major adviser, the program for the junior and senior year.

Consult this catalog for courses available within the Department and for specific departmental requirements concerning advanced courses. Available, also, are many courses outside the Department. The following are recommended: Gt 1; 2, American Government, Gt 81; 82, Introduction to Law, Gt 83; 84, Constitutional Law, Gy 22, Economic Geography, Hy 19. 20, Economic History of the United States, Pl 35, Logic, and courses in the Fine Arts and English.

SPECIMEN CURRICULUM FOR CHEMISTRY

Freshman Year

FALL SEMESTER			Hours	SPRING SEMESTER			Hours
Ch	1	General Chemistry	4	Ch	2	General Chemistry	4
Eh	1	Freshman Composition	3	Eh	2	Freshman Composition	3
Gm	11	Scientific German (Elem.)	3	Gm	12	Scientific German (Elem.)	3
Ms	1	Trigonometry	2	Ms	12	Anal. Geometry and Calculus	4
Ms	3	College Algebra	2	Mt	2	Military Science I	1½
Mt	1	Military Science I	1½	Pe	2	Physical Education	0
Pe	1	Physical Education	0				
Sh	1	Public Speaking	2				
			17½				15½

Sophomore Year

			Hours				Hours
Ch	31	Qualitative Analysis and Inorganic Chemistry	4	Ch	40	Quantitative Analysis	4
Gm	13	Scientific German (Intermed.)	3	Gm	14	Scientific German (Intermed.)	3
Ms	27	Calculus	5	Ms	28	Calculus	5
Mt	3	Military Science II	2	Mt	4	Military Science II	2
Pe	3	Physical Education	0	Pe	4	Physical Education	0
Ps	1	General Physics	5	Ps	2	General Physics	5
			19				19

Junior Year

			Hours				Hours
Ch	51	Organic Chemistry	5	Ch	52	Organic Chemistry	5
Ch	71	Physical Chemistry	5	Ch	72	Physical Chemistry	5
		Humanities	3			Humanities	3
		Social Science	3			Social Science	3
			16				16

Senior Year

			Hours				Hours
		Intermediate Quant. Analysis	4	*Ch	90	Inter. Organic Chemistry Lab.	3
		Chemical Literature	2	*Ch	54	Adv. Inorg. Chem.	3
*Ch	64	Social Science	3			Social Science	3
*Ch	85	Electives (Other than Chemistry)	6-8			Electives (Other than Chemistry)	6-8
			15-17				15-17

* For American Chemical Society Certification.

SPECIMEN CURRICULUM FOR FOREIGN SERVICE

The Foreign Service curriculum is in process of extensive revision. It will be a part of a broader set of offerings in the field of International Relations, to be given by the Department of History and Government, the School of Business Administration, and the Department of Foreign Languages and Classics. Several new curricula will be set up to help prepare students for such fields as international trade, international banking, foreign service, and employment with the United Nations.

Full information on the new programs will be found in the next issue of this catalog. Meanwhile information may be obtained by writing to the Department of History and Government, 145 Stevens Hall.

SPECIMEN CURRICULUM FOR MEDICAL TECHNOLOGY

Freshman Year

FALL SEMESTER			Hours	SPRING SEMESTER			Hours
Ch	1	General Chemistry	4	Ch	2	General Chemistry	4
Eh	1	Freshman Composition	3	Eh	2	Freshman Composition	3
Pe	1	Physical Education	0	Pe	2	Physical Education	0
Pe	21	Healthful Living	2	Sh	1	Public Speaking	2
Zo	3	Animal Biology	4	Zo	4	Animal Biology	4
		Modern Language	3-4			Modern Language	3-4
			16-17				16-17

Sophomore Year

			Hours				Hours
Pe	3	Physical Education	0	Ch	40	Quantitative Analysis	4
Py	1	General Psychology	3	Pe	4	Physical Education	0
Ps	3	Descriptive Physics	3	Py	2	General Psychology	3
Zo	51	Histology	4	Zo	58	Animal Parasitology	4
		Social Science	3			Social Science	3
		Mod. Lang. or Mathematics	3			Modern Language or elective	3
			16				17

Junior Year

			Hours				Hours
By	27	General Bacteriology	5	By	52	Pathogenic Bacteriology	4
Ch	51	Organic Chemistry	5	Ch	52	Organic Chemistry	5
Eh	15	Masterpieces of Literature	3	Eh	16	Masterpieces of Literature	3
		Mathematics or elective	3			Elective	3
			16				15

*Senior Year

Twelve months in either the Eastern Maine General Hospital, Bangor, Maine, the Central Maine General Hospital, Lewiston, Maine, or the Maine Medical Center, Portland, Maine.

* Students desiring to spend their senior year at the University of Maine may do so by electing the proper advanced courses along with a departmental major other than medical technology. Such students are candidates for the bachelor's degree in the major fields of their choice. They are eligible for the certificate of M.T. only upon completion of a fifth year of training, this to be obtained at a hospital laboratory.

CURRICULUM IN NURSING

Leading to the Degree of B.S.

The graduate is eligible for the licensing examinations as a Registered Nurse.

Freshman Year

			Hours
Bc	7	Fundamentals of Chemistry	4
Bc	8	Elementary Physiological Chemistry	4
Eh	1, 2	Freshman Composition	6
Nu	1, 2	Introduction to Nursing	4
Nu	3	Fundamentals of Nursing (June)	4
Pe	1, 2	Physical Education	0
Zo	1	General Zoology	4
Zo	8A	Anatomy and Physiology	5
		Electives*	6

Sophomore Year

			Hours
By	21	Bacteriology	3
Cf	3	The Pre-School Child	3
Fn	52	Nutrition	3
Fn	53	Applied Nutrition	2
Nu	4	Community Health	2
Pe	3; 4	Physical Education	0
Py	1; 2	General Psychology	6
Sh	1	Public Speaking	2
Sy	1; 2	Anthropology	6
		Electives*	6

Junior Year

			Hours
Nu	5	Medical-Surgical Nursing I	14
Nu	6	Maternal and Newborn Nursing	8
Nu	7	Child Health Nursing	8
Py	65	Educational Psychology	3

Senior Year

			Hours
Nu	8	Principles of Public Health Nursing	2
Nu	9	Public Health Nursing	4
Nu	10	Psychiatric Nursing	6
Nu	11	Nursing Seminar	2
Nu	12	Medical-Surgical Nursing II	6
Nu	13	Rehabilitation Nursing	3
Nu	14	Senior Nursing	6
		Elective*	3

* Chosen from the humanities and social sciences; permission to substitute must be secured from the Director of the School of Nursing.

SPECIMEN CURRICULUM IN PHYSICS

Freshman Year

			Hours
Ps	1a	General Physics	4
Ms	1	Trigonometry	2
Ms	3	College Algebra	2
Eh	1	Freshman Composition	3
Gm	11	Scientific German	3
		Social Science	3
Mt	1	Military Science I	1½
Pe	1	Physical Education	0
			18½

			Hours
Ps	2a	General Physics	4
Ms	12	Anal. Geometry and Calculus	4
Eh	2	Freshman Composition	3
Gm	12	Scientific German	3
		Social Science	3
Mt	2	Military Science I	1½
Pe	2	Physical Education	0
			18½

Sophomore Year

FALL SEMESTER			Hours	SPRING SEMESTER			Hours
Ps	17	Intermediate Physics	4	Ps	18	Intermediate Physics	4
Ms	27	Calculus	5	Ms	28	Calculus	5
Gm	13	Scientific German (Intermed.)	3	Gm	14	Scientific German (Intermed.)	3
		Social Science	3			Social Science	3
Sh	1	Funds. of Public Speaking	2	Mt	4	Military Science II	2
Mt	3	Military Science II	2	Pe	4	Physical Education	0
Pe	3	Physical Education	0				
			19				17

Junior Year

			Hours				Hours
Ps	53	Electrical Measurements	3	Ps	72	Optics	3
Ps	55	Electricity and Magnetism	2	Ps	76	Physical Measurements	2
*Ms	57	Engineering Mathematics	3	*Ms	58	Engineering Mathematics	3
		Humanities	3			Humanities	3
		Elective	3-6			Elective	3-6
			14-17				14-17

Senior Year

			Hours				Hours
Ps	69	Modern Physics	3	Ps	62	Heat and Thermodynamics	3
		Elective	11-14			Elective	11-14
			14-17				14-17

* Students preparing for secondary school teaching may wish to substitute courses in Education for advanced mathematics.

SPECIMEN CURRICULUM FOR PREMEDICAL STUDIES

Freshman Year

			Hours				Hours
Eh	1	Freshman Composition	3	Eh	2	Freshman Composition	3
*Gm	1	Elementary German	4	Gm	2	Elementary German	4
Ms	5	Elements of College Math.	3	Ms	6	Elements of College Math.	3
Mt	1	Military Science I	1½	Mt	2	Military Science I	1½
My	1	Modern Society	3	My	2	Modern Society	3
Pe	1	Physical Education	0	Pe	2	Physical Education	0
Zo	3	Animal Biology	4	Zo	4	Animal Biology	4
			18½				18½

Sophomore Year

			Hours				Hours
Ch	1	General Chemistry	4	Ch	2	General Chemistry	4
Gm	3	Intermediate German	3	Gm	14	Scientific German	3
Mt	3	Military Science II	2	Mt	4	Military Science II	2
Pe	3	Physical Education	0	Pe	4	Physical Education	0
Py	1	General Psychology	3	Py	2	General Psychology	3
Sh	1	Public Speaking	2	Zo	36	Vertebrate Embryology	4
Zo	33	Comparative Anatomy	4			Elective	2-3
			18				18-19

Junior Year

Freshman Year

			Hours
Ch	51	Organic Chemistry	5
Ps	1a	General Physics	4
Zo	63	Principles of Genetics	3
		Humanities	3
		Elective	2-3
			17-18

Sophomore Year

			Hours
Ch	52	Organic Chemistry	5
Ps	2a	General Physics	4
		Humanities	3
		Elective	4-6
			16-18

Senior Year

			Hours
Zo	51	Histology	4
Zo	77	Animal Physiology	4
Zo	95	Zoology Seminar	1
		Elective	6-8
			15-17

			Hours
Ch	40	Quantitative Analysis	4
Zo	78	General Physiology	4
Zo	96	Zoology Seminar	1
		Elective	6-8
			15-17

* The equivalent of two years of collegiate modern foreign language, preferably German, is usually required for medical school admission. Candidates should be familiar with the specific requirements of several schools before planning their first-year program. Those who have a special interest in chemistry should take Ch 1; 2, General Chemistry, with or without Animal Biology.

CURRICULUM FOR PREDENTAL STUDIES

The predental curriculum consists of selected portions of the above premedical program.

SPECIMEN CURRICULUM IN PUBLIC MANAGEMENT

Leading to

Degree of B.A. in Public Management (City and Town Manager Option)

Eg	1; 12	Engineering Drawing and Forestry Drawing
Eh	1; 2	Freshman Composition
Hy	3. 4	United States History
Ms	1, 3, 12, or Ms 5, 6	Mathematics
Mt	1. 2	1st Yr. Basic Military Science
Pe	1. 2	Physical Education
		Foreign Language
Ce	1 and 3, or 5	Surveying
Gt	1; 2	American Government
Mt	3. 4	2nd Yr. Basic Military Science
Pe	3. 4	Physical Education
Sh	1	Public Speaking
		Foreign Language
		Natural Science (Chemistry recommended)

Junior Year

Be	1; 2	Principles of Economics
Be	9; 10	Elementary Accounting
Ce	29	Highway Construction
Ce	31	Sanitary Engineering
Gt	33	Municipal Government
Gt	34	Municipal Administration
Gt	40	Community Planning
Sy	13	Social Problems
Sw	4	Social Welfare
		Humanities

Senior Year

Be	55; 56 or 58	Business Law
Be	61	Personnel Management
Gt	7. 8	Maine Government
Gt	41	Police and Fire Admin.
Gt	42	Public Works Admin.
Gt	44	Public Relations
Gt	46	Municipal Law
Gt	51; 52	Public Administration
Ms	19	Statistics
Sw	66	General Assistance

Note: A summer intern program is required for the B.A. degree. See P. Mgt. 93, under History and Government.

SPECIMEN CURRICULUM FOR SOCIAL SERVICE WORK

Sy 1; 2, Cultural Anthropology; Sy 13, Social Problems; Sy 96, History of Sociology; Py 1; 2, General Psychology; and Py 76, Social Psychology, are required of all Sociology majors.

Freshman Year

Eh	1; 2	Freshman Composition
My	1; 2	Modern Society
Pe	1. 2	Physical Education
Pe	21	Healthful Living (Women)
Sh	1	Public Speaking
Zo	3; 4	Animal Biology
		Foreign Language (to be continued in Sophomore year if not completed)

Sophomore Year

Be	1; 2	Principles of Economics
Ms	19	Statistics
Pe	3. 4	Physical Education
Pl	1. 2	Philosophy and Modern Life, or elective in Humanities
Py	1; 2	General Psychology
Sy	1; 2	Cultural Anthropology
Sy	13	Social Problems
Sw	4	Social Welfare
		Mathematics or Science

Junior and Senior Years

The curriculum of the Junior and Senior years will depend on whether the student wishes to prepare for graduate training or for positions not requiring graduate training, as well as on his special field of interest (e.g., case work, group work).

Sociology majors planning to attend a graduate school of social work should choose the Sociology and Anthropology option with the addition of Sw 4, Social Welfare, and Py 71, Abnormal Psychology. Others planning to attend such a school should aim at a broad liberal education with some concentration in the social sciences (including Psychology) and the specific inclusion of Sw 4, Social Welfare. Some graduate schools specifically require Ms 19, Statistics.

Sociology majors who wish to prepare for a position upon graduation should choose the Social Work option. Recommended, in addition to the required courses, are Sw 52, Child Welfare; Sw 66, General Assistance; Pe 74, Organization and Administration of Recreational Activities; and Py 71, Abnormal Psychology, depending on the student's interests. Other students who wish to prepare for a social work position should elect Sw 4, Social Welfare, and Sw 57, Group Leadership, or Sw 71, Principles of Case Work, and as many other courses from the Social Work option as they can.

Note: Please see program in Child Development and Family Relationships on page 105.

Upper: Memorial Union Building, the center of student activities
Lower: Attractive new Physics Building

COURSES OF INSTRUCTION

Courses numbered 1-99 are for undergraduates; courses numbered 200 and above are primarily for graduates. Courses numbered below 100 which have been approved for graduate credit are indicated by a graduate designation, in parentheses, after the regular course number.

One number is used for a course which is given both fall and spring.

When a dash is used between the two numbers (e.g., 1-2), both semesters must be taken to obtain credit; when a semicolon is used (e.g., 1; 2), the first semester may be taken by itself, but the second cannot be taken unless the first is taken previously; when a period is used (e.g., 1. 2), either semester may be taken for credit.

Courses offered in 1962-63 and alternate years are indicated by the sign (‡) placed before the number of the course; courses offered in 1961-62 and alternate years are indicated by the sign (†) placed before the number of the course.

ART

PROFESSOR HARTGEN; ASSISTANT PROFESSOR GREAVER

1; 2. Free-Hand Drawing and Sketching.—Fundamentals of drawing. Principles of perspective, shades and shadows, and composition, through use of still life sets and plaster casts. Pencil, charcoal, graphite, and crayon. *Lab* 4, *Cr* 2.
MR. GREAVER

3. 4. Principles of Art.—The basic principles of art—its substance, nature, and classifications. An analysis of architectural, sculptural, and pictorial forms. Not a historic study, although masterpieces will be studied. *Rec* 2, *Cr* 2.
MR. HARTGEN

5. 6. Art Appreciation and History.—Techniques and trends in architecture, sculpture, and painting as related to the history of art from the earliest times to the present day. Emphasis on artists and schools. Lectures, text, slides, and prints. *Rec* 3, *Cr* 3. MR. HARTGEN

7; 8. Crafts and Design.—Fundamentals of design through crafts experience. Blockprinting, silk screening, clay modeling, plaster casting, papier mache, posters, wire sculpture. Two and three dimensional design problems. *Lab* 4, *Cr* 2. MR. GREAVER

9; 10. Advanced Crafts and Design.—Advanced work in design problems using crafts-experiences introduced in basic course. Two and three dimensional problems carried into layout, graphics, fabrics, etc. Prerequisite, At 1; 2 or At 7; 8. *Lab* 4, *Cr* 2. MR. GREAVER

11; 12. Advanced Free-Hand Drawing and Sketching.—Advanced studies in form, space, composition, and cast drawing. Field trips for outdoor sketching and painting. Development from charcoal to watercolor painting. Prerequisite, At 1; 2. *Lab* 4, *Cr* 2. MR. HARTGEN

15; 16. Painting and Rendering.—Studio studies and landscape painting with emphasis on composition, palette and techniques. Problems using pastel, sepia, watercolor, gouache, and oil. Prerequisite, At 11; 12. *Lab* 4, *Cr* 2.
MR. HARTGEN, MR. GREAVER

19. Art in the Community.—The place of art in social and professional

life. Architecture, fashions, advertising, industrial design, city planning, and related subjects. *Rec* 2, *Cr* 2. MR. GREAVER

20. American Art.—Survey of American art: trends, and schools, with special emphasis on present-day activities. Lectures, text, study of slides and plates. *Rec* 2, *Cr* 2. MR. GREAVER

‡***23. 24. Contemporary Art Forms.***—An examination of all modern European and American trends in architecture, sculpture, painting, and the graphic arts. A comparison of the modern "isms." At 5 and 6 are recommended but not required. *Rec* 2, *Cr* 2. MR. HARTGEN, MR. GREAVER

†***25. 26. Renaissance Art.***—The architecture, sculpture, and painting of the Renaissance in Europe. First semester: the Renaissance in Italy; the second: Renaissance and Baroque variations in other European countries. At 5 and 6 recommended, but not required. *Rec* 2, *Cr* 2. MR. HARTGEN, MR. GREAVER

69. The Teaching of Art.—Current methods and materials for the teaching of art in the elementary grades. Theory and actual experience with various two and three dimensional art projects. *Lec and Lab* 3, *Cr* 3. MR. GREAVER

SCHOOL OF BUSINESS ADMINISTRATION

PROFESSOR HAWLEY, *Director*

The School of Business Administration is a division of the College of Arts and Sciences. It offers curricula leading to the B.S. degree in Business Administration with major programs in Marketing, Finance, Accounting, and Industrial Management. Students enter the School of Business Administration during their third or fourth year of study in the College of Arts and Sciences.

The primary objective of the program of the School of Business Administration is to develop students' abilities to assume the responsibilities of business management. Given this basic orientation to management development, the school's curricula are aimed at providing the broad training which is necessary for successful business management in the present rapidly changing economy. No attempt is made to provide detailed, specialized training in particular business tasks. The program aims, rather, at developing in the student those skills and attitudes of mind that will enable him to cope successfully with the changing problems of business management in the years ahead.

Implementation of this program takes place in three general phases.

First, the student acquires broad training in the arts and sciences. This training is viewed as the necessary foundation on which his future education will build. Students in the School of Business Administration must fulfill all of the general requirements of the College of Arts and Sciences.

Second, the student pursues a program of study designed to provide him with an understanding of the major functional areas which are common to most business operations and with a knowledge of certain fields which are particularly relevant to the study of business management. This is sometimes referred to as the "core" program and includes basic courses in economics, accounting, industrial management, finance, business law, marketing, statistics, and exposition.

Third, the student undertakes to acquire a deeper knowledge of the field of concentration which he has selected. This is done largely during the senior year and is accomplished by taking 15 credit hours of work beyond the introductory course in the chosen field. The four fields of concentration in which ad-

vanced work may be done are Accounting, Marketing, Finance, and Industrial Management.

Thus, by the time he has graduated, a student in the School of Business Administration will have acquired a broad background in arts and sciences, a basic knowledge of the major areas of relevance to business management, and some specialized knowledge in a particular field of business operation.

Admission to the School of Business Administration will be considered after completion of 56 degree hours in the University. In general, only those students presenting work in the first two years averaging C grade or above will be considered for admission.

During the first two years students will be required to complete the general requirements of the College of Arts and Sciences with the modification that students will be required to complete one year of basic mathematics (either Ms 5; 6 or Ms 1, 3; 12) as part of the science requirement.

When entering the College of Arts and Sciences, students planning to enter the School of Business Administration will be required to offer two units of high school algebra. Students planning to transfer to the School from other approved colleges must have completed an acceptable two-year course of academic studies aggregating the equivalent of 56 degree hours.

I. General School Requirements:

All candidates for the B.S. degree in Business Administration must complete: Be 1; 2, Principles of Economics; Be 9, Principles of Accounting I; Be 10, Principles of Accounting II; Be 23; 24, Elements of Industrial Management; Be 49, Business Economics; Be 51, Business Organization and Finance; Be 55; 56*, Business Law; Be 63; 64, Marketing; Eh 19, Expository Writing; and Ms 19, Statistics.

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* Be 58 may be substituted for Be 56.

II. Specific Major Requirements:

Having completed the general School requirements, the student will choose one of the following major fields of emphasis:

Accounting Major—Be 41; 42, Intermediate Accounting; Be 43, Advanced Accounting; Be 45, Cost Accounting I, Be 48 Auditing.

Marketing Major—Be 59; 60, Business Management and Policy; Be 65, Advertising; Be 66, Retailing; Be 67, Sales Management.

Finance Major—Be 32, Business Fluctuations; Be 50, Investments; Be 53; 54, Money and Banking; Be 52, Business Finance (second semester).

Industrial Management Major—Be 33; 34, Labor Economics; Be 59; 60, Business Management and Policy; Be 61, Personnel Management.

Major students must attain a minimum grade-point average of 2.0 in all courses carrying the Be designation.

Course offerings in the School of Business Administration are listed with those offered by the Department of Business and Economics.

BUSINESS AND ECONOMICS

PROFESSOR HAWLEY; ASSOCIATE PROFESSORS RAPHAELSON, SIEDLIK, AND YU; ASSISTANT PROFESSORS BARTLETT, CALIGARIS, DEVINO, MCCLURE, NADEL, RUCKSTUHL, WOJCIK; MRS. CURRY, MR. SISKIND; MR. HARVEY

None of the courses listed is available to freshmen. All courses in the Department are intended for juniors and seniors except that Be 1; 2, Be 9, and Be 10 are available to sophomores as well as juniors and seniors.

Freshmen who plan to major in Business and Economics should register for My 1; 2, Modern Society. It is also recommended that a year of basic mathematics be taken by potential Business and Economics majors.

With the aid of his adviser, a major may establish a program of courses in one of six recognized fields: Accounting, Economics, Finance, Labor and Industrial Relations, Management, and Marketing.

Specific Major Requirements:

B.A. in Business and Economics (minimum of 36 hours—maximum of 48 hours): Be 1; 2, Principles of Economics, Be 9; Principles of Accounting I; Eh 19, Expository Writing; Ms 19, Statistics; Be 49, Business Economics *or* Be 73, Economic Analysis.

Major students must attain a minimum grade-point average of 2.0 in all courses carrying the Be designation.

In addition to the requirements just listed, students must choose 15 hours from the following list of courses: Be 32, Business Fluctuations; Be 33; 34, Labor Economics; Be 35, History of Economic Thought; Be 37, Comparative Economic Systems; Be 39; 40, International Trade; Be 53; 54, Money and Banking; Be 68, Social Control of Business; Be 71; 72, Public Finance; Be 73, Economic Analysis; Be 74, Economic Policy.

(The following courses offered by other departments are recommended: Gy 22, Economic Geography; Hy 19; 20, Economic History of the United States; Ms 5; 6, Elements of College Mathematics, *or* Ms 1, 3, and 12, Trigonometry, College Algebra, and Analytic Geometry and Calculus.)

The maximum number of hours one may take within the Department is 48.

The Department offers graduate work leading to the degree of M.A. in Economics or M.S. in Business and Economics.

Courses in Business and Economics and Business Administration

1; 2. Principles of Economics.—Analysis of the fundamental characteristics and institutions of modern economic society, including business and labor organization, national and international policies. *Cr* 3. STAFF

‡1a. Principles of Economics.—A mathematical presentation of essential elements of economic principles. Open to non-majors only. Prerequisite, Ms 1, 3; 12. *Cr* 3.

9. Principles of Accounting I.—An introductory course in accounting with emphasis on the basic accounting cycle, management use of accounting data, construction and analysis of financial statements, asset valuation, and elementary cost analysis. *Cr* 3. MR. MCCLURE, MR. SIEDLIK, MR. YU

10. Principles of Accounting II.—Books of original entry, analysis of

assets and liabilities, negotiable instruments, and an introduction to partnership and corporate accounting. Prerequisite, Be 9. *Cr* 3.

MR. MCCLURE, MR. SIEDLIK, MR. YU

23; 24. Elements of Industrial Management.—A comprehensive survey of all phases of the management of industrial and business enterprises. The influence of industrial relations is interspersed with the treatment of management's technical problems. Prerequisite, Be 1; 2. *Cr* 3. MR. NADEL

32 (132). Business Fluctuations.—An analysis of the basic forces that cause fluctuations in economic activity. The effects on employment, investment, and business firms are thoroughly treated. Stabilization proposals are examined and evaluated. Prerequisite, Be 1; 2. *Cr* 3. MR. RAPHAELSON

33; 34 (133; 134). Labor Economics.—A discussion of labor in an industrial society serves as background for an examination of the origins and structure of the labor movement, the theories of the labor movement, the theories of wages and labor's income, the process of collective bargaining in industrial relations, and the development of labor legislation and social security laws. Prerequisite, Be 1; 2. *Cr* 3. MR. DEVINO

35 (135). History of Economic Thought.—A survey of the development of basic economic principles and theories from pre-industrial times to the present. Major emphasis is on the Classical School (Smith Ricardo, and Malthus) and its critics, the development of the Austrian School, the synthesis of Neo-Classicism, and the emergence of Macroeconomics. Prerequisite, Be 1; 2. *Cr* 3. MR. DEVINO

‡36. American Labor Movement.—Not given in 1961-62.

‡37. Comparative Economic Systems.—The structures and operating principles of the major contemporary economic systems are examined and compared. Prerequisite, Be 1; 2. *Cr* 3. MR. RAPHAELSON

39; 40 (139; 140). International Trade and Commercial Policy.—The principles and practices of international trade and finance are thoroughly treated. Special emphasis is given to current trends in the international economy and to United States commercial policy. Prerequisite, Be 1; 2. *Cr* 3. MR. NADEL

41; 42. Intermediate Accounting.—Principles in regard to the valuation and recording of working capital items and noncurrent items; capital stock and surplus; statement analysis. Prerequisite, Be 9, Be 10. *Lec* 2, *Lab* 2, *Cr* 3.

MR. YU

43. 44. Advanced Accounting.—The application of accounting principles to accounting problems arising in connection with branch accounts, consolidated statements, partnership, joint ventures, insurance, statement of affairs, receiverships, estates and trusts, statement of realization and liquidation, consignments, installment sales, foreign exchange, and governmental and institutional accounting. Prerequisite, Be 41. *Cr* 3. MR. SIEDLIK

45. Cost Accounting I.—The principles and methods of job order costs including inventory control and pricing, labor costs and analysis and allocation of factory overhead. Principles and practices of process cost accounting. Prerequisite, Be 9, 10. *Cr* 3. MR. SIEDLIK

46. Cost Accounting II.—A comprehensive study of joint and by-product costs, estimated and standard costs, distribution and differential costs. Budgeting. Analysis of cost structure and management use of standards. Prerequisite, Be 45. *Cr* 3. MR. SIEDLIK

47 (147). Business Data Processing.—The application of electronic data processing equipment to accounting systems. Basic principles of operation and programming. Selected case problems. Prerequisite, Be 9, 10. *Cr* 3. MR. SIEDLIK

48 (148). Auditing.—The systematic verification of financial statements including a study of the responsibilities, liabilities and ethics of the independent public accountant. Prerequisite, Be 9, 10, 41. *Cr* 3. MR. YU

49. Business Economics.—Applications of economic analysis to concrete business situations. Emphasis on developing the student's ability to apply economic analysis to the solution of problems faced by business management. Prerequisite, Be 1; 2, 9. *Cr* 3. MR. MCCLURE

50 (150). Investments.—Problems of personal finance and investment. Includes consideration of insurance, installment credit, mortgage financing, savings investment, and the use of bonds and stock in formulating a program of financial management. Prerequisite, Be 1; 2, 9, 51. *Cr* 3. MR. HAWLEY

51; 52 (151; 152). Business Finance.—The first semester deals with the promotion, organization, and financing of the single proprietorship, partnership, and corporation. The second semester utilizes advanced cases and problems related to the theory and principles developed in the first semester. Prerequisite, Be 1; 2, 9. *Cr* 3. MR. SISKIND

53; 54 (153; 154). Money and Banking.—The first semester includes a survey of the nature, characteristics, and functions of the monetary and banking system of the United States. The second semester deals with the money market, central banking problems, and related international aspects of banking policy. Prerequisite, Be 1; 2, 9. *Cr* 3. MR. CALIGARIS

55; 56 (155*; 156*). Business Law.—An introduction to business law, with emphasis on the development and role of law, the present-day American legal and judicial system, and the legal environment of business. This is followed by a detailed study and analysis of contracts as basic legal instruments by which business decisions are implemented. The second semester includes a study of the basic principles of negotiable instruments and a study of contracts relating to employment, lease, transportation, and sales. *Cr* 3. MR. WOJCIK

‡57. Problems in Business Finance.—Advanced cases and problems related to the theory and principles developed in Be 51; 52 with emphasis on corporate internal control and financing; various functions of finanical institutions in the conduct of business. Prerequisite, Be 1; 2, 9; 10, 51. *Cr* 3.

58. Business Law.—A study of agency, partnerships, corporations, and trade infringements (patent, copyrights, trade marks, etc.). Prerequisite, Be 55. *Cr* 3. MR. WOJCIK

59; 60 (159; 160). Business Management and Policy.—Administrative practice at the higher levels of business management through case analysis and discussion. The course attempts to coordinate the background of business majors in the formulation and administration of sound business policy. Prerequisite, Be 1; 2, 49, 51, 63; 64. *Cr* 3. MR. HAWLEY

61 (161*). Personnel Management.—The selection, training, and management of personnel in private and public business. Designed for the student interested in administration, office management, or personnel work in education, business, engineering, public service, and other fields. *Cr* 3. MR. DEVINO

63; 64. Marketing.—Problems of distribution for representative industrial and consumer goods, including merchandising policies, selection of distribution channels, price policies, and advertising and sales promotion methods. Prerequisite,

Be 1; 2, 9; Be 49 is a prerequisite for Be 64. Students may register for Be 49 and Be 63 at the same time. *Cr* 3. MR. BARTLETT

65 (165). Advertising.—The place of advertising in the marketing program. Business cases are analyzed to determine those situations in which advertising may be profitably employed to stimulate primary and selective demand for industrial and consumer goods and services. Prerequisite, Be 1; 2, 63; 64. *Cr* 3. MR. HAWLEY

‡***66. Retailing.***—A study of the retail distribution structure and of the problems involved in successful store operation under current conditions. Prerequisite, Be 63; 64. *Cr* 3.

67. Sales Management.—An analysis of the problems facing marketing management in formulating sales policy and in managing the sales organization. Prerequisite, Be 63; 64. *Cr* 3. MR. BARTLETT

68. Social Control of Business.—Public policy toward business; government powers and private rights; government aids; regulation of competition and monopoly; public enterprise. Prerequisite, Be 1; 2. *Cr* 3. MR. CALIGARIS

71; 72 (171; 172). Public Finance.—The study of the background, administration and economic effects of national, state and local taxes, such as those on property, income, and sales. Analysis of government policies of spending, borrowing and taxing with emphasis on their effects upon national economic conditions. Prerequisite, Be 1; 2. *Cr* 3. MR. RAPHAELSON

73 (173). Economic Analysis.—Price, income, and employment theory as tools in the study of economics. Prerequisite, Be 1; 2. *Cr* 3. MR. CALIGARIS

74 (174). Economic Policy.—Current economic problems on national and international levels. Prerequisite, Senior standing in B.A. Program in Business and Economics, or permission. *Cr* 3. MR. DEVINO

‡***75 (175). Managerial Economics.***—The application of economic analysis to the operation of a business. Demand and cost analysis, competitive and noncompetitive pricing, and multi-line production and marketing problems are considered. Prerequisite, Be 1; 2 and Be 49. *Cr* 3.

76. Federal Tax Reporting.—Federal tax laws as they affect individuals. partnerships, corporations, and estates. An opportunity is given the student to become familiar with tax forms. Prerequisite, Be 9; 10. *Lec* 2, *Lab* 2, *Cr* 3. MR. SIEDLIK

97, 98 (197, 198). Projects in Business and Economics.—For the advanced senior major having a minimum of 24 hours in Business and Economics. Apply directly to Professor Hawley prior to registration. *Cr* 2 *or* 3.

299. Graduate Thesis.—*Cr* 6.

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* Available for graduate credit only with consent of student's adviser.

CHEMISTRY

PROFESSORS BEAMESDERFER, DOUGLASS, DUNLAP; ASSOCIATE PROFESSORS BOGAN, BRAUNSTEIN, MARTIN, PETTIT, WOLFHAGEN; ASSISTANT PROFESSOR GEORGITIS; MRS. HESS, MR. HESS, MR. HILL, MR. HILTON, MR. THOMAS

The student majoring in Chemistry in the College of Arts and Sciences is able to complete all requirements for certification to the American Chemical Society Committee on Professional Training. Chemistry majors who intend to enter

medicine or other related fields are permitted to take fewer chemistry courses in order to have a wider choice of electives.

The Chemistry curriculum and courses in the Department of Chemistry are described under the College of Technology.

ENGLISH

PROFESSORS HANKINS, CROSBY, WENCE, EDWARDS, WHITNEY, AND REYNOLDS; ASSOCIATE PROFESSORS FIFE AND TERRELL; ASSISTANT PROFESSORS MANLOVE AND BEECHHOLD; MR. ANDERSEN, MR. IVES, MR. HOLMES, MR. SPRAGUE, MR. LINBERG, MRS. BERNEN, MISS JOHANNES, AND MISS TODD; MRS. HANKINS, MRS. CHAPMAN, MRS. SLEEPER, MRS. ANDERSEN, MRS. LINDBERG, AND MR. ARTHUR REYNOLDS; MISS FERNALD, MR. HAMMER, AND MISS SAMUELSON

Students expecting to major in English should take Eh 3. 4, English Literature, in their sophomore year. For these students, Eh 3. 4 satisfies the humanities requirement. One semester of Second-Year Composition (Eh 7 or 8) and Eh 43, American Literature, are likewise required at some time in the college course. Whenever the student's program allows, Eh 7 or 8 may well be taken along with Eh 3. 4 in the sophomore year. Majors are expected to take during their college course between 36 and 48 hours in the Department, of which at least nine hours must be selected from the following courses: Eh 53, 57, 58, 59, 61, 64, 65, 66.

The departmental major examinations comprise: (a) an examination over the mechanics of composition in January of the junior year and (b) an examination over English and American literature in the final senior semester. Both tests are written. A passing grade in each examination is required for graduation.

The Department offers the Master of Arts degree in English, normally requiring 24 semester hours of course credits and the writing of a satisfactory thesis. Students are required to attend a graduate seminar, at which they will present papers prepared in connection with the material of their other courses. For those who need it, the Department will plan a combined curriculum in English and Education, allowing the student to secure the Master of Arts in English and his teaching certificate for high-school work; the time normally required is one academic year and two summer sessions.

Courses in Composition and Rhetoric

1; 2. Freshman Composition.—Expository and narrative writing, with the reading of illustrative material. Required of all freshmen and prerequisite for all other English courses. *Cr* 3. MR. WHITNEY, Chairman

5. Technical Composition.—The principles and techniques of business correspondence and of technical reports and papers. Prerequisite, junior standing in Technology or Agriculture. *Cr* 2. MR. TERRELL, Chairman

7. 8. Second-Year Composition.—A course in writing for those who wish to develop skill either for their own pleasure or for professional uses. In the first semester the writing of formal and informal essays; in the second, descriptive and narrative writing. *Cr* 3. MR. WENCE

19. Expository Writing.—Primarily for student majors in Home Economics and in Business Administration. Training in clear expository writing of formal

reports, business letters, and similar materials. Prerequisite, junior standing. *Cr* 2. MR. BEECHHOLD

77. 78. Creative Writing.—An advanced course for students of ability. Prerequisite, English 7 or 8 or permission of instructor. *Cr* 3. MR. WHITNEY

Courses in Literature

3. 4. English Literature.—The chief authors of English literature in chronological order, with reading and class discussion of their work. From the beginning to 1700 in the fall semester; 1700 to the present in the spring. *Cr* 3. MISS FIFE, Chairman

9. Modern Literature.—A study of contemporary fiction. Readings from Crane, Dreiser, Wharton, Hemingway, Steinbeck, and others. *Primarily for students in Technology and Agriculture. Cr* 2. MR. MANLOVE, Chairman

15. 16. Masterpieces of English and American Literature.—An introduction to literary appreciation through the study of selected masterpieces from English and American literature. Not recommended for students who have had Eh 3. 4 or advanced courses in literature. *Cr* 3. MR. WENCE, Chairman

†34. Ballad and Folksong.—The types and traditions of folksong in America, with special attention to the ballad and its problems. The English, Scottish, and Irish traditions, with some attention to Spanish, French, and Negro material. *Lec* 2, *Lab* 1, *Cr* 2. MR. IVES

†35. 36 (135. 136). Recent Drama.—Outstanding dramatists and plays, mainly of the twentieth century. American drama is taken up in the first semester and European drama in the second. *Cr* 2. MR. WHITNEY

‡39; 40 (139; 140). The English Bible.—The English Bible studied as one of the chief masterpieces of English literature. Considerable attention is also paid to the background of Biblical literature. *Cr* 2. MR. REYNOLDS

‡42 (142). Writers of Maine.—A study of the Maine scene and Maine people as used by Sarah Orne Jewett, E. A. Robinson, Edna St. Vincent Millay, Mary Ellen Chase, Robert P. T. Coffin, Kenneth Roberts, E. B. White, and others. *Cr* 2. MISS FIFE

43. American Literature.—American literature in the eighteenth and nineteenth centuries, with emphasis on the principal writers. *Cr* 3. MR. EDWARDS

45. 46 (145. 146). Twentieth-Century Literature.—The novel and poetry from 1900 to the present. British writers are considered in the first semester, American in the second. *Cr* 3. MR. TERRELL, MR. WENCE

In order to take courses in English Literature numbered above 50, students should have previously taken two of the following: Eh 3, 4, 9, 15, 16. With the approval of an English adviser, the student may substitute for these any two courses that fill the Humanities requirement.

53 (153). Chaucer.—Selections from the *Canterbury Tales* and the Minor Poems, stressing the reading of Chaucer as poetry, his literary range and qualities, and his picture of his time. *Cr* 3. MISS CROSBY

‡55 (155). Poetry of the Romantic Movement.—Wordsworth, Coleridge, Scott, Byron, Shelley, Keats, and their contemporaries, against the background of their time. *Cr* 3. MR. HANKINS

‡56 (156). Victorian Poetry.—Browning, Tennyson, Arnold, the pre-Raphaelites, and their contemporaries. *Cr* 3. MR. LINDBERG

57. 58 (157. 158). Shakespeare.—A study of Shakespeare's comedies,

tragedies, and history plays. Comedies and history plays are stressed in the first semester, tragedies in the second. *Cr* 3. MR. HANKINS

†*59 (159). Elizabethan Prose and Verse.*—Not including the drama. Poems, sonnet sequences, romances, pastorals, translations. The pageant of Elizabethan life and thought. Special attention to Spencer's *The Faerie Queene*. *Cr* 3. MR. HANKINS

‡*61. 62 (161. 162). British Drama.*—In the fall semester, Shakespeare's contemporaries, with some attention to the drama before and after Shakespeare. In the spring, a survey of British drama from the Restoration to 1900. *Cr* 3. MR. WHITNEY

†*64 (164). Milton.*—The poetry and prose of Milton with consideration of the literary and historical background of his time. *Cr* 3. MISS CROSBY

†*65 (165). The Age of Dryden and Pope.*—Restoration literature, and the evolution of Neo-classicism in the early eighteenth century. *Cr* 3. MR. MANLOVE

‡*66 (166). The Age of Johnson.*—The later eighteenth century. Johnson and his circle. The beginnings of Romanticism. *Cr* 3. MR. MANLOVE

†*69 (169). The American Novel.*—The chief American novelists of the nineteenth century and their work. *Cr* 3. MR. EDWARDS

‡*70 (170). The American Drama.*—The development of drama in America from colonial times to the First World War. *Cr* 3. MR. EDWARDS

71 (171). Early American Literature.—The development of American Literature from the beginnings to 1800. Offered on request. *Cr* 3.

‡*72 (172). The New England Renaissance.*—A study of the great authors of New England in mid-nineteenth century. Their works, their personalities, and their social background. *Cr* 3. MISS CROSBY

†*81 (181). The Earlier English Novel.*—The principal English novelists from the beginnings to Sir Walter Scott. *Cr* 3. MR. WENCE

‡*82 (182). The Later English Novel.*—The principal English novelists from Dickens to Hardy. *Cr* 3. MR. WENCE

†*83 (183). Nineteenth Century Prose.*—Not including fiction. The major essayists from Lamb to Stevenson. Studies of content and literary style. *Cr* 3. MR. LINDBERG

†*92 (192). The Rise of Realism in America.*—A survey of literature from 1865 to 1914, including such authors as Mark Twain, Bret Harte, Howells, James, Henry Adams, Hamlin Garland, and Edith Wharton. *Cr* 3. MR. EDWARDS

295. Graduate Seminar.—Subjects and credit vary. Investigations, written and oral reports. The course may be repeated with different subjects: (a) Linguistics and semantics; (b) Literature of the English Renaissance; (c) 18th and 19th Century English Literature; (d) American Literature to 1900; (e) 20th Century Literature, British and American; (f) Folklore.

Courses in Linguistics

21. Principles of Grammar and Usage.—A course designed for prospective teachers of English and for others interested in the basic theories of grammar and in current usage. For juniors and seniors. *Cr* 3. MR. WHITNEY

‡*49 (149). The Science of Language.*—Modern methods of linguistic studies: phonetics, diacritical marks, speech graphs; etymology and word-coinage; language symbols and the alphabet; semantics and problems of meaning. *Cr* 2. MR. REYNOLDS, MR. BEECHHOLD

†*51; 52 (151; 152). Old English.*—Old English grammar and reading of easy prose and poetry. Reading of *Beowulf* in the second semester. *Cr* 3.
MR. REYNOLDS

†*67 (167). History of the English Language.*—English words and their background; changes in meanings, forms, and sounds, with a brief review of modern grammar. Recommended for students preparing to teach English. *Cr* 2.
MR. REYNOLDS

‡*68 (168). The American Language.*—Our present-day usage and vocabulary as developed from Colonial times. Regional speech types and the problem of standard English. American English as a world language. *Cr* 2. MR. REYNOLDS

Courses in the Teaching of English

84 (184). The Teaching of English in the Secondary School.—A discussion of principles and practices in the teaching of literature and composition, with exercises in theme-correction. *Cr* 3. MR. HOLMES

Courses in Comparative Literature

†*Cp 73. 74 (173. 174). Literary Criticism.*—From Plato to the present. Includes reading of selected classics, and practice in criticizing contemporary literature. *Cr* 3. MR. ANDERSEN

†*Cp 75. 76 (175. 176). European Literature.*—Continental European literature in translation from Homer to the Renaissance in the first semester and from the Renaissance to the present in the second. Recommended for majors in history or foreign languages, and for students preparing for library work. *Cr* 3.
MISS FIFE

†*Cp 79 (179). Folk Narratives of the World.*—Folk tales and folk traditions of other lands; the influence of folklore upon epic, saga, romance, and other narrative forms. *Cr* 2.

‡*Cp 80 (180). American Folklore.*—Folk tales, folk songs, and folk traditions of the American people, including the American Indians. *Cr* 2. MR. IVES

†*Cp 85. 86 (185. 186). Biography.*—The evolution of biographical writing, stressing the personalities in the great biographies and the times in which they lived. From Plutarch to Boswell in the first semester; from the eighteenth century to the present in the second semester. *Cr* 3. MR. WENCE

†*Cp 87 (187). Oriental Masterpieces: The Near East.*—Selections from the literature of India, Iran, and the Arab countries. *Cr* 3. MR. BEECHHOLD

‡*Cp 88 (188). Oriental Masterpieces: The Far East.*—Selections principally from the literature of China and Japan. *Cr* 3. MR. BEECHHOLD

‡*Cp 89. 90 (189. 190). The Novel in Europe.*—A brief survey with reading of representative novels. In the first semester, The Novel in Western Europe, including Italy, Germany, France, and Spain. In the second semester, The Novel in Eastern and Northern Europe, including Russia, Poland, and Scandinavia. *Cr* 3.
MR. TERRELL AND STAFF

FOREIGN LANGUAGES AND CLASSICS

PROFESSORS MILES, PELLEGRINO, MENGERS, AND SHERK; ASSOCIATE PROFESSORS GROSS, CASAVANT, AND RIOUX; ASSISTANT PROFESSOR TRONERUD; MR. REID, MRS. RITTER, MR. BELL, MR. MARCHIONE, AND MR. ROGGENBAUER; MRS. GROSS; MR. BAKER

The Department offers major work to candidates for the Bachelor of Arts degree in the following subject fields: French, German, Spanish, Romance Languages, Modern Languages, and Latin in accordance with the requirements listed below.

Students electing to major in **French, German,** or **Spanish** will be required to take a **minimum** of twenty-four hours in literature and civilization courses of the subject matter field in advance of the intermediate courses.

Students electing to major in **Romance Languages** will be required to take a **minimum** of twenty-four hours chosen from literature and civilization courses in French and Spanish beyond the intermediate level.

Students electing to major in **Modern Languages** will be required to take a **minimum** of twenty-four hours chosen from literature and civilization courses in one of the Romance Languages and German beyond the intermediate level.

Students electing to major in **Latin** will be required to take a **minimum** of eighteen hours of the subject matter field in advance of the intermediate course.

The passing of an oral comprehensive examination covering the language, literature, and civilization of the area represented by at least eighteen hours of advanced courses is a requirement for graduation for all students majoring in the Department.

Hy 5; 6, Hy 15. 16, Hy 79. 80 are also required for students whose main concentration is French or German, Spanish, or Latin respectively.

Fl 66 is normally required of majors who plan to teach in secondary schools.

Courses recommended for students who do not major in the Department, but who plan to obtain certification for teaching French are: Fr 9. 10, Fr 57; 58, Fl 65. 66, and a minimum of two semesters of literature courses. For those who wish to obtain certification for teaching Spanish, the following courses are recommended: Sp 57; 58, Fl 66 and a minimum of two semesters of literature courses. For those who wish to obtain certification for teaching Latin, the following course is recommended as a minimum: Lt 9. 10.

The Department also offers work leading to the Master of Arts degree in French, Spanish, Romance Languages, Modern Languages, and German in terms of the general requirements for graduate work. A program of courses up to 24 hours which does not duplicate undergraduate work will normally be selected from courses numbered 51 or above in the French, German, and Spanish curricula listed below. Evidence of oral ability in the language undertaken will be required. The thesis will be an essential aspect of the work and will be evaluated at no less than one-fifth of the graduate program. The Summer Session catalog should be consulted for special aspects involved when the degree is sought through attendance at the Summer Sessions. See also Graduate Study Bulletin.

FOREIGN LANGUAGES

Fl 66 (166). The Teaching of Foreign Languages.—Principles and practice of teaching foreign languages. Analysis of current trends and methods. Ap-

plication of language-learning principles to classroom procedures. Theory and practice of language methodologies at different learning levels. For seniors seeking certification in foreign language teaching. *Cr* 3. MR. PELLEGRINO

Fl 201-202. Linguistics.—Comparative grammar, elements of phonology and morphology, introduction to linguistic science and semantics. Given upon sufficient demand. *Cr* 2.

FRENCH

1-2. Elementary French.—Emphasis on development of listening comprehension, speaking, reading and writing skills. Laboratory practice. For students who have had no French or whose previous training does not qualify them for a more advanced course. *Cr* 4. THE STAFF

3; 4. Intermediate French.—Continuation of 1-2. Laboratory practice. For students who have completed French 1-2 or who are otherwise qualified to continue at this level. This course fulfills the language generalization requirement. *Cr* 3. THE STAFF

9. 10. Readings in French Literature.—For students who wish further practice in reading before beginning advanced literature courses. Discussion and analysis in French. *Cr* 3. THE STAFF

51. 52 (151. 152). Nineteenth Century French Literature.—Lectures, readings, analysis of representative works in the drama, novel and poetry. Attention to political, social and cultural backgrounds. For students who have completed Fr 9. 10 or who are otherwise qualified. *Cr* 3. MR. RIOUX

†53. 54 (153. 154). Contemporary French Literature.—The works of leading twentieth century writers, with special attention to the novel and drama. *Cr* 3. MISS MENGERS

57; 58 (157; 158). French Civilization.—A study of French culture so designed as to increase the skills of aural comprehension, oral and written expression through readings, discussions, lectures, written and oral reports, and laboratory practice. Prerequisite, Fr 9. 10 or the equivalent. *Cr* 3. THE STAFF

62 (162). French-Canadian Literature.—Emphasis on the contemporary novel and its social, economic, and historical backgrounds. Special attention to cultural patterns, including those contributed to the United States. Given upon sufficient demand. *Cr* 2. THE STAFF

‡63. 64 (163. 164). French Literature of the Seventeenth and Eighteenth Centuries.—Lectures, reading of representative works of Corneille, Racine, Moliere, Voltaire, Rousseau and others, with reference to the social and political conditions, and philosophic ideas. *Cr* 3. MR. PELLEGRINO

81. 82 (181. 182). Seminar.—Serves as preparation for the oral comprehensive required of each major student. Written finals are accepted in place of written comprehensives. Lectures, discussions, readings, and reports. *Cr* 2. THE STAFF

299. Graduate Thesis.—*Cr* 6.

GERMAN

1-2. Elementary German.—Emphasis on development of listening comprehension, speaking, reading, and writing skills. Laboratory practice. For students who have had no German or whose previous training does not qualify them for a more advanced course. *Cr* 4. MR. MILES, MR. REID, MR. ROGGENBAUER

3; 4. Intermediate German.—Continuation of 1-2. Laboratory practice. For students who have completed German 1-2 or the equivalent. Completion of this course fulfills the language generalization requirement. *Cr* 3.

MR. REID, MR. ROGGENBAUER

9. 10. Readings in German Literature.—For students who wish further practice in reading before beginning more advanced literature courses. *Cr* 3.

MR. MILES

11; 12. Scientific German (Elementary).—Beginning course in German for students in the Colleges of Agriculture and Technology and for students in the College of Arts and Sciences who intend to major in Chemistry or Physics. *Cr* 3. MR. REID, MR. ROGGENBAUER

13. Scientific German (Intermediate).—Continuation of Course 12, which is prerequisite. May be followed by Gm 14. *Cr* 3. MR. ROGGENBAUER

14. Scientific German.—May replace Gm 4 for premedical, predental, zoology, and psychology major students. Completion of Courses 13 and 14, or 3 and 14 fulfills the language generalization requirement. *Cr* 3.

MR. ROGGENBAUER

†51. 52 (151. 152). Early Modern German Literature, 1750-1850.—Reading of plays, novels, short stories by Lessing, Goethe, Schiller, Kleist, Heine, and other authors representative of the period. Informal lectures on the current literary movements. *Cr* 3. MR. MILES

‡53. 54 (153. 154). Late Modern German Literature, 1850 to the Present.—Reading of plays, novels, and short stories by Hebbel, Hauptmann, Storm, Meyer, Keller, Mann, Hesse, and other authors representative of the recent period. Informal lectures on current literary movements. *Cr* 3. MR. REID

57; 58 (157; 158). German Civilization.—A study of German culture so designed as to increase the skills of aural comprehension, oral and written expression through readings, discussions, lectures, written and oral reports, and laboratory practice. Prerequisite, German 9. 10 or the equivalent. *Cr* 3. MR. REID

299. Graduate Thesis.—*Cr* 6.

RUSSIAN

1-2. Elementary Russian.—Emphasis on development of listening comprehension, speaking, reading and writing skills. Laboratory practice. *Cr* 4.

MRS. RITTER

3; 4. Intermediate Russian.—Continuation of 1-2. Laboratory practice. This course fulfills the language generalization requirement. *Cr* 3. MRS. RITTER

9. 10. Third Year Russian.—Further emphasis on the acquisition of linguistic skills, with selected readings. *Cr* 3. MRS. RITTER

SPANISH

1-2. Elementary Spanish.—Emphasis on development of listening comprehension, speaking, reading and writing skills. Laboratory practice. For students who have had no Spanish or whose previous training does not qualify them for a more advanced course. *Cr* 4. THE STAFF

3; 4. Intermediate Spanish.—Continuation of 1-2. Laboratory practice. For students who have completed Spanish 1-2 or who are otherwise qualified to continue at this level. Completion of this course fulfills the language generalization requirement. *Cr* 3. THE STAFF

†*51 (151). Nineteenth Century Spanish Literature.*—Chief works of Romanticism, Regionalism and the Generation of 1898 in relation to the cultural and political backgrounds. *Cr* 3. MR. GROSS

†*52 (152). Contemporary Spanish Literature.*—A study of Tremendismo and other currently significant literary trends. *Cr* 3. MR. GROSS

‡*53. 54 (153. 154). Modern Latin-American Literature.*—The literary scene since Independence: the Romantic upheavel, Gaucho literature, early modern novels. Modernism and subsequent poetry, later novels and short stories; recent literary works with attention to contemporary cultural life and thought. *Cr* 3. MR. GROSS

†*55 (155). Galdos and Benavente.*—The lives, times, and works of two of Spain's greatest and most representative authors: Benito Pérez Galdos, novelist, and Jacinto Benavente, playright. Given upon sufficient demand. Cr 3. MR. GROSS

57; 58. Hispanic Civilization.—A study of Hispanic culture so designed as to increase the skills of aural comprehension, oral and written expression through readings, discussions, lectures, written and oral reports, and laboratory practice. Prerequisite, Sp 3; 4 or the equivalent. *Cr* 3. MR. GROSS

‡*59 (159). The Renaissance and Golden Age.*—Reading of representative masterpieces of the period when Spain emerged from the Middle Ages, reached cultural and political unity and built its colonial empire. *Cr* 3. MR. GROSS

‡*60 (160). Cervantes.*—A study of the life and literary works of Cervantes with special emphasis upon the reading and interpretation of *Don Quijote*. Lectures on the political, social and literary backgrounds of the period. *Cr* 3. MR. GROSS

299. Graduate Thesis.—*Cr* 6.

LATIN

1-2. Elementary Latin.—Fundamentals of the Latin language. For students who have had little or no previous instruction. *Cr* 4. MR. SHERK

3; 4. Intermediate Latin.—Selected reading from masters of Latin prose. For students who have had Latin 1-2 or at least two years of high-school Latin. Completion of this course fulfills the language generalization requirement. *Cr* 3. MR. SHERK

9. 10. Readings in Latin Literature.—Designed to give a wide acquaintance with the masterpieces of Latin prose and poetry. Selections will be read from Catullus, Livy, Horace, Vergil, Tacitus, Martial. *Cr* 3. MR. SHERK

†*51; 52 (151; 152). Roman Comedy.*—One play at least will be read from Plautus and Terence. *Cr* 3. MR. SHERK

‡*53 (153). The Augustan Poets.*—A study of the lives and works of the great poets at the end of the first century before Christ in relation to the cultural and political background of Augustan Rome. *Cr* 3. MR. SHERK

‡*82 (182). Survey of Latin Literature.*—A rapid survey from the Archaic Age to Medieval Latin. Lectures, discussions, reports, and assigned readings. Cr 3. MR. SHERK

GREEK

1-2. Elementary Greek.—The fundamentals of the Greek language. For students who have had little or no previous instruction. Given upon sufficient demand. *Cr* 4. MR. SHERK

3; 4. Intermediate Greek.—Selections will be read from Xenophon and Thucydides. In the second semester one of the tragedies of Euripides will be studied. Given upon sufficient demands. *Cr* 3. MR. SHERK

9; 10. Greek Tragedy.—One play at least will be read from Sophocles and Aeschylus. Given upon sufficient demand. *Cr* 3. MR. SHERK

CLASSICS

1. 2. Greek and Latin Literature in English Translation.—The first semester is devoted to Greek literature, the second to Latin. No knowledge of either language is necessary. This course satisfies the Humanities requirements of the College of Arts and Sciences. *Cr* 3. MR. SHERK

GEOLOGY AND GEOGRAPHY

PROFESSOR TREFETHEN; ASSOCIATE PROFESSOR OSBERG; ASSISTANT PROFESSORS BORNS AND HOWD; MR. HAGAR; MRS. TREFETHEN

Geology is the branch of Natural Science which deals with rocks and minerals, their arrangement, occurrence, properties, and surface expression as modified by various agents, and with the history of the earth and its organic inhabitants. Geography is the science of surface differentiation. It is primarily concerned with the description and explanation of the natural and cultural features of the earth's surface. Geography is thus intermediate between the natural and social sciences.

A major course in geology is offered for students in the College of Arts and Sciences. The geology curriculum is designed to give the student a thorough understanding of the fundamentals of the science. Specialization within a particular branch of geology requires graduate work. In addition to the prescribed courses in geology, a geology major should include basic courses in both the physical and biological sciences, mathematics, surveying, and drafting, and must maintain at least an average grade of "C" in geology and ancillary courses above the sophomore level. Field excursions are at the student's expense.

Courses in Geology and Geography

1. Principles of Geology, Physical.—A study of earth materials and processes, vulcanism, mountain building, the work of seas, streams, ice and winds. Includes elementary map interpretation and identification of a few minerals and rocks. *Rec* 3, *Lab* 3, *field trip, Cr* 4.

2. Principles of Geology, Historical.—The history of the earth and its inhabitants with special reference to North America. Emphasis on principles and methods. Laboratory includes study of fossils and maps. Prerequisite, Gy 1. *Rec* 3, *Lab* 3, *one one-day field trip, Cr* 4.

3. Descriptive Geology, Physical.—A survey course presenting the landscape as a result of the geological agents. A summary view of the work of streams, glaciers, the seas, winds, and organisms. *Rec* 3, *Cr* 3.

4. Descriptive Geology, Historical.—A survey of earth history. Traces

the coincident developments of life and environments up to the advent of man. *Rec* 3, *Cr* 3.

5. Common Rocks and Minerals.—A study of the identification, occurrence, and origin of common minerals and rocks. Prerequisite, Gy 1 or 16. *Rec* 2, *Lab once a week, Cr* 3.

6. Advanced General Geology.—An analysis of the geologic work of wind, ice, and water, including the interpretation of land forms. Prerequisite, Gy 1 or 17. *Rec* 2, *Lab* 3, *Cr* 3.

16. Geology for Engineers.—A study of geologic materials, including origin, identification, modes of occurrence, distribution and engineering characteristics. For students in technology and agriculture. *Rec* 2, *Lab* 3 for nine weeks, *Cr* 2½.

17. Geology for Engineers.—Study of the geological processes as related to civil engineering practice, foundations, excavation, surface and ground water problems, stream control, shore defense, etc. Includes reading and interpretation of geologic maps. Prerequisite, Gy 16. *Rec* 2, *Lab* 3 for nine weeks, *Cr* 2½.

21. Introduction to Regional Geography.—An elementary course in college geography covering the natural and cultural aspects of selected major geographic regions of the world. *Rec* 3, *Cr* 3.

22. Economic Geography.—The geographical aspects of world resources, production, and trade. *Rec* 3, *Cr* 3.

24. Political Geography.—See Gt 24 under History and Government.

51. Structural Geology.—A consideration and analysis of the principal geologic structures, their recognition, delineation, and methods of study. Problems and map interpretation. Prerequisite, Gy 6 or 17. *Rec* 3, *Cr* 3.

52. Economic Geology.—The formation, structure, and classification of economic mineral deposits. An analysis of a few of the more important mineral districts. Prerequisite, Gy 6 or 16. *Rec* 3, *Cr* 3.

53. 54. Seminar.—Written and oral reports with discussions on assigned topics in any special branch of Geology. *Rec* 2, *Cr* 2.

55. 56 (155. 156). Geologic Problems.—The study of and report upon some original investigation. *Time to be arranged. Cr* 2.

58 (158). Field Geology.—A consideration of the methods of field geology and an analysis of some of the problems encountered in the field. Use of the plane-table, Brunton compass, and other instruments. Prerequisite, Ce 5 (Surveying) and Gy 6. *Rec* 2, *Lab* 3, one week is spent in the field, *Cr* 3.

59 (159). Mineralogy.—A study of the physical and chemical properties of minerals, including an introduction of crystallography. In the laboratory the student studies crystal models and identifies minerals. Prerequisite, Gy 6 or 16, or Ch 31. *Rec* 2, *Lab* 6, *Cr* 4.

60. Mineralogy.—A continuation of Gy 59 with emphasis on economic minerals. In the laboratory the student studies crystals and identifies minerals. Prerequisite, Gy 59. *Rec* 2, *Lab* 3, *Cr* 3.

61. Optical Mineralogy.—Elementary theory of the polarizing microscope and the optical properties of crystalline substances. Use of the polarizing microscope in the determination of non-opaque minerals. Prerequisite, Gy 59. *Rec* 2, *Lab* 6, *Cr* 4.

62. Petrography.—Classification of igneous, sedimentary and metamorphic rocks. Interpretation of textural and chemical relationships between minerals in rocks. Petrographic calculations. Application of micrometric analysis and uni-

versal stage techniques in the solution of petrographic problems. Prerequisite, Gy 61 and Ms 12. *Rec* 2, *Lab* 6. *Cr* 4.

65 (165). Ore Microscopy.—Use of petrographic and metallographic microscope to identify ore minerals by physical properties and chemical reactions. Preparation of polished sections and interpretation of ore textures included. Prerequisite, Gy 59 and Gy 61. *Rec* 2, *Lab* 3, *Cr* 3.

70. Glacial Geology.—A study of the work of glaciers, with special reference to the pleistocene continental ice sheets. Prerequisite, Gy 5 or 17. *Rec* 2, *Lab* 3, *Cr* 3.

71. Photogeology.—A study of the characteristics of aerial photographs, geological and geomorphic interpretation; construction of topographic, planimetric, and geologic maps from aerial photographs; application of air photos in field mapping. Prerequisite, Gy 6 and Gy 51. *Rec* 2, *Lab* 4, *Cr* 3.

73. Paleontology.—A study of selected common and geologically significant invertebrate fossils. Prerequisite, Gy 2. *Rec* 2, *Lab* 6, *Cr* 4.

82 (182). Advanced Engineering Geology.—A study of selected geological topics and problems related to civil engineering practice. Prerequisite, Gy 17. *Rec* 2, *Cr* 2.

†250. Advanced Structural Geology.—Analysis and interpretation of geologic structures illustrated by studies of selected regions. Prerequisite, Gy 51. *Rec* 2, *Lab* 3, *Cr* 3.

263. Topics in Petrology.—A study of the physico-chemical basis of mineral associations and the important processes of minerogenesis. Course content may vary from year to year. Prerequisite, Gy 62 and Ms 28. *Rec* 3, *Cr* 3.

†264. Sedimentology.—A study of processes and results of sedimentation, field and laboratory investigation of sediments, their structures and properties. *Rec* 2, *Lab* 3, *Cr* 3. Not offered in 1961-62.

266. Ore Forming Fluids.—Theoretical, experimental, and field investigation of ore deposits, followed by a study of the interaction of hydrothermal solutions and host rocks. Detailed analysis of several major mining districts. Prerequisite, consent of instructor. *Rec* 3, *Cr* 3.

†272. Geomorphology.—A study of the origin, development, and modifications of the earth's surficial features with field and laboratory analyses. *Rec* 2, *Lab* 3, *Cr* 3. Not offered in 1961-62.

283. Geological Exploration.—A study of modern geological exploration, including the application of geophysical and geochemical techniques. Field and laboratory studies. *Rec* 2, *Lab* 3, *Cr* 3.

299. Graduate Thesis.

HISTORY AND GOVERNMENT

PROFESSORS DOW, YORK, STEWART, JEFFREY, AND TRAFFORD; ASSOCIATE PROFESSORS NOLDE, BILLIAS*, MAWHINNEY, AND THOMSON; ASSISTANT PROFESSORS SCHOENBERGER, BASS, CLARK, HAKOLA, AND DECKER; DR. LARSEN, MR. SULLIVAN, MR. WHEALEY; MR. DEARBORN; MISS CROWE, MR. SHIRLEY, AND MR. ZIGLAR

Students may major in the following fields: (1) Government, (2) History, (3) History and Government, (4) Public Management.

Specific Requirements for Majors:

1. Government: Gt 1; 2; Hy 3. 4, 5; 6; Gt 83; 84 or 89. 90, and at least 18 hours in other government courses approved by adviser.
2. History: Gt 1; 2; Hy 3. 4, 5; 6, and at least 24 hours of history courses approved by adviser.
3. History and Government: Gt 1; 2; Hy 3. 4, 5; 6, and at least 24 hours of history and government courses, approved by adviser, with not less than 10 hours in each field.
4. Foreign Service: See information on page 126.
5. Public Management: See specimen curriculum on page 130.

Major students are required to pass a senior oral comprehensive examination as a departmental requirement for graduation.

The department offers M.A. degrees in the various fields listed for majors. Students will be admitted as candidates upon presentation of credentials indicating excellent undergraduate records with sufficient subject matter background.

A specimen curriculum for the M.A. in Public Management for graduates in Civil Engineering is found in the catalog section on Civil Engineering.

The department also offers a program leading to the Ph.D. degree in American History. The requirements are described in the Bulletin of the Graduate Division.

Courses in Government and Public Management

In Government

1; 2. American Government.—An introduction to government, with emphasis on American principles and practices. Not open to freshmen. *Cr* 3.

MR. DOW, *Chairman*

1a. American Government.—A one semester survey of the principles, politics, organization, and techniques of national government in the United States. For students in the Colleges of Agriculture and Technology only. *Cr* 3.

MR. SCHOENBERGER

7. 8. Maine Government.—Practical operation and current problems of state and local government in Maine. One lecture each week by an official, followed by a discussion period. Open to all sutdents. *Cr* 1.

MR. DOW AND GUEST LECTURERS

7a. 8a. Maine Government.—Designed for prospective teachers and others who wish more material on Maine government than is given in Gt 7. 8. No person may receive credit for both Gt 7 and 7a nor for both Gt 8 and 8a. *Cr* 2.

MR. DOW

* On leave of absence, 1961-62.

24. Political Geography.—The geographic and demographic factors that condition national and international politics. Emphasis will be placed on the relationships of the major nations to their areas and to the world, on examination of their strategic necessities, and on historical reviews of their resultant foreign policies. Listed also under Geology. Prerequisite, sophomore standing. *Cr* 3.

MR. SCHOENBERGER

33. Municipal Government.—The process of government in modern cities; types of city government; metropolitan areas; home rule; nominations and elections; relations with the Federal and state governments. Prerequisite, Gt 2 or My 1;2. *Cr* 3. MR. DOW

34. Municipal Administration.—Special emphasis on the city plan; financial control and administration; line functions—fire, police, and recreation; civil service; and citizen interest. Prerequisite, Gt 33. *Cr* 3. MR. DOW

35. Democratic Governments of Europe.—The governments of Great Britain, France, and West Germany will be discussed as basic examples of European patterns of democratic government. Special attention will be given to political parties, electoral systems, and historical backgrounds. Prerequisite, Gt 1; 2. *Cr* 3. MR. CLARK

36. The Communist Pattern of Government.—The governmental systems of the U.S.S.R. and of selected satellite states will be analyzed, with special attention given to the relationship between party and state, economy and state, and social patterns and state. Prerequisite, Gt 1; 2. *Cr* 3. MR. CLARK

40. Community Planning.—The need and nature of community planning; legislative basis and administrative organization; zoning, master plans, land use, fiscal abilities, and services; practical formulation of city plans. Prerequisite, Gt 2, or 39. *Cr* 2. MR. DEARBORN

‡41 (141). Police and Fire Administration.—Organization, powers, and duties of the police and fire departments, with special emphasis on the problems of the administrative head and his relations with other agencies of government. *Cr* 2. MR. DOW

‡42 (142). Public Works Administration.—The management of highway departments, water works, and the like. Administrative problems of organization, personnel, finance, and relations with other governmental agencies. *Cr* 2.

MR. DOW

‡44 (144). Public Relations.—The problems of communication between governmental units and the public, with emphasis at the municipal level. *Cr* 2.

MR. DOW

‡46 (146). Municipal Law.—The law relating to liability, powers, and duties of municipal corporations. Special attention is given to Maine law. *Cr* 3.

MR. THOMSON

51; 52 (151; 152). Public Administration.—First semester: nature of administration, decision making, communication, administration and politics, organizational theory and practice, personnel and finance administration. Second semester: administrative law and administrative responsibility. Prerequisite, Gt 1; 2. *Cr* 3. MR. MAWHINNEY

54 (154). The Legislative Process.—The methodology of law-making, mostly federal level, including influence and control factors. The interaction of legislators, parties, constituents, interest groups, and executive and judicial departments upon the final legislative product. Prerequisite, Gt 1. *Cr* 3.

MR. MAWHINNEY

55. Congressional Internship.—A first-hand study of the national legislative process and the function of the legislator. The student will be assigned to the staff of a Congressman or Senator in Washington, D. C., from about February 1 to the end of July. Readings and reports are required in addition to the staff work. Open to Juniors on a competitive basis. Rules announced publicly each fall semester. *Cr* 6. MR. MAWHINNEY

56 (156). Political Parties.—Development and present organization and operation of the American party system. Nature and function of major and minor parties, sectionalism, nominating systems, presidential and congressional elections, the electorate, finance, interest groups. Prerequisite, Gt 1. *Cr* 3. MR. CLARK

58 (158). Public Opinion.—Nature, analysis and measurement of public opinion and its effects on political processes. The roles of the press, radio, movies, social clubs, pollsters, national and international informational agencies in the formation of public opinion. Prerequisite, Gt 1. *Cr* 3. MR. CLARK

‡59 (159). Problems of American Government.—Analysis of basic problems of U. S. national government. Case studies in such areas as federalism, civil rights, congressional-presidential relations, judicial functions, taxation, and foreign affairs. Prerequisite, Gt 1; 2. *Cr* 2. MR. MAWHINNEY

‡60 (160). Problems of State Government.—A consideration of the theory, organization and functions of the American states and their present-day problems. Prerequisite, Gt 1; 2. *Cr* 2. MR. MAWHINNEY

73, 74 (173, 174). International Relations.—In the fall semester there is an analysis of the theory and practice of international politics. In the spring semester this conceptual framework is applied to recent American foreign policy. Prerequisite, six hours of history or government. *Cr* 3. MR. SCHOENBERGER

†81; 82 (181; 182). Introduction to Law.—The focus of the course is on the nature and functions of law in the modern world; on law as part of the study of society. Not a technical course in law. Prerequisite, Junior or Senior standing. *Cr* 3. MR. THOMSON

83; 84 (183; 184). Constitutional Law.—The economic, political and social development of the constitution through Supreme Court decisions. Case study of decisions affecting constitutional relationships in federal system; commerce, taxation, war powers; Bill of Rights and Fourteenth Amendment. Court procedures. Prerequisite, Gt 1; 2. *Cr* 3. MR. MAWHINNEY

‡87 (187). International Law.—Historical treatment and analysis. Includes development of international law, recognition of states, nationality, law of treaties, responsibilities of states, and legal regulation of the use of force. *Cr* 3. MR. SCHOENBERGER

‡88 (188). International Organization.—The forms, functions and development of international organization. Conferences, international administration and adjudication, international federation, world government. United Nations and specialized agencies—organization and administrative procedures. *Cr* 3. MR. SCHOENBERGER

†89, 90 (189, 190). Political and Social Thought.—A survey of political theories from ancient Greece to the French revolution. The basic approach is historical, and seeks to relate theories of politics to the environments in which they developed. Prerequisite, junior or senior standing. *Cr* 3. MR. THOMSON

‡91 (191). American Political Ideas.—The development of political ideas in America from 1620 to the present. *Cr* 3. MR. THOMSON

‡*92 (192). Modern Political and Social Thought.*—From the French revolution to the present. Liberalism, utilitarianism, socialism, fascism, communism. *Cr* 3. MR. THOMSON

97. 98 (197. 198). Seminar.—Projects for qualified students. Cr 2 or 3.

In Public Management

93. Internship.—Selected students are assigned to towns and cities, usually during the summer. Each municipal intern works under the direction of a city or town manager, one-half of his time being spent on a major project, the remainder in learning about the varied tasks of a manager. Required for the B.A. degree in Public Management. When approved, this course may be repeated for credit. *Cr* 3. MR. DOW

Courses in History

1. 2. Classical and Medieval Civilization.—The social and cultural development of the ancient Greeks and Romans is treated in the first semester. The second semester deals with the social and cultural development of Western Europe in the middle ages. Particular attention is given to the great achievements in literature, philosophy, religion, and art. *Cr* 3. MR. SULLIVAN

3. 4. United States History.—From 1789 to recent years. The development of democracy, growth of the West, slavery and sectionalism, the Civil War, reconstruction, the making of modern America, industrialization, imperialism, and other topics. *Cr* 3. MR. YORK, Chairman

5; 6. History of Western Europe.—Europe and its civilization from the decline of the Roman empire to the present. The emphasis is upon the development of those political, economic, and social institutions which help to explain our present-day civilization. *Cr* 3. MISS STEWART, Chairman

9. 10. History of Maine.—A survey of Maine's social, economic, and political life, from primitive times to the present. After a brief study of Indian life preceding white settlement, the periods of colonial, provincial, and state history are covered. *Cr* 2. MR. YORK

**15. 16. Hispanic America.*—The Spanish and Portuguese colonial empires in America to their achievement of independence, and the national period of Hispanic America. Prerequisite, Hy 3. 4 or 5; 6. *Cr* 3. MR. JEFFREY

**17. 18. History of England.*—A general survey of the political, social, economic, constitutional and cultural aspects of England. Emphasis will be placed on such topics as trial by jury, the evolution of parliament, the Protestant revolt, the commercial and industrial revolutions, and the growth of democracy. Prerequisite, six hours of history. *Cr* 3. MR. TRAFFORD

**19. 20. Economic History of the United States.*—From the colonial period to the present with special attention to the problems raised by the economic evolution of the country. *Cr* 3. MR. HAKOLA

21. 22. Current World Problems.—A survey of contemporary national and international affairs based on area studies of the United States, the Soviet Union, Europe, the Middle East, the Far East, and Southeast Asia. Open to all students. *Cr* 2. MR. SCHOENBERGER

23. 24. History of Science.—Development of the physical and biological

* Graduate credit with the approval of the student's adviser.

sciences from pre-Greek civilization to the twentieth century. Consideration will be given to the transmission of scientific thought from one civilization to another, and to the reciprocal relations between scientific thought and intellectual and social culture. Not open to freshmen. *Cr* 3.

†***51 (151). Era of the French Revolution.***—The historical development of Europe from the eve of the French revolution to the congress of Vienna, with special emphasis on the causes and the political, social, and economic aspects of the revolution, the career of Napoleon and the spread of revolutionary principles in Europe. Prerequisite, Hy 5; 6. *Cr* 3. MR. WHEALEY

†***52 (152). Europe in the 19th Century.***—Europe from the congress of Vienna through the Franco-Prussian war. Consideration will be given such topics as liberalism and nationalism, reaction and revolutions, the unification of Italy and Germany, and contemporary cultural and intellectual movements. Prerequisite, Hy 5; 6. *Cr* 3. MR. WHEALEY

‡***53. 54 (153. 154). Europe Since 1870.***—Expanding industrialism, imperialism, and their effect upon world politics; the background and causes of World War I; the Paris peace settlement and its resultant problems; the rise and character of communism, fascism, and nazism; and the background of World War II and post World War II problems. Prerequisite, Hy 5; 6. *Cr* 3. MR. TRAFFORD

55. 56 (155. 156). History of Russia.—Russian history from earliest times to the present. The first semester will cover the rise of Russia to the 19th century; the second semester will treat of 19th century Russia, the collapse of the Tsardom, and the Soviet Union. Prerequisite, Hy 5; 6 or permission of instructor. *Cr* 3. MR. NOLDE

57. 58 (157. 158). American Colonial History.—The founding and the political, social, and economic development of the colonies. English colonial policy. The development of the colonies in the eighteenth century; the remote and immediate causes of the revolution. Juniors and Seniors. *Cr* 2. MR. LARSEN

59. 60 (159. 160). Twentieth Century America.—The Spanish-American War, the progressive movement, the Wilson reforms, World War I, the depression of 1929, the New Deal, World War II, and subsequent events. Prerequisite, Hy 3. 4. *Cr* 2. MR. BASS

62 (162). Maritime History of the United States.—Ships and trade from colonial days to the present, including famous ships and ship builders, the evolution from wood to iron and steel ships, the effect of the civil war and world wars on our merchant marine. Not offered in 1961-62. Permission of the instructor required. *Cr* 2. MR. BILLIAS

†***63. 64 (163. 164). Canadian History.***—A survey of Canadian history from early French settlement to the present, with emphasis on political and economic evolution, and Canada's relations with the U. S. Prerequisite, Hy 3. 4 or 5; 6. *Cr* 3. MISS STEWART

65 (165). Argentina, Brazil, and Chile.—A history of the major countries of South America, from their independence in 1823 to the present. Prerequisite, Hy 16 or permission. *Cr* 3. MR. JEFFREY

66 (166). Mexico.—A history of Mexico, from early times to the present. Prerequisite, Hy 15. 16 or permission. *Cr* 3. MR. JEFFREY

†***67. 68 (167. 168). American Diplomatic History.***—American diplomatic history from the revolution to the present with emphasis on the formation and application of America's major foreign policies. Prerequisite, Hy 3. 4. *Cr* 3. MR. BASS

69. 70 (169. 170). Social History of the United States.—American social and cultural development as illustrated in its thought, literature, fine arts, religion, and humanitarian reforms. Prerequisite, Hy 3. 4. *Cr* 3. MR. YORK

71. 72 (171. 172). History of the West.—This course concerns the story of the frontier region. It begins with the coming of the white man and ends with the disappearance of the frontier about 1900. Prerequisite, Hy 3. 4. *Cr* 2. MR. DECKER

73. 74 (173. 174). Economic History of Europe.—The economic history of western Europe in the medieval and modern periods. Emphasis on such topics as agriculture, feudalism, the rise of towns and guilds, mercantilism, capitalism, and industrialism. *Cr* 3. MR. HAKOLA

‡75. 76 (175. 176). The Renaissance and Reformation.—The political and economic forces and the social and cultural achievements of Europe in the period 1300-1650. The first semester will deal with the Renaissance. The second semester will deal with the Protestant revolt, the Catholic reform, and the wars of religion. *Cr* 2.

77. 78 (177. 178). The British Commonwealth.—A survey of the modern British Commonwealth, considering the history, the contemporary position and problems of Canada, the West Indies, and British Africa in the first semester, and of the Commonwealth countries in Asia and the Pacific in the second. Prerequisite, Hy 5; 6 or 17. 18. *Cr* 3. MISS STEWART

†79. 80 (179. 180). Ancient History.—Political, social, and economic history of the civilizations of the ancient Mediterranean world. Egypt, the Near East, and Greece will be covered in the first semester; and Rome, in the second semester. *Cr* 2 or 3. MR. SULLIVAN

‡81; 82 (181; 182). Constitutional History of the United States.—A study of the constitutional institutions in the United States with only incidental treatment of political and economic events except where they directly affect the background or growth of constitutionalism in the United States. Prerequisite, Hy 3. 4. *Cr* 3. MR. BASS

83. 84 (183. 184). History of China.—The fall semester will include the history and culture of the Chinese people from earliest times to the nineteenth century. The spring semester will be concerned with the "modernization" of China: the coming of the West, the impact of Western ideas, and the resulting revolutionary movement. Prerequisite, 6 hours of history. *Cr* 3. MR. NOLDE

85 (185). Latin America and the United States.—United States participation in Latin American affairs from the recognition of independence and the Monroe Doctrine to the good neighbor policy and the present day. Prerequisite, six hours of history. *Cr* 2. MR. JEFFREY

86 (186). Problems of Latin-America.—Recent problems facing Latin American nations in relation to the world and in their internal development. Prerequisite, six hours of history. *Cr* 2. MR. JEFFREY

‡87. 88 (187. 188). The Middle Ages.—Europe from late antiquity to the Renaissance. Emphasis on such topics as the fall of Rome, feudalism, medieval church and state, the Renaissance problem, impact of peripheral areas on Western Europe. Prerequisite, Hy 5 or instructor's consent. *Cr* 3.

89 (189). History of Modern Japan.—The course will be primarily concerned with the history of Japan during the past century. The major focus will be the coming of the West, the impact of Western ideas upon traditional

Japanese culture, and the rise and fall of the Japanese empire. Prerequisite, 6 hours of history. *Cr* 3. MR. NOLDE

90 (190). Problems of Southeast Asia.—A survey of countries recently emerged from colonialism, such as Indonesia and Malaya. Prerequisite, same as for Hy 89. *Cr* 3. MR. NOLDE

91, 92 (191, 192). The Middle East.—A history of the middle east in modern times, with special emphasis on the impact of the west in terms of political, economic, and cultural change. Prerequisite, six hours of history. *Cr* 2.

†93 (193). Revolution and Confederation.—The causes of the American Revolution, the war with special attention to the "internal revolution," and the postwar period to 1789. Prerequisite, Hy 3, 4 or Hy 57, 58. *Cr* 3. MR. LARSEN

†94 (194). Civil War and Reconstruction.—The political, economic, social, and diplomatic history of the civil war and reconstruction period. Prerequisite, Hy 3. *Cr* 2 or 3. MR. DECKER

†95 (195). Modern England.—England since 1815, with emphasis on the gradual democratization of her government, the continuing industrial revolution, social and cultural change, the merging of Empire into Commonwealth, and her survival through two world wars. Prerequisite, Hy 5; 6 or Hy 17, 18. *Cr* 3. MR. TRAFFORD

97 (197). Historical Methods and Materials.—A study of bibliographical tools, resource potentials, and research and writing techniques, with special attention to principles of document analysis and the use of quantitative data. The materials of the course are applied to specific student research problems and topics. *Cr Ar.* MR. DECKER

98 (198). History of Historical Writing.—A survey of the principal schools of historical writing and of their products, with detailed student analysis of the research and writing techniques of selected major historians. *Cr Ar.* MR. DECKER

Graduate Courses

Gt 202. Topics in Public Administration.—*Cr, Ar.*
Gt 203. Topics in International Relations.—*Cr, Ar.*
P.Mgt. 203. Internship.—*Cr* 3.
Hy 201. Topics in Colonial History.—*Cr, Ar.*
Hy 202. Topics in U. S. History from the Revolution to 1877.—*Cr, Ar.*
Hy 203. Topics in U. S. History since 1877.—*Cr, Ar.*
Hy 205. Topics in American Social and Intellectual History.—*Cr, Ar.*
Hy 206. Topics in American Foreign Relations.—*Cr, Ar.*
Hy 207. Topics in Latin American History.—*Cr, Ar.*
Hy 208. Topics in Canadian History.—*Cr, Ar.*
Hy 211. Topics in 19th Century European History.—*Cr, Ar.*
Hy 212. Topics in 20th Century European History.—*Cr, Ar.*
Hy 250. Independent Readings.—*Cr, Ar.*
Hy 260. Supervised College Teaching.—*Cr, Ar.* MR. YORK, Chairman
Hy 297. Philosophy of History.—*Cr, Ar.*
299. Graduate Thesis in Government, History, or Public Management.—*Cr, Ar.*

HONORS PROGRAM

PROFESSORS LEVINSON (Chairman), MILES (Secretary), FLYNN, GLANVILLE, HARTGEN, REYNOLDS, SHERK, AND WEILER; ASSOCIATE PROFESSORS SWINFORD, AND THOMSON

Freshmen of marked academic ability, enrolled in the College of Arts and Sciences, are invited to apply, through their advisers, for admission to the sequence of Honors Courses described below. The work of the Freshman and Sophomore years provides the stimulus and the guidance which should enable a superior student to begin building for himself a perspective view of the liberal arts and sciences and to lay a foundation for the more specialized work which is to come. The Honors Program reaches its climax in a thesis, written during the Senior year, and treating some limited problem falling in the student's major field. In exceptional cases, students may be admitted at any stage of the Honors Program up to the opening of the Junior year.

45. Freshman Honors Colloquium.—Discussions and demonstrations displaying the range and nature of the Liberal Arts and Sciences. *Cr* 3.

46. Pre-Sophomore Honors Readings.—Optional for those who have taken 45. An individually arranged program of preliminary readings independently pursued in the summer. *Cr* 1.

47. 48. Sophomore Honors.—Oral and written reports, under tutorial direction, upon an individually planned sequence of books representative of the various fields of liberal education. Hr 47. 48 fulfills the Sophomore Humanities requirement for those students registered for the Honors Program. *Cr* 3.

51; 52. Junior Honors.—A tutorially conducted survey of the student's major field, issuing in the choice of an approved thesis topic. *Cr* 3.

53-54. Senior Honors.—The planning and completion of an Honors Thesis. *Cr* 3.

JOURNALISM

ASSOCIATE PROFESSOR HAMILTON

The Department of Journalism has two purposes: (1) to provide a major program leading to the Bachelor of Arts degree in Journalism with a combination of preprofessional training and a liberal education for those interested in newspaper, public relations or allied journalism careers; and (2) to provide courses for any students in the University who have an interest in writing as an aid to their other interests or in the study of modern mass communications as part of society.

Prospective majors in their first two years will fulfill the basic requirements of the College of Arts and Sciences. Freshmen and sophomores may wish to make choices to fulfill some of these on the basis of options listed below. My 1; 2 is recommended for freshmen; Eh 7 or 8 as a sophomore elective.

Majors in their junior and senior years are required to take Jr 31. 32; 93; 94; and 95; 96, to provide their preprofessional background. Laboratory facilities include a newsroom with typewriters, a copydesk, photographic equipment and a darkroom, and a journalism library. *The Maine Campus*, a student-operated weekly newspaper, is a practical laboratory. Students also have access to the University printing plant and the campus radio station, and are served daily with

Associated Press news. Part-time work is available for a limited number on Maine newspapers and in the University publicity office. Some summer work is available.

Majors will round out their programs in accord with one of the five options below, depending on the student's interest and aptitudes. With the requirements as listed for each, the student will still have some elective time for courses in other areas properly included in a liberal education.

Public Affairs Option. For the student preparing for news work in mass communications in the United States, with emphasis on American public affairs. Required courses: Gt 1; 2; Be 1; 2; Hy 3. 4; plus at least 24 hours of advanced courses in one or two of these social sciences approved by the adviser.

Foreign Affairs Option. For the student preparing for work abroad in mass communications or public relations or related activities. The student must complete courses in French, German or Spanish at least up to the 57. 58 (or fourth year) level. Other required courses: Hy 5; 6; Gt 1; 2; Gt 35; 36; Be 1; 2; plus at least 24 hours in advanced courses in these subjects approved by the adviser except that part of this requirement may be met with two years in a second foreign language (including Russian). Graduate work in Languages and foreign studies is recommended.

Economics Affairs Option. For the student with a special interest in economics, preparing for newspaper work, public relations, industrial editing and related activities. Required courses: Ms 1, 3 and 12 or 5; 6; Be 1; 2; Hy 19. 20; and at least 24 hours of advanced economics and related courses approved by the adviser.

Linguistics, Literature and Humanities Option. For the student interested in this broader background as preparation for a writing career. Required courses: Eh 3. 4 or 15. 16; 7 or 8; four hours chosen from Eh 21, 49, 67 and 68; plus at least 12 additional hours in advanced literature and composition courses. The student will be expected to use some of the greater elective time in this option for courses in the humanities (such as philosophy) and the fine arts.

Science Writing Option. Designed to combine liberal arts and a strong science background with journalism training, for those interested in this new and more specialized field. Prospective majors should elect Ms 1, 3 and 12 for their freshman science requirement, and German for the language requirement. The student should also, by the beginning of his sophomore year, choose one of the sciences as a field of major interest. The student will be required to complete 32 to 40 hours in this science and the necessary requirements or prerequisites in related sciences. Graduate work in sciences and communications is recommended.

22. Survey of Journalism.—A beginner's course in the structure and operation of modern news media. Includes visits to a modern newspaper plant and a television studio. Open to all freshmen and sophomores. *Cr* 2. MR. HAMILTON

25. History of American Journalism.—A review of the newspaper's role in American history, and the development of modern mass communications. Open to all sophomores, juniors and seniors. *Cr* 2. MR. HAMILTON

26. The Newspaper and the Community.—A study of modern mass communications, their relation to society and the operation of a "free press" system in America. Open to all sophomores, juniors and seniors. *Cr* 2. MR. HAMILTON

31. 32. News Writing.—A course in writing and reporting procedures. For the student interested in communicative writing skill generally or as part of a vocational interest. Open to all juniors and seniors. *Cr* 3. MR. HAMILTON

91. Staff Training.—On-the-job training during the summer between the junior and senior years. Under the direction of a local editor. *Cr* 3.

93, 94. Advanced Journalism.—Intensified writing training; readings and discussions in the ethics and law of journalism. For seniors who have had 31, 32. *Cr* 3. MR. HAMILTON

95, 96. News Editing.—A laboratory course designed to acquaint the student with the problems of news selection, copy-editing and so on in the process of publication. *Six hours of class work a week. Cr* 3. MR. HAMILTON

97. Departmental and Feature Writing.—Given when there is sufficient demand. *Cr* 2.

98. Newspaper Make-Up.—Given when there is sufficient demand. *Cr* 2.

MATHEMATICS AND ASTRONOMY

PROFESSORS KIMBALL, LAMOREAU, AND EVES*; ASSOCIATE PROFESSORS WOOTTON, SWINFORD, AND DORFF; ASSISTANT PROFESSORS HAMM, TOOLE, DODGE, HARPER, AND ALTENBERGER; MRS. HART*, MRS. STEARNS, MRS. PERRY, MR. STEARNS, MRS. TOOLE, MR. PACKARD, MR. TREWORGY, AND MR. GOFF; MR. BERRY, MR. BYSTROM, MR. CASWELL, MR. DONOHUE, MR. HODSDON, MR. GARLAND, AND MR. GLYNN

ASTRONOMY

9. Descriptive Astronomy.—An elementary course emphasizing the principles of this natural science. Lectures are supplemented by demonstrations in the planetarium and the observatory. *Cr* 3.

11. Practical Astronomy.—The conversion of time, the determination of terrestrial latitudes, and the establishment of meridian lines. Prerequisite, Mathematics 1 and 3. Not given every year. *Rec* 2, *Lab* 2, *Cr* 3.

14. Navigation.—The compass, piloting, dead reckoning, the sailings, celestial navigation. Prerequisite, Trigonometry. Not given every year. *Cr* 3.

15; 16. General Astronomy.—A more complete treatment of the subject than is possible in Course 9. Work in the observatory receives a greater emphasis. Prerequisite, one year of college mathematics. *Cr* 3.

59; 60. Practical Astronomy.—The theory and use of the astronomical transit, zenith telescope, and equatorial; accurate determination of time and latitude. Prerequisite, Mathematics 1, 3, and 12 and Astronomy 9 or 15. Not given every year. *Cr* 3.

MATHEMATICS

Students who major in mathematics are normally required to take Courses 1, 3, 12, 15, 16, 21, 22, 23, 97, 98, and an additional three credit hours in at least three of the four following areas: algebra, analysis, geometry, and mathematical statistics. Ms 27; 28 may be substituted for Ms 15; 16. A minimum of 39 hours in mathematics is required of all majors except that certain advanced courses in other sciences may be included subject to the approval of the Department. The detailed program will depend upon the student's vocational plans.

The general requirements for the Master of Arts degree are given in the

* Leave of absence, 1961-62.

section on Graduate Study. Candidates for this degree in Mathematics are expected to have a substantial undergraduate training in this subject.

Two years of high-school algebra are prerequisite for any of the following courses, with the exception of Courses 7 and 19, for which one year is required.

Students taking Courses 1, 3, and 12 may not take Course 5; 6 for credit. Students taking Course 27; 28 may not take Course 15; 16 for credit.

1. Trigonometry.—The trigonometric functions, their properties and applications to solving triangles. *Cr* 2.

3. College Algebra.—Basic topics in algebra necessary for further work in mathematics. *Cr* 2.

5; 6. Elements of College Mathematics.—A modern introduction to college mathematics for liberal arts students and prospective teachers. *Cr* 3.

7; 8. The Structure of Arithmetic.—A development of the real number system beginning with the sub-system of natural numbers and generalizing through the systems of integers, rational numbers, and real numbers. Properties of numbers, relations, and operations. Details of numeration systems. Primarily for the elementary school teacher. Not given every year. *Cr* 3.

12. Analytic Geometry and Calculus.—Equations and graphs, differentiation and integration of polynomials, applications. Prerequisite, Trigonometry and the equivalent of Ms 3. *Cr* 4.

15; 16. Elements of Calculus.—A continuation of the analytic geometry and calculus of Ms 6. Prerequisite, Course 6 or 12. *Cr* 3.

17. Mathematical Theory of Investment.—Interest, annuities, and their applications. *Cr* 3.

19. Principles of Statistical Inference.—An introductory course including such topics as distributions, sampling variability, estimation, hypothesis testing and regression. *Cr* 3.

21. Elements of Real Number Theory.—The development of the real number system from a foundation in intuitive set theory. Designed principally for mathematics majors. *Cr* 2.

22. Elements of Set Theory.—An introduction to general set theory. Designed principally for mathematics majors. *Cr* 2.

23. Advanced Algebra.—An introduction to the theory of such topics as the real number system, determinants, matrices, and the theory of equations. Prerequisite, Course 16 or 28 or permission of the instructor. *Cr* 3.

24. Advanced Analytic Geometry.—A continuation of the geometry of Course 15 and Course 27. Prerequisite, Course 15 or 27. *Cr* 3.

27. Analytic Geometry and Calculus.—Conic sections; differentiation and integration of algebraic, trigonometric, logarithmic and exponential functions; applications. Prerequisite, Ms 12 or consent of the Department. *Cr* 4.

28. Analytic Geometry and Calculus.—Polar coordinates, geometry of three dimensions, infinite series, partial differentiation; applications. Prerequisite, Ms 27. *Cr* 4.

29. Calculus and Differential Equations.—Multiple integrals in two and three dimensions and an introduction to ordinary differential equations; applications. Prerequisite, Ms 16 or 28. *Cr* 4.

30. Probability.—The elementary concepts of probability theory. Not given every year. Prerequisite, Course 16 or 28. *Cr* 2.

31; 32. Mathematical Statistics.—Principles of inference, approached

through a study of probability and distribution theory, and emphasizing the concepts of estimation and hypothesis testing. Prerequisite, Course 16 or 28; Course 19 advised. *Cr* 3.

49. Mathematics for Teachers.—A modern approach to selected topics in mathematics with methods of presentation to secondary school students. Prerequisite, Course 16 or 28, or consent of the Department. *Cr* 3.

54 (154). Solid Analytic Geometry.—Analytic geometry in three dimensions. Not given every year. Prerequisite, Course 16 or 28. *Cr* 3.

55; 56 (155; 156). Differential Equations.—An introduction to the theory and solution of ordinary and partial differential equations. Not gvien every year. Prerequisite, Course 16 or 28. *Cr* 3.

57 (157). Engineering Mathematics (Differential Equations).—Ordinary differential equations and applications. Prerequisite, Course 28. *Cr* 3.

58 (158). Engineering Mathematics.—Partial differential equations and selected other topics. Prerequisite, Course 57. *Cr* 3.

59 (159). Vector Analysis.—The algebra and calculus of vectors with an introduction to applications in Physics and Engineering. Prerequisite, Course 16 or 28. *Cr* 3.

60 (160). Advanced Engineering Mathematics.—Selected topics such as elementary functions of a complex variable. LaPlace transformation theory, determinants and matrices. Prerequisite, Course 55 or 57. *Cr* 3.

61 (161). History of Mathematics.—The development of elementary mathematics from ancient to modern times. Not given every year. Prerequisite, Course 12 or 15. *Cr* 3.

64 (164). College Geometry.—Modern Euclidean geometry, including such topics as the nine-point circle, harmonic section, and inversion. Not given every year. *Cr* 3.

65 (165). Theory of Numbers.—Elementary properties of the integers. Prerequisite, Course 16 or 28. *Cr* 3.

67. Statistical Methods in Research.—Analysis of variance, factorials, planned comparisons, multiple comparisons, analysis of covariance, and multiple regression, viewed as tools for research in all fields. Prerequisite, Ms 19 or 31. *Rec* 2, *Lab* 2. *Cr* 3.

68. Design of Experiments.—Randomization analysis, blocking, and orthogonality; split-plot, factorial, and incomplete-block designs. Examples will be chosen from a variety of fields. Not given every year. Prerequisite, Ms 67. *Rec* 2, *Lab* 2. *Cr* 3.

69 (169). Numerical Analysis.—Numerical methods for solving problems of analysis. Not given every year. Prerequisite, Course 16 or 28. *Cr* 2.

71; 72 (171; 172). Higher Algebra.—An introduction to abstract algebra. Not given every year. Prerequisite, Course 16 or 28. *Cr* 3.

73; 74 (173; 174). Advanced Calculus.—Functions of real variables, infinite series, partial differentiation, multiple integration, line integrals, and other topics. Prerequisite, Course 16 or 28. *Cr* 3.

75; 76 (175; 176). Higher Geometry.—An introduction to various geometries, such as projective and non-Euclidean. Not given every year. Prerequisite, Course 16 or 28. *Cr* 3.

77 (177). Topology.—An introduction to topological concepts. Not given every year. Prerequisite, Course 16 or 28. *Cr* 3.

79 (179). Finite Groups.—Theory of groups, including Sylow's theorems

and Abelian groups. Prerequisite, Course 16 or 28 or consent of the Department. *Cr* 3.

91; 92 (191; 192). Differential Geometry.—Applications of calculus to the study of space curves and surfaces. Not given every year. Prerequisite, Course 16 or 28. *Cr* 3.

96 (196). Selected Topics in Mathematics.—Advanced topics in mathematics not regularly covered in other courses. The content is not fixed but can be varied to suit current needs. The course may, with permission of the Department, be taken more than once. Prerequisite, consent of the Department. *Cr* 2 or 3.

97; 98 (197; 198). Foundations of Mathematics.—Fundamental concepts and methods of mathematics; viewpoints on the foundations of mathematics. Not given every year. *Cr* 3.

‡279; 280. Functions of a Complex Variable.—Prerequisite, Course 74 or consent of the Department. *Cr* 3.

†283; 284. Functions of a Real Variable.—Prerequisite, Course 74 or consent of the Department. *Cr* 3.

COMPUTER CENTER

The University Computing Center is under the supervision of the Department of Mathematics and is located in the Gottesman Foundation Laboratory in Aubert Hall. The basic machine is an I.B.M. 1620 Digital Computer.

Arrangements for instructional purposes for faculty research and consulting use must be made through the Director, Professor R. A. Altenberger. Assistance will be given to faculty and graduate students in programming their problems.

MODERN SOCIETY

Assistant Professor McKay* (Chairman); Mrs. Herrick, Mr. Scontras

Modern Society is a general education course designed both for those students who may major in the social sciences and also for those whose chief interest is in other curricula but who need this contribution to a well-rounded education.

The course has three primary objectives: To gain a basic knowledge of the organization and processes of contemporary society, to develop a method of critical analysis, and to arouse interest in the problems of our times.

Modern Society is open only to freshmen in the College of Arts and Sciences. In the other colleges the course is open to any student who has not had a minimum of two years of social science at the college level.

1; 2. Modern Society.—The course includes such topics as group ways and control, public opinion, housing, race relations, crime, business and labor organization, problems and trends in agriculture, democracy and the American system of government, political parties and elections, international relations. *Cr* 3.

* On leave, 1961-62.

MUSIC

PROFESSOR NIVEN; ASSOCIATE PROFESSOR SLEEPER; ASSISTANT PROFESSOR GROTH; MR. JONES, MR. SHAW

Music may be chosen as a major subject or as a broad elective. The Department offers a program that will develop a cultural asset in life or lead toward music teaching and directing.

In addition to the courses in aesthetics and theory, all Music Majors are required to demonstrate by examination their ability to play piano pieces of the difficulty of (a) a two-part invention of Bach, (b) a sonata of Haydn or Mozart, (c) a composition of the nineteenth century, and (d) a composition in the contemporary idiom.

Courses in Theory and Aesthetics

1; 2. Introduction to Muisc Literature.—The development of music from the fourth century to the present day, with emphasis on the various historical movements in the other arts, together with a study of the great composers and their contrasting styles as exemplified by their most important compositions. *Cr* 2.
MR. GROTH, MR. NIVEN AND MR. SLEEPER

1a. Basic Music Literature.—Intelligent listening through presentation of the various forms and periods of musical expression. For majors in Education. *Cr* 3. MR. SLEEPER

3; 4. Fundamentals of Music I.—Notation and terminology, scales and intervals, ear-training, elementary rhythmic and melodic dictation, sight-singing. For the layman as well as the student of music. *Cr* 2. MR. GROTH

3a. Fundamentals of Music.—Notation and terminology, scales and intervals, ear-training, elementary rhythmic and melodic dictation, sight-singing. For majors in Education. *Cr* 3. MR. GROTH

5; 6. Elementary Harmony.—Four-part harmony in diatonic relationships, melody-writing, ear-training and dictation, analysis, and keyboard. Prerequisite, Mc 3; 4 or its equivalent. *Cr* 3. MR. GROTH

7 (107). Teaching Music in the Elementary School.—Music literature through direct participation in voice, piano, and simple instruments. Primarily for majors in Elementary Education. *Cr* 3. MR. NIVEN

9. Elementary Conducting.—Practice in conducting the various meters with special attention to the preparation, point, indication, and release of the beat. Elementary score-reading. *Cr* 1. MR. GROTH

28. Advanced Conducting.—Band technique and its specialized problems. Prerequisite, Mc 9. *Cr* 1. MR. SHAW

29. Advanced Conducting.—Orchestra technique and its specialized problems, score-reading, interpretation. Prerequisite, Mc 9. *Lec* 1, *Lab* 1, *Cr* 1.
MR. GROTH

30. Advanced Conducting.—Chorus technique and its specialized problems. Prerequisite, Mc 9. *Cr* 1. MR. NIVEN

†33 (133). Music in the Baroque Era, 1600-1750.—Its form and content with emphasis upon the works of Bach and Handel. Prerequisite, Mc 1; 2. *Cr* 2.
MR. SLEEPER

†34 (134). Music in the Classical Period, 1750-1800.—The changing

style in form and content as evolved by Haydn, Mozart, and early Beethoven. Prerequisite, Mc 1; 2. *Cr* 2. MR. SLEEPER

‡***35 (135). Music in the Romantic Period, 1800-1900.***—The expansion of its form and content with representative works of the period from Beethoven through Debussy. Prerequisite, Mc 1; 2. *Cr* 2. MR. GROTH

‡***36 (136). Music in the Twentieth Century.***—Its trends and tendencies as exemplified by its leading composers—the American scene in particular. Prerequisite, Mc 1; 2. *Cr* 2. MR. NIVEN

†***41 (141). Form and Analysis.***—Analysis of the structural designs or forms of musical composition from the smallest to the largest. Prerequisite, Mc 5; 6 or its equivalent. *Cr* 2. MR. SLEEPER

43; 44. Fundamentals of Music II.—Continuation of Mc 3; 4. Advanced exercises in ear-training, dictation, intervals, and chord construction. Prerequisite, Mc 3; 4. Given when there is sufficient demand. *Cr* 2. MR. SLEEPER

45; 46. Advanced Harmony.—A continuation of Mc 5; 6 in chromatic relationships. Original compositions in the smaller forms. Analysis, writing, and keyboard. Prerequisite, Mc 5; 6. *Cr* 3. MR. SLEEPER

†***52. Modal Counterpoint.***—Contrapuntal techniques as practiced by composers of the sixteenth and seventeenth centuries. Written exercises and analysis. Prerequisite, Mc 3; 4 or its equivalent. *Cr* 2. MR. SLEEPER

53; 54. Tonal Counterpoint.—Contrapuntal techniques as practiced by composers of the eighteenth and nineteenth centuries. Written exercises and analysis. Prerequisite, Mc 5; 6. *Cr* 2. MR. SLEEPER

55; 56. Canon and Fugue.—Analysis of masterpieces in these forms, with particular concentration on the canons and fugues of Bach. Composition projects in these polyphonic types. Prerequisite, Mc 45; 46 and 53; 54 or its equivalent. Given when there is sufficient demand. *Cr* 2. MR. SLEEPER

57; 58 (157; 158). Free Composition Seminar.—Analysis of nationalistic and individual trends in composition and creative problems in the smaller forms. Prerequisite, a working knowledge of harmony and counterpoint and permission of the instructor. Given when there is sufficient demand. *Cr* 2. MR. SLEEPER

‡***59; 60 (159; 160). Orchestration.***—Study of the ranges, tonal possibilities, technical limitations, and necessary transpositions for all orchestral and band instruments; scoring of short pieces in various styles for small and large orchestras and ensembles. Prerequisite, Mc 3; 4, 5; 6. *Cr* 2. MR. SLEEPER

Courses in Ensemble Performance and Direction

11. 12. Band.—Rehearsal and performance of standard Band repertoire. Instrumentation of symphonic proportions is maintained. Audition required. *Lab* 2, *Cr* 1. MR. SHAW

13. 14. Chorus.—Rehearsal and performance of representative choral repertoire with a consideration of the composers' creative aims and styles. Audition required. *Lab* 3, *Cr* 1. MR. NIVEN

15. 16. Orchestra.—The rehearsal and performance of symphonic works. Audition required. *Lab* 2, *Cr* 1. MR. GROTH

23. 24. Advanced Instrumental and Vocal Ensemble.—A course in the study and performance of chamber music. Audition required. *Lab* 2, *Cr* 1. MR. GROTH, MR. NIVEN AND MR. SLEEPER

Applied Courses

The University provides applied music instruction through an affiliation with the Northern Conservatory of Music in Bangor.

A maximum of eight hours of credit is allowed for applied music. Repetition of these courses is therefore permitted, with the requisite variation and progress in technical and literary material; but, generally, whatever number of hours is credited must be paralleled by at least an equal number of hours in music theory and aesthetics.

21. 22. Private Lessons in Instruments and Voice.—One hour lesson weekly, $60.00. *Cr* 2. One-half hour lesson weekly, $30.00. *Cr* 1.

Many students schedule one hour weekly lessons, even though working for one credit hour, in order to have the advantage of added instruction from the teacher. This is advisable if the student is able to meet the expense.

25. 26. Instrument and Voice Foundation Studies.—Tone production and technique through class instruction. Instruction is offered in voice, piano, and strings. Permission of the instructor required. Two class hours and three practice hours weekly. No additional fee charged. *Cr* 1. THE STAFF

The practice requirements are one hour daily for five days each week for one credit, and two hours daily for two credits. The semester is fifteen weeks for applied music study. Practice facilities are provided on the campus. The University provides, so far as possible, practice opportunity for students who desire to take applied courses without credit.

For the use of the University instruments and practice rooms, fees are charged as follows for a daily practice hour five days a week: Organ $15.00; all other instruments, $5.00. The fee for additional practice hours is prorated.

THE SCHOOL OF NURSING

PROFESSOR MACLEAN, Director; ASSISTANT PROFESSORS KITTRICK AND SCHOPPEE; MISS DUNHAM, MRS. WILLIAMS

The School of Nursing, a division of the College of Arts and Sciences, offers a four year program which combines liberal arts and professional nursing education. Upon satisfactory completion of the course students will receive the Bachelor of Science degree and will be eligible to take State Board Examinations for licensure as registered nurses.

The program is planned so that there are both nursing and general education courses in all four years, with the first two years spent on the college campus and the third and fourth years in the clinical situation.

The course requires eight full semesters plus four weeks in June of the first year and eight weeks between the Junior and Senior years. The course is completed in June of the fourth year.

The student in the School of Nursing is a regularly enrolled undergraduate in the University and, as such, has available all the facilities of the University for study, scholarship aid and extracurricular activities. The Eastern Maine General Hospital in Bangor and the Maine Medical Center in Portland will be used as clinical fields. Experience in public health nursing will be provided through cooperation with the Division of Public Health Nursing of the State of Maine Department of Health and Welfare. Psychiatric and rehabilitation nursing will be with cooperating agencies specializing in these fields.

Fees and Expenses.—During the first two years the expenses will be the same as those of other students with the addition of the following:

Nursing uniforms (purchased spring of first year) approximately $90.00

Board and Room Eastern Maine General Hospital (4 weeks June) 60.00

During the Junior and Senior years the student pays tuition to the University and board and room to the agency where she is housed. Charges may vary, but the total is expected to approximate the University charge for board and room. During the public health experience the student is responsible for finding her own housing in the community to which she is assigned.

The School of Nursing reserves the right to request the withdrawal of any student who fails to make a satisfactory adjustment to the field of nursing.

1. Introduction to Nursing.—A discussion of the change in health problems during this century with emphasis on the present health problems and their implication for nursing and nursing education. *Cr* 2. MISS MACLEAN

2. Introduction to Nursing.—The history of nursing; the social factors which have determined its development and the role of the profession today. *Cr* 2. MISS MACLEAN

3. Fundamentals of Nursing.—Introduction to nursing care of the patient; understanding and meeting the patient's personal needs. Guided experience in applying principles and developing evaluation, planning, manual, communication and teaching skills. Given during June, following Freshman year, at E. M. G. Hospital, Bangor. *Cr* 4.

4. Community Health.—The health and social needs of people and some of the resources available to meet them. Includes some public health administration and epidemiology. The responsibilities of the professional nurse in the community are emphasized and field trips to local agencies are included. *Cr* 2. MISS KITTRICK

5. Medical-Surgical Nursing.—Theory and guided experience in the care of Medical-Surgical patients; includes pharmacology, diet-therapy. The focus is on the patient and his family. *Cr* 14.

6. Maternal and Newborn Nursing.—A family centered approach to the care of mothers and newborn. Principles and opportunity for guided experience with a discussion of the field of maternal and newborn health. This course is planned in conjunction with the course in Child Health Nursing. *Cr* 8. MISS SCHOPPEE

7. Child Health Nursing.—The care of children, based on an understanding of the well child and offering experience in the care of the sick child. The field of Child Health is discussed. This course is planned in conjunction with the course in Maternal and Newborn Nursing. *Cr* 8. MISS DUNHAM

8. Principles of Public Health Nursing.—The role of the public health nurse and the organization and administration of public health nursing. *Cr* 2. MISS KITTRICK

9. Public Health Nursing.—Field practice in public health nursing. Selected supervised experience. *Cr* 4. MISS KITTRICK AND OTHERS

10. Psychiatric Nursing.—Provides an opportunity for guided experience in the nursing care of the mentally ill. The approach is based on the concepts of mental health and the dynamics of human behavior. Community aspects are discussed. *Cr* 6.

11. Nursing Seminar.—The present situation in nursing; the problems of

the profession and the individual practitioner and an evaluative discussion of the trends. *Cr* 2.

12. Medical-Surgical Nursing II.—Theory and guided experience in Senior Medical-Surgical Nursing; includes care of patients with orthopedic and neurosurgical problems. *Cr* 6.

13. Rehabilitation Nursing.—Emphasizes the concept of rehabilitation in all patients. Provides opportunity for guided experience in the care of patients with long term crippling conditions in a rehabilitation setting. *Cr* 3.

14. Senior Nursing.—Understanding of the principles of guiding and evaluating students learning; and of the role of the head nurse in organizing and administering the care of patients in a hospital unit; theory and guided experience provided. *Cr* 6.

PHILOSOPHY

PROFESSORS LEVINSON AND VIRTUE

Philosophy is man's attempt at a total understanding of himself and his world. Gathering the accumulated light of human experience on all levels—historical, scientific, religious, moral, artistic—it seeks to discover the most general truths and principles, and to organize them into a pattern of enlightened and harmonious living.

The department offers three introductory courses: Pl 1. 2, Philosophy and Modern Life, and two other beginning courses of a more specialized nature, Pl 35, Ethics, and Pl 36, Logic. Juniors and seniors in high standing, whose needs are not met by other offerings, may apply for admission to Pl 65. 66, Topics in Philosophy.

1. 2. Philosophy and Modern Life.—Pl 1 deals directly with philosophical methods of thought and with representative world views through readings from the works of major western philosophers, including a more intensive study of one philosophical classic. Pl 2 is concerned wholly with ethics as formulated in a set of readings expressing the ethical traditions of western civilization. It concludes with a survey of Chinese philosophy as representative of Oriental culture. *Cr* 3. MR. VIRTUE

†***15. Our Religious Heritage.***—The Hebrew-Christian tradition embodied in Judaism and Catholic and Protestant Christianity. *Cr* 2. MR. VIRTUE

16. Philosophy of Religion.—Basic problems of religious thought: language and other symbolism; experience and its interpretation; reason and faith; concepts of God and the soul; the function of religion in personal and social life. *Cr* 2. MR. VIRTUE

‡***17. Religions of the East.***—Hinduism, Buddhism, Confucianism, Taoism, Shinto and Islam—their founders, scriptures, modes of worship and ethics. *Cr* 2. MR. VIRTUE

33. Aesthetics.—The general principles underlying aesthetic experience, brought to special focus in the field of literature. Special attention will be paid to philosophical poetry. When not given, see Pl 65. 66. *Cr* 3. MR. LEVINSON

35 (135). Ethics.—Types of ethical theory as expressed in the writings of philosophers from Plato to contemporary thinkers, together with a consideration of some practical moral issues. *Cr* 3. MR. VIRTUE

36 (136). Logic.—An introduction to logic relying mainly on modern

symbolic procedures. Special topics include: the logic of meaning; the logic of propositions; the logic of classes; implication and other types of inference. *Cr* 3.

MR. VIRTUE

65. 66 (165. 166). Topics in Philosophy.—Individual and small group study of the philosophic aspects of problems of special concern to the student. Groups are likely to be maintained in such areas as Aesthetics, Philosophy of Science and Philosophy of Literature. *Cr Ar.* MR. LEVINSON

Offered occasionally: **22. Readings in Philosophy; 40 (140). American Thought; 54. Man and the Social Order; 62. Recent Philosophy.**

Attention is called to Ms 97. 98, Foundations of Mathematics, which in view of its logical content may be taken for credit in philosophy by qualified majors.

PHYSICS

PROFESSORS BENNETT AND BISCOE; ASSOCIATE PROFESSORS COFFIN AND KRUEGER; ASSISTANT PROFESSORS TODD, WYLIE, THOMAS, AND CARR; MR. RICH; MR. BLEASE, MR. DERICK, MR. DIONNE, MR. MARSTON, AND MR. TAUDVIN

The Department offers major work leading to the degree of Bachelor of Arts in Physics in the College of Arts and Sciences, and also major work leading to the degree of Bachelor of Science in Engineering Physics in the College of Technology.

The following courses should be taken by all candidates for the B.A. degree: Ps 1; 2 (or 1a; 2a), 17. 18, 53, 55, 62, 69, 72, 76, along with Ms 1, 3, 12, 27; 28. Additional courses in Physics and Mathematics should be considered as electives, subject to departmental approval.

Students who plan to major in Physics should register for Mathematics and Physics in the freshman year. This usually means the postponement of one of the required freshman courses for Arts and Sciences students.

Fundamental training, which is adequate for secondary school teaching, is provided by Ps 1; 2 (or 1a; 2a) and 17. 18, along with mathematics through the calculus.

The following courses of the more descriptive variety are open to all students and have no prerequisites: Ps 3, 10, 31.

1; 2. General Physics.—The fundamentals of mechanics, matter, sound, heat, electricity, magnetism, light, and modern physics. The course meets the needs of engineering and science students. Calculus will be introduced as needed. *Lec* with *Dem* 2, *Rec* 2, *Lab* 2, *Cr* 5. MR. BENNETT AND STAFF

1a; 2a. General Physics.—The fundamentals of mechanics, sound, heat, electricity, magnetism, light, and modern physics. Similar to Ps 1; 2 but modified laboratory program with less emphasis on computations and more emphasis on discussion and graphical methods. Calculus is not used. Meets the needs of predental and premedical students. *Lec* with *Dem* 2, *Lab* 4, *Cr* 4.

MR. WYLIE AND STAFF

3. Descriptive Physics.—For the non-science student. A treatment in nonmathematical language of the more important topics in physics. Designed to develop an appreciation for the concepts, vocabulary, and methods of the science rather than a false sense of mastery. *Lec* with *Dem* 3, *Cr* 3.

MR. BENNETT AND MR. TODD

6. Essentials of Physics.—A one-semester general physics course designed primarily for students from the College of Agriculture. A condensation of

Ps 1; 2 accomplished by a careful selection of the topics treated. *Lec* with *Dem* 3, *Lab* with *Discussion* 4. *Cr* 5. MR. COFFIN AND OTHERS

10. Meteorology.—The earth's atmosphere, composition, and movements. Atmospheric conditions accompanying changes in weather, and weather predictions. Air-mass analysis. The course may be followed by Course 61. *Rec* 3, *Cr* 3. MR. TODD

17. 18. Intermediate Physics.—A more mathematical treatment with the calculus of many of the topics in Course 1; 2 or 1a; 2a, either of which is a prerequisite. (With special permission, students may register for this course under the number Ps 17a. 18a without laboratory for *three credit hours.*) *Lec* 2, *Comp* 2, *Lab* 2, *Cr* 4. MR. COFFIN AND OTHERS

31. Photography.—Fundamental theories and techniques. For the scientist and the amateur. Characteristics and use of various types of cameras, lenses, exposure and exposure meters, emulsions, filters, artificial lighting and copying, contact and projection printing, dark-room practice. *Rec* 2, *Lab* 3, *Cr* 3. MR. TODD

36. Introductory Modern Physics for Engineers.—Selected topics in molecular, atomic, electronic, and nuclear physics, intended to meet the needs of the present day Electrical Engineering student. Courses Ps 1; 2 and Ms 12 are prerequisite. *Rec* 3, *Cr* 3.

Course 17. 18 (or the equivalent) and the calculus are prerequisite for the following advanced courses.

53 (153). Electrical Measurements.—A third year laboratory course covering theories and practices in the measurement of electrical and magnetic quantities. *Lab* 4, *Cr* 2.

55 (155). Electricity and Magnetism.—An advanced treatment of the fundamental aspect of electrostatics, magnetism, electromagnetic phenomena, direct and alternating currents. *Rec* 3, *Cr* 3. MR. BISCOE

61 (161). Advanced Meteorology.—A more theoretical treatment than Course 10, combined with which the meteorology requirement for government service is satisfied. Not given every year. *Rec* 3, *Cr* 3. MR. TODD

62 (162). Heat and Thermodynamics.—Theoretical thermodynamics as applied to the measurement of temperature, specific heat, thermal expansion, conduction, convection, radiation, change of state. *Rec* 3, *Cr* 3. MR. CARR

66 (166). Electronic and Thermionic Phenomena.—Thermionic and photoelectric emission, electron optics, and other electronic phenomena. Applications of theory to the design of vacuum tubes. *Rec* 3, *Cr* 3. MR. WYLIE

69 (169). Modern Physics.—Atomic, nuclear, and molecular physics. Includes atomic structure, X-rays, quantum concepts and spectroscopy. *Rec* 3, *Cr* 3. MR. CARR

70 (170). Nuclear Physics.—Basic concepts, radioactivity, nuclear reactions, radiation detectors, particle accelerators, nuclear fission, and cosmic radiation. Tracer techniques and health physics may be considered. A more specialized course than Ps 69. May be taken without the Ps 18 prerequisite by departmental permission. *Rec* 2, *Cr* 3 *if taken with laboratory, or Cr* 2 *if taken without laboratory.* MR. WYLIE, MR. RICH

72 (172). Optics.—A practical study of geometric optics including ray tracing, aperture limitations, light sources and receivers, photometry and color. *Rec* 3, *Cr* 3. MR. BENNETT

76 (176). Physical Measurements.—A third year laboratory course in

which experiments are selected from various branches of physics. *Lab* 4, *Cr* 2.
MR. WYLIE

81.82 (181.182). Advanced Laboratory Physics.—Selected advanced experiments and projects in the field of Physics, for senior students. Opportunity is given to develop original ideas and to construct apparatus. Departmental approval required. *Lab* 6, *Cr* 3. MR. BISCOE, MR. CARR, MR. KRUEGER, MR. THOMAS

84 (184). Advanced Nuclear Physics.—Extension of course 70 which is prerequisite. Special emphasis on nuclear forces, neutron physics, two-, three-, and four-body problems, high energy reactions, nuclear spin and magnetism, and multipole radiations. *Rec* 2, *Cr* 2. MR. WYLIE

91.92 (191.192). Mathematical Physics.—An advanced theoretical course which deals with the mathematical aspects of physics. Mathematics is treated as a tool in the analysis of physical problems. Analytical mechanics is emphasized the first semester; topics are selected from the whole field of physics in the second semester. *Rec* 3, *Cr* 3. MR. THOMAS

98a. 98b. Physics Seminar.—Oral and written reports on approved topics. Primarily for seniors. *Sem* 1, *Cr* ½. MR. BENNETT

99. Problems in Physics.—An undergraduate thesis project ordinarily of an experimental nature. *Cr, Ar* (1-3). THE STAFF

237. Statistical Mechanics.—Macroscopic properties of matter derived from a statistical consideration of microscopic properties of elementary systems. Relationships to Thermodynamics and Kinetic Theory are examined. Not offered every year. Prerequisite, Ps 62 and Differential Equations. *Rec* 3, *Cr* 3.

†257. Electrodynamics.—Basic phenomena in static, stationary, quasistationary, and rapidly varying electromagnetic fields are considered from the view point of Maxwell's equations. Classical electron dynamics and certain aspects of the interaction between the electromagnetic field and matter are examined. Not offered every year. Prerequisite, Ps 55 and Differential Equations. *Rec* 3, *Cr* 3.
MR. KRUEGER

†265. Quantum Theory.—The physical concepts and mathematical methods currently used in problems dealing with atomic and sub-atomic Physics. A limited number of applications of these methods to physical phenomena will be considered. Not offered every year. Prerequisite, Ps 69 and Ps 91 and Differential Equations. *Rec* 3, *Cr* 3.

291. 292. Special Topics in Theoretical or Experimental Physics.—Subjects which may be studied under this heading depend upon current interests of students and staff and will ordinarily be in areas for which no formal courses are offered. Given on demand. *Cr, Ar.* THE STAFF

293. Physical Optics.—Fresnel and Fraunhofer diffraction and their application to interferometers and diffraction spectroscopes, Abbe and Rayleigh treatments of image formation, diffraction theory of aberrations, imaging of extended objects in partially coherent illumination and rigorous diffraction theory. Prerequisite, course 72 and Ms 58. Not offered every year. *Rec* 3, *Cr* 3.
MR. KRUEGER

‡294. X-Rays and Structure of Matter.—Elementary diffraction theory applied to structure determinations of solids, liquids and gases. Not offered every year. *Rec* 3, *Cr* 3. MR. BISCOE

‡296. Introduction to Solid State Physics.—Structure of free atoms. Nature of interatomic forces in the formation of solids, liquids, and molecules. Properties of semi-conductors, insulators and metals as explained by simple Brillouin-zone

theory. Correlation of theoretical concepts with experimental evidence. Prerequisite, Courses 69, 91, and Ms 58. Not offered every year. *Rec* 3, *Cr* 3.

299. Graduate Thesis.—*Cr, Ar.* THE STAFF

GRADUATE WORK IN PHYSICS

The degree of Master of Science is offered in Physics. See section on Graduate Study for detailed requirements. Although undergraduates in Physics from the University of Maine are often encouraged to do their graduate work elsewhere to broaden their outlook, an opportunity is afforded to outstanding college graduates to supplement their background with courses of a fundamental nature. In each case a program of courses is developed around an original investigation, the results of which are embodied in a thesis. Research facilities are available in such fields as optics, electricity, molecular physics and electronics, with special reference to optical properties of gases at high pressure, X-ray studies of molecular structure, physical optics, solid state physics, micro wave techniques, and electronic circuits. Several graduate assistantships are available in this department.

PSYCHOLOGY

PROFESSORS GLANVILLE, ANTONITIS, BRUSH, AND QUINSEY; ASSOCIATE PROFESSORS BARON AND NICHOLS; ASSISTANT PROFESSOR GULO; LECTURERS KAPLAN AND HAMMER; MRS. GERSHMAN

The instruction offered by the Department of Psychology is designed to acquaint the student with psychology as a biological science and as a social science. The Department provides the student with training in both the principles and the applications of psychology.

The minimum requirement for a major in the Department is 24 hours which must include Py 1; 2 and Py 93. 94. All majors are required to take a written comprehensive examination in the senior year over the major work. A passing grade on the examination is required for graduation.

A limited number of women majors interested in Family Life and Child Development may arrange to spend one semester at the Merrill-Palmer School in Detroit, Michigan, in the junior year.

Py 1; 2, General Psychology, is a prerequisite for all advanced courses in the Department.

1; 2. General Psychology.—Survey of psychology as the science of behavior. Lecture discussion of major areas such as personality, intelligence, emotion, learning, etc.; laboratory introduction to tests and methods. Not open to freshmen. *Lec* 2, *Lab* 2, *Cr* 3. THE STAFF

3. Applied Psychology.—Applications to industry, business, advertising, salesmanship, and other fields. Survey of psychological methods and tests in the selection and training of workers. An introductory course open only to Mechanical Engineering students. *Cr* 2. MR. BARON, MR. BRUSH

5. Applied Psychology for Nurses.—An introductory course for three-year nurses. *Cr* 2. MR. GLANVILLE

Unless other prerequisites are stated, Course 1; 2 or the equivalent is prerequisite for the following advanced courses.

51 (151). Business and Industrial Psychology.—Applications of psychological principles, facts, and research methods to problems of trait and proficiency

measurement, selection, efficiency, training, accidents, motivation, and adjustment in business and industry. *Cr* 2. MR. ANTONITIS

53. 54. Child Study Laboratory.—Observation and study of a group of pre-school children. Individual projects, supplemented by reading and class discussions. Opportunity to assist in guiding the children's activities. *Rec* 1, *Lab* 4, *Cr* 3. MR. NICHOLS, MRS. GERSHMAN

65 (165). Educational Psychology.—The underlying psychological principles useful to the teacher. Problems of growth, intelligence, personality, social life, sex hygiene, and attitudes. Principles of effective learning. *Cr* 3.
MR. QUINSEY

67 (167). Psychology of Childhood.—A systematic study of the child's behavior and psychological development. Emphasis upon principles underlying development, methods of child study, and practical implications. *Cr* 3.
MR. NICHOLS

68 (168). Psychology of Adolescence.—Adolescent development in the physical, intellectual, emotional, and social spheres. Adolescent personality and problems of adjustment in relation to the family, the schoool, the community, and the world of work. Delinquency and abnormality in adolescents. *Cr* 2.
MR. GULO

69; 70 (169; 170). Experimental Psychology.—First semester, techniques and objective approach to problems; second semester, techniques applied to practical problems, planning and conducting an original investigation by the student, and quantitative and statistical treatment of psychological data. *Rec* 1, *Lab* 4, *Cr* 3. MR. GLANVILLE

71 (171). Abnormal Psychology.—The origin, development, and manifestations of the psychoneuroses and major psychoses with a view to better understanding of adjustment. Emphasis on the biological and social determinants of maladjusted behavior. Prerequisite, Course 1; 2 with grade of C or better. *Cr* 3.
MR. KAPLAN

72 (172). Mental Hygiene.—A consideration of the fundamental factors in human adjustment with emphasis upon the prevention of inadequate adjustments and upon the processes by which maladjusted individuals may be restored to normal living. Family and educational situations will be emphasized. *Cr* 3.

74 (174). Advanced Psychopathology.—Intensive readings and discussion of the etiology of mental disorders with particular emphasis on behavior disorders in childhood. Prerequisite, Course 71 and consent of instructor. *Cr* 3.
MR. KAPLAN

76 (176). Social Psychology.—The psychological principles which enter into the social behavior of man. Representative topics include culture and personality, crowd behavior, prejudice, and propaganda. *Cr* 3. MR. QUINSEY

77 (177). Theories of Personality.—A survey of the chief contemporary approaches to the study of personality. Critical issues in personality. Consideration of assessment techniques and research methods. Prerequisite, Course 1; 2 with grade of C or better. *Cr* 3. MR. BRUSH

79 (179). Psychology of Learning.—Basic principles that underlie the discovery, fixation, and retention of new modes of human behavior. Conditioned response learning, serial learning, memory and forgetting, transfer of training, thinking and problem solving, insight and concept formation, individual differences in learning. *Cr* 3. MR. BARON

80 (180). Theories of Learning.—An examination of the most impor-

tant current psychological theories concerning the nature of the learning process including the behavioristic positions (Guthrie, Skinner, the Hullian group, Estes), Gestalt positions (Lewin, Tolman), and dynamic psychology (psycho-analysis). Applications of the theories will be made. *Cr* 3.

81 (181). Individual Psychological Testing.—Intensive training in the administration of individual mental tests, with emphasis on the Revised Stanford-Binet Scale. Historical background and current problems in the theory and practice of testing. Prerequisite, permission of instructor. *Rec* 2, *Lab* 4, *Cr* 4.

MR. BRUSH

83 (183). Comparative Psychology.—Principles of animal behavior in relation to corresponding processes in humans. Maturation, motivation, learning, social behavior, and abnormal behavior are considered. *Cr* 3. MR. BARON

84 (184). Aptitude Testing.—The use and interpretation of psychological tests and related techniques in vocational guidance and vocational selection. Occupational description and classification. Applications in such fields as business, industry, education, and public agencies. *Rec* 2, *Lab* 2, *Cr* 3. MR. QUINSEY

86 (186). Physiological Psychology.—Physiological bases of behavior with emphasis upon the development and function of the nervous system and the sense organs; the relation between psychological processes and physiological activity. Prerequisite, Course 1; 2 and a basic course in Zoology. *Cr* 3.

MR. NICHOLS

89 (189). Psychological Methodology.—An intermediate level survey of the various methods and techniques employed by psychologists in the evaluation of data and the verification of hypotheses. Prerequisite, Py 69; 70 and Ms 19 or Ms 31. *Cr* 3. MR. GULO

91, 92 (191, 192). Problems in Psychology.—Primarily for graduate students and seniors with grade of B or better. Opportunity to select and attack particular psychological problems under guidance. Admission by consent of head of the Department. *Cr, Ar.* MR. GLANVILLE AND STAFF

91A, 92A (191A, 192A). Problems in Experimental Psychology.—Prerequisite, Py 69; 70 and consent of the head of the Department. *Cr, Ar.*

THE STAFF

91B, 92B (191B, 192B). Problems in Psychometrics.—Prerequisite, Py 81 and consent of the head of the Department. *Cr, Ar.*

MR. BRUSH, MR. GLANVILLE

91C, 92C (191C, 192C). Problems in Aptitude Testing and Counseling.—Prerequisite, Py 84 and consent of the head of the Department. *Cr, Ar.*

MR. QUINSEY

91D, 92D (191D, 192D). Problems in Psychological Theory.—Prerequisite, twelve hours in psychology with grade of B or better and consent of the head of the Department. *Cr, Ar.* THE STAFF

93, 94 (193, 194). Seminar in Psychology.—An historical account of the development of psychology. First semester, the development of psychological concepts and points of view prior to Wundt; second semester, the major modern systems and schools of psychology. Required of all psychology majors; open to others by permission of instructor. *Cr* 2. MR. GLANVILLE

203. Ethics and Professional Problems.—Discussion of common professional problems encountered in the practice of psychology; consideration of responsibilities and limitations of the psychologist in the light of the ethics recommended by the American Psychological Association. *Cr* 1. THE STAFF

211. Advanced Experimental Psychology I.—Analysis and development of practical research designs in experimental, clinical, and applied psychology; library research, apparatus design, and critique of proposed research by the student. Prerequisite, Course 69; 70 or its equivalent. *Cr* 3. MR. ANTONITIS

212. Advanced Experimental Psychology II.—Conduct of one or more original investigations of limited scope; analysis of results, report, and critique. Prerequisite, Course 211. *Rec* 1, *Lab* 4, *Cr* 3. MR. ANTONITIS

222. Advanced Child Psychology.—Intensive reading and evaluation of recent research literature in child psychology. Emphasis on special areas related to the normal, retarded, and disturbed child. Prerequisite, consent of instructor. *Cr* 3. MR. NICHOLS

242. Personality Assessment I.—A general orientation to projective techniques. Administration and scoring of the Rorschach Test. Analysis and interpretation of Rorschach protocols (quantitative, sequences and content analysis). Prerequisite, Course 77 and consent of instructor. *Rec* 1, *Lab* 4, *Cr* 3. MR. BRUSH

†***243. Personality Assessment II.***—Advanced Rorschach interpretation with emphasis on specific clinical protocols. Consideration will also be given to other test instruments including TAT, Sentence Completion, and MMPI. Prerequisite, Course 242. *Rec* 1, *Lab* 4, *Cr* 3.

†***245. Psychodiagnosis.***—Intensive training in the integration of psychological test data into meaningful written reports. Prerequisite, Course 77, 81, and 242. *Cr* 3.

247. 248. Psychological Test Practicum.—Closely supervised testing experience including administration, scoring, interpretation, and writing of test reports within a child guidance, school, or mental hospital setting. Prerequisite, Course 77, 81, and 242. *Cr* 3. MR. KAPLAN

†***272. Seminar in Clinical Psychology.***—A critical review of current research literature in the area of clinical psychology including tests and measurements, psychotherapy, and personality theory. *Rec* 2, *Cr* 3.

273. Seminar in Physiological Psychology.—Current problems and theories of physiological psychology and the methods and techniques employed in studying them. *Rec* 2, *Cr* 3. MR. NICHOLS

274. Seminar in Learning.—An advanced consideration of significant topics in the area of learning. Reports and discussion of current research and theory. *Rec* 2, *Cr* 3.

†***275. Seminar in Motivation.***—A consideration of the phenomena and theoretical constructs subsumed under the concept of motivation. Presentation by the student of critical reports of current research. *Rec* 2, *Cr* 3.

†***276. Seminar in Perception.***—An advanced consideration of significant topics in the area of perception. Reports and discussion of current research and theory. *Rec* 2, *Cr* 3.

295. 296. Graduate Seminar.—Reports and discussions of special problems and of recent developments in psychology based on the literature or on the results of current research. Required of all psychology graduate students while in residence. *Cr* ½. THE STAFF

299. Graduate Thesis.—*Cr, Ar.* THE STAFF

GRADUATE WORK IN PSYCHOLOGY

The Department offers work leading to the Master of Arts degree, the general requirements for which are listed under Graduate Study. Candidates will be ex-

pected to have taken fundamental courses in psychology at the undergraduate level. The Department recommends that prospective candidates for graduate work acquire as undergraduates a background in the physical, biological, and social sciences and in statistics. A reading knowledge of at least one foreign language is desirable. Applicants are required to take the Graduate Record examination.

Candidates for the Master of Arts degree who have not previously had a laboratory course in experimental psychology will be required to take Py 69; 70 as an aid in acquiring techniques of psychological research needed in the preparation of the required thesis. All graduate students must enroll for Py 295. 296 during their entire period of residence.

Graduate programs at the Master's level are offered by the Department in general psychology and in clinical psychology. The general program requires a minimum of 30 credit hours and permits some specialization in child or experimental psychology or in vocational selection and guidance. The program in clinical psychology is a two-year program and requires a minimum of 43 credit hours in specified courses, in practicums, and in writing a thesis. In this program the student will normally spend at least three semesters in residence.

The Department also offers to qualified candidates a program leading to the Ph.D. degree in General-Experimental Psychology. The requirements are described in the Bulletin of the Graduate Division.

SOCIOLOGY AND ANTHROPOLOGY

PROFESSORS FORER, ROMANYSHYN, AND WEILER; ASSOCIATE PROFESSOR SEZAK; ASSISTANT PROFESSOR EMERICK
Cooperating Member: ASSOCIATE PROFESSOR PLOCH

The Department offers undergraduate work leading to the degree of Bachelor of Arts in Sociology. In working toward this degree the major student may select one of two separate programs. After completing certain basic required work, the major student may choose either the Sociology-Anthropology option or the Social Work option.

None of the courses listed is available to freshmen. All courses in the Department are intended for juniors and seniors except that Sy 1; 2, Sy 13, Sy 24, and Sw 4 are available to sophomores as well as juniors and seniors.

Specific Major Requirements for B.A. in Sociology

Sy 1; 2, Cultural Anthropology; Sy 13, Social Problems; Sy 96, History of Sociology; Py 1; 2, General Psychology; Py 76, Social Psychology and the requirements of one of the following two options.

The additional requirements for the Sociology and Anthropology option are: Sy 24 or Sy 26, Rural or Urban Sociology; Sy 29, The Individual and the Community; Ms 19, Statistics; Be 1; 2, Principles of Economics.

The additional requirements for the Social Work option are: Sy 59, Marriage; Sw 4, Social Welfare; Sw 57, Group Leadership; Sw 71, Principles of Case Work.

For majors interested in the Family Life and Development program, Fn 41, Introduction to Foods and Nutrition; Cf 3, The Pre-School Child; Py 67, Psychology of Childhood; and Sy 59, Marriage, are also required.

A minimum of 24 hours is required for majors in Sociology, in addition to the required Psychology, Economics, and Statistics courses.

The maximum number of hours one may take within the Department is 48.

The Department offers graduate work leading to the degree of Master of Arts in Sociology.

Courses in Sociology

1; 2. General Anthropology.—The development of man as a biocultural phenomenon. Special emphasis on the nature of culture and on such human institutions as social organization, marriage, religion, economics, etc., among primitive people with some application of derived principles to civilized societies. *Cr* 3. MR. EMERICK

13. Social Problems.—A study of selected social problems; analysis of their interrelationships, and the degree to which they arise from common social conditions. Possible solutions are discussed in terms of major social trends. Not open to freshmen. *Cr* 2 or 3. MR. WEILER

24. Rural Sociology.—Sociological impacts of suburbanization and migration on farming and on the rural community; and the significances of changes in the institutions of family, religion, education, and stratification. Course same as Fm 24. *Rec* 3, *Cr* 3. MR. PLOCH

26. Urban Sociology.—A descriptive and analytical approach to the study of city life. Emphasis is placed on environment, social organization, the ecological processes, population, areas, housing, and maladjustments. Juniors and seniors. *Cr* 3. MR. SEZAK

29 (129). The Individual and the Community.—Analysis of group processes, program planning and leadership in small towns and communities. Training in, and application of, social research methods. Course same as Fm 29. Prerequisite, Fm/Sy 24 or Sy 26 or permission of instructor. *Rec* 3, *Cr* 3. MR. PLOCH

†30 (130). Rural Community Analysis.—Intensive analysis of the problems of smaller communities. Case studies and student analysis of real community situations. Course same as Fm 30. Prerequisite, Fm/Sy 29 or permission of instructor. *Rec* 2, *Lab* 2, *Cr* 3. MR. PLOCH

55 (155). Educational Sociology.—Social interaction and culture as related to the school and education including school-community relationships, social groups, and patterns of social behavior. *Cr* 3. MR. SEZAK, MR. FORER

59. Marriage.—A study of the factors involved in success and failure in marriage. Research in the social, psychological, and biological sciences is applied to common personal problems of courtship, marriage, and parenthood. Juniors and seniors only. *Cr* 2. MR. ROMANYSHYN, MR. SEZAK

62 (162). Sociology of the Family.—A sociological approach to the study of the family including the structure of social relationships, the modern American family as a social institution, the cultural background of the family, and the impact of social change. Prerequisite, Sy 1; 2 and Sy 59; or permission of instructor. *Cr* 3. MR. SEZAK

63; 64. Criminology.—A comprehensive study of the etiology and control of crime. Delinquency is considered in the first semester, adult crime in the second. Prerequisite, Sy 1; 2, 13. *Cr* 3. MR. ROMANYSHYN

68 (168). Modern Social Organization.—An examination of selected, crucial institutional arrangements in modern industrial societies: occupational pat-

terns, bureaucracy, forms of social stratification, and mass media of communication. Prerequisite, Sy 1; 2. *Cr* 3. MR. FORER

82 (182). Population.—Theories of population. Demography: analysis of birth, death, and migration trends. Problems and policies. Prerequisite, Sy 13, or Sy 1; 2, or Be 1; 2. *Cr* 3. MR. WEILER

84 (184). Race and Culture Conflict.—Analysis of causal factors in group conflict with emphasis on the problem of minority groups in culture contact situations. Prerequisite, Sy 1; 2, or permission of instructor. *Cr* 3. MR. EMERICK

88 (188). Culture and Personality.—A study of how culture influences the development of personality. The major emphasis is on the different ways in which primitive and modern societies socialize the child. Prerequisite, Sy 1; 2 or consent of the instructor. *Cr* 3. MR. EMERICK

96 (196). History of Sociology.—Trends and leading figures in the history of sociology. Survey of current approaches and established principles in the field. Required of senior majors; others, by consent of the instructor. Prerequisite, Sy 1; 2, 13, Py 76. Seniors only. *Cr* 3. MR. WEILER

97, 98 (197, 198). Projects in Sociology.—For the advanced senior major having a minimum of 15 hours in Sociology. Apply directly to Professor Forer prior to registration. *Cr* 2 or 3.

299. Graduate Thesis.—*Cr* 6.

Courses in Social Work

4. Social Welfare.—Study and evaluation of agencies and their organized efforts to solve social problems. Discussion of aims, methods, and basic issues in social welfare designed to help the citizen to participate intelligently in modern community life. Prerequisite, Sy 13 or My 1. *Cr* 3.

MR. WEILER, MR. ROMANYSHYN

52 (152). Child Welfare.—The psycho-social development of children. The relationship of early experiences to adjustment problems of later life. The social resource and methods used in treatment. Prerequisite, Sw 4. *Cr* 3.

MR. ROMANYSHYN

57 (157). Group Leadership.—The philosophy and methods of leadership of democratic groups with emphasis on the dynamic forces within the group. Application is made to clubs, schools, camps, social agencies, and adult organizations. Prerequisite, Py 1; 2; and My 1 or Sy 13. *Cr* 3. MR. ROMANYSHYN

66. General Assistance.—Objectives, structure, and administration of this residual form of public assistance. Principles of interviewing. Special attention is given to conditions in Maine and to the town manager's role in welfare. Prerequisite, Sw 4. *Cr* 2. MR. WEILER

71. Principles of Case Work.—Case work techniques including interviewing, recording, referral, preparation of the social case study, evaluating and planning. Actual case histories are analyzed. Prerequisite, Sw 4. *Cr* 3.

MR. ROMANYSHYN

73c, 74c. Field Practice in Case Work.—Field observation and experience in an approved casework agency under supervision. Casework, public assistance, child welfare, probation and school social work agencies used for placements. Registrations limited to placement opportunities. *Apply directly to instructor for admission prior to registration.* Sw 71 required. *Cr* 2. MR. ROMANYSHYN

†73g, 74g. Field Practice in Group Work.—Field observation and experi-

ence under supervision in an approved group work agency. Registration limited to *placement* opportunities.

SPEECH

PROFESSOR GARDNER; ASSOCIATE PROFESSORS BRICKER AND GILLESPIE; ASSISTANT PROFESSORS BARUSHOK AND COOK; MRS. MOWER, MR. MACLAUCHLIN, MR. CYRUS, AND MR. COLE

The major studies leading to a degree in speech or a degree in theatre are designed to provide a broad background of training and to allow some degree of specialization within a particular area. Courses required of all majors are Sh 3, 11, 21, 31, 32, 41, and 98. In addition, all majors are required to complete satisfactorily a three-hour course in four out of the five areas of speech (public address, theatre, radio, speech correction, and oral interpretation), plus nine more elective hours in the department. Students planning to do graduate work in speech correction may substitute certain courses in psychology or zoology. A platform test of proficiency in speaking and oral reading must be passed satisfactorily during the junior year.

All prospective majors should select Py 1; 2, General Psychology, as a part of the sophomore social science requirement, and those particularly interested in speech correction should elect Zo 3; 4, Animal Biology, to satisfy partially the natural science and mathematics requirement. Majors are expected to take advantage of the laboratory opportunities offered by the Department through the Debating Council, Masque Theatre, and Radio Station WORO.

Advanced courses recommended for majors who plan to teach are Sh 7, 15, 62, 81, 92, and 97.

The Department offers work leading to the Master of Arts in Speech as outlined in the general requirements for graduate work. A program will be selected from courses numbered 51 and above. Students will be admitted as candidates upon presentation of credentials indicating excellent undergraduate records. The Summer Session Bulletin should be consulted for special courses offered during the summer.

Courses in Public Address

The Maine Debating Council offers practical experience in debate, discussion, oratory, and extemporaneous speaking through competition with other colleges and universities. All undergraduate students in the University may participate in the activities of the Council.

1. Fundamentals of Public Speaking.—An analysis of the problems of the beginning speaker—choice of subject, selection and arrangement of material, audience analysis, and delivery. Classroom experience in the preparation and delivery of short speeches. *Cr* 2. MR. COOK, Chairman

3. Advanced Public Speaking.—Principles and methods of the composition and delivery of the types of speeches common to business and professional life with emphasis on analysis, materials, structure, and style. Prerequisite, Course 1. *Cr* 2. MR. COLE

5. Group Discussion.—The principles, methods, and types of democratic group procedure in problem-solving. Emphasis on preparing for, participating in, and leading group discussions. Class participation in the discussion of current issues. *Cr* 3. MR. GARDNER

7. Debate.—The principles of argumentation and debate with attention to analysis, evidence, reasoning, construction of cases, and refutation. Participation in debates on current issues constitutes part of the course. *Cr* 3.

MR. GARDNER

9. Parliamentary Procedure.—Consideration of the principles and rules by which a group transacts its business. Training in such functions as drawing up a constitution, the presentation and disposition of motions, and serving as presiding officer. *Cr* 1. MR. GARDNER

51. 52. Varsity Debate.—An intensive study of the national proposition with active participation in intercollegiate debates. Limited to varsity debaters. Prerequisite, permission of instructor. *Cr* 1. MR. GARDNER

55 (155). American Public Address.—Consideration of representative American speakers from colonial times to the present. A critical analysis of the invention, structure, and style of selected speeches. Limited to juniors and seniors. Prerequisite, Course 1. *Cr* 3. MR. GARDNER

56 (156). Persuasion.—An advanced study of the problems involved in influencing an audience. Consideration of such factors as mental attitudes, attention, rationalization, adaptation, suggestion, and motivation. Limited to juniors and seniors. Prerequisite, Course 1. *Cr* 3. MR. GARDNER

Courses in Theatre

The Maine Masque Theatre presents four major productions each year and serves as a practical training ground in theatre. All undergraduate students in the University are eligible to read for plays to be produced and may participate in the other areas of the Theatre.

11. Theatre Today.—An introduction to the contemporary American theatre and its place in society. Consideration is given to present conditions in the educational, community, and professional theatre; to dramatic theory, play construction, styles in drama, and criticism as these apply to play presentation. *Cr* 2. MR. BRICKER, MR. BARUSHOK

15. 16. Play Production.—A foundation for advanced courses and for students wishing to direct high school plays or to participate in community theatre. Fall semester: theatre organization, the director's analysis of a play, make-up, and directing. Spring semester: fundamentals of stagecraft, scene designing, costuming, and lighting. *Cr* 3. MR. BRICKER, MR. CYRUS

17. Acting.—*A study of acting techniques.* A practical approach to the problem of creating, rehearsing, and presenting a role. *Lab* 4, *Cr* 3. MR. BRICKER

62 (162). Theatre History.—A survey of the dramatic theory, physical theatre, and modes of production from early Greek festivals to the modern drama. Limited to juniors and seniors. *Cr* 3. MR. BARUSHOK

‡63. Scene Designing.—Principles, methods, and materials used in scene designing, with consideration of the designer-director relationship. Laboratory projects in preparing the complete design for a particular production, including drawings, models, and plans. Limited to juniors and seniors. *Lab* 4, *Cr* 2.

MR. CYRUS

†64. Stage Lighting.—Principles of stage lighting and their artistic and technical applications to the theatre, the motion picture, and the television studio. Projects will include problems in lighting particular productions. Limited to juniors and seniors. *Cr* 2. MR. CYRUS

67. Theatre Laboratory.—Advanced work in one or more of the following

divisions: **67a. Acting; 67b. Designing; 67c. Lighting; 67d. Directing; 67e. Make-Up.** Students are not permitted to take more than six hours of work in this course. Limited to juniors and seniors. Prerequisite, permission of instructor. *Lab* 3, *Cr* 2. MR. BRICKER, MR. BARUSHOK, MR. CYRUS

‡***68 (168). Creative Theatre.***—Principles, methods, and techniques used in choosing plots, guiding dialogue and action, and producing drama, including the "child-made" play. Creative dramatics in the classroom, the church, summer camps, and on the playground. Limited to juniors and seniors. *Cr* 2.
MR. BRICKER

‡***70 (170). Stage Directing.***—The principles of stage direction in theory and practice, with emphasis on ethics and aesthetics. Limited to juniors and seniors. Prerequisite, Course 15. 16, and permission of instructor. *Cr* 3.
MR. BRICKER

Courses in Radio and Television

Campus Radio Station WORO provides practical experience in broadcasting and all students have the opportunity to work for staff positions and program assignments. Certain opportunities are available on University of Maine television programs.

21. Introduction to Radio and Television.—Survey of the nature of the broadcasting media, history and influence, network and station organization, regulations, and types of programs. *Cr* 2. MR. MACLAUCHLIN

22. Radio Speaking.—The adaptation of the skills of speech to the microphone. Introductory laboratory experience in radio speech situations. *Rec* 1, *Lab* 2, *Cr* 2. MR. MACLAUCHLIN

25. Radio Workshop.—Radio experience in the broadcast activities of WORO in such areas as production, programming, writing, sales, traffic, and engineering. Prerequisite, Course 21, Course 22, and permission of instructor. *Cr* 1.
MR. MACLAUCHLIN

71 (171). Writing for Broadcast.—An analysis of the problems involved in writing for radio and television. The preparation of different forms of continuity copy and the creation of various types of programs. Limited to juniors and seniors. Prerequisite, Course 21, or permission of instructor. *Cr* 3.
MR. MACLAUCHLIN

†***72 (172). Broadcast Procedures.***—The techniques of broadcast production with particular emphasis upon the treatment of sound, music, and speech in the preparation of radio programs. Limited to juniors and seniors. Prerequisite, Course 21. *Rec* 2, *Lab* 2, *Cr* 3. MR. MACLAUCHLIN

†***73 (173). Broadcast Production.***—Problems of the director and production staff in the preparation for broadcast of various types of programs, including documentaries and dramas. Limited to juniors and seniors. Prerequisite, Course 72. *Rec* 2, *Lab* 2, *Cr* 3. MR. MACLAUCHLIN

‡***74 (174). Broadcast Programming.***—The problems in planning, preparing, and scheduling programs for radio and television—audience and market analysis, standards of evaluation, planning procedures, program ratings, and station policy. Limited to juniors and seniors. Prerequisite, Course 21. *Cr* 3.
MR. MACLAUCHLIN

77 (177). Teaching by Radio and Television.—Values and potentials of radio and television in education: program analysis and evaluation; in-school and

out-of-school uses; and methods and techniques of producing the educational program. Limited to juniors and seniors. *Cr* 3. MR. MACLAUCHLIN

Courses in Speech Correction

0. Remedial Speech.—An analysis of the student's personal speech problems followed by an intensive program of training designed to increase oral effectiveness. Prerequisite, permission of instructor. *Cr* 0. MR. GILLESPIE

31. Voice and Diction.—Designed to establish good speech habits through an understanding of the vocal mechanism and instruction in the development, care, and use of the speaking voice. *Cr* 2.

MR. GILLESPIE, MRS. MOWER, MR. COOK

32. Introduction to Phonetics.—A study of the sounds of the English language and the symbols of the International Phonetic Alphabet which represent them. Emphasis will be placed upon the auditory recognition and the phonetic transcription of the sounds as they occur in connected speech. *Cr* 1.

MR. GILLESPIE

81 (181). Introduction to Speech Correction.—A survey of the symptoms and causes of voice and articulation defects with training in the recognition, diagnosis, and treatment of minor speech problems. Recommended for prospective teachers. Limited to juniors and seniors. *Cr* 3. MR. GILLESPIE

82 (182). Speech Correction Methods.—Further study of the causes of speech disorders with emphasis given to methods of therapy used at the classroom level. Supervised planning of actual therapy sessions will constitute a portion of the course. Prerequisite, Course 81. *Cr* 3. MR. GILLESPIE

85, 86 (185, 186). Problems in Functional Speech Defects.—Detailed study of a functional speech problem followed by the planning and administration of remedial speech procedures. Weekly remedial sessions, conferences with the instructor, and special library study. Prerequisite, Course 82. *Cr* 1.

MR. GILLESPIE

Courses in Oral Interpretation

41. Fundamentals of Interpretation.—An introduction to the art of interpretation in order to stimulate an understanding and responsiveness to literature and to develop the ability to convey to others, through oral reading, an appreciation of that literature. *Cr* 2. MR. BARUSHOK, MRS. MOWER, MR. CYRUS

92 (192). Advanced Oral Interpretation.—Consideration of the particular problems involved in the oral reading of each of the following: (1) prose, (2) poetry, and (3) drama. Limited to juniors and seniors. Prerequisite, Course 41. *Cr* 3. MR. BARUSHOK

General Courses

95, 96 (195, 196). Problems in Speech.—For the advanced student desiring to study a particular problem of his own choice under the guidance of a member of the staff. Prerequisite, permission of the Head of the Department. *Cr* 2. THE STAFF

†97 (197). Teaching of Speech.—Problems, methods, and materials related to the teaching of speech in the secondary school. Particular attention to the extracurricular speech program. Limited to juniors and seniors. Prerequisite, permission of the instructor. *Cr* 3. MR. GARDNER

98 (198). Seminar in Speech.—Oral and written reports by class members. Required of all senior majors. Prerequisite, permission of the instructor. *Cr* 2. MR. GARDNER

299. Graduate Thesis.—*Cr, Ar.*

ZOOLOGY

PROFESSORS SPEICHER, MURRAY, EVERHART, FLYNN, AND MEYER; ASSOCIATE PROFESSOR BARDEN; ASSISTANT PROFESSORS SASS, MAJOR, MUN, AND ZUSI; DR. K. G. SPEICHER; MRS. BARR, MR. STEBBINS, MR. BURNS, MR. GRAY, AND MISS JORDAN

Zoology, being the study of animal life, is important to an understanding of the relationship of man to his natural environment. It also serves as a basis for the study of mental and social behavior.

Students majoring in Zoology take between 38 and 48 hours in this field but may include in the total certain advanced biological courses in other departments. Organic Chemistry and General Physics are taken by all zoology majors.

The Department offers curricula which satisfy the admission requirements of graduate, medical, dental, and medical technology schools. Premedical students in this Department follow a program which includes a minimum of 48 hours of Chemistry and Biology combined, including certain specified courses.

Either Zoology 1 and Botany 1, or Zoology 3; 4, are prerequisite to all advanced courses in the Department.

1. General Zoology.—A basic one-semester course. Fundamental principles and a brief survey of the animal kingdom illustrated by laboratory studies on a few of the major types of animals with emphasis on the mammals. Repeated each semester. *Lec* 2, *Lab* 4, *Cr* 4. MR. BARDEN AND STAFF

3; 4. Animal Biology.—A basic two-semester course. The first semester reviews the major forms of animal life, with emphasis on the structure and functions of the mammal. The second semester deals with principles of life, including properties of cells, embryology, heredity, and organic evolution. *Lec* 2, *Lab* 4, *Cr* 4. MR. SPEICHER, MR. ZUSI, AND STAFF

5. Anatomy and Physiology for Nurses.—The general principles of animal life, emphasizing the structure and functions of the human body. Restricted to three-year student nurses. *Lec* 3, *Lab* 4, *Cr* 5. MR. SASS AND STAFF

8. Anatomy and Physiology.—The general principles of animal life, with emphasis on the structure and functions of the human body. Students who have had Zo 3; 4 should take Zo 33 rather than Zo 8. *Lec* 2, *Rec* 1, *Lab* 2, *Cr* 4. MR. SASS AND STAFF

8a. Anatomy and Physiology.—Similar to Course 8, with additional time for laboratory. For students in the School of Nursing. *Lec* 2, *Rec* 1, *Lab* 4, *Cr* 5. MR. SASS AND STAFF

12. Organic Evolution.—The biological development of higher forms of life from the simpler, the evidence which support this fact and the processes which bring it about. Open to all non-majors above freshman standing. Not given every year. *Lec* 2, *Cr* 2. MR. SPEICHER

32 (132). Ichthyology.—The characteristics of fishes, their life histories and economic importance, with emphasis on fresh-water species. Lectures, supplemented by laboratory study and dissection. *Lec* 2, *Lab* 4, *Cr* 4. MR. EVERHART

33 (133). Comparative Anatomy.—The structure, origin, and history of

the vertebrate organ-systems. Prerequisite, Zoology 1 and Botany 1 or Zoology 3; 4. *Lec* 2, *Lab* 4, *Cr* 4. MR. FLYNN

36 (136). Vertebrate Embryology.—The development and formation of tissues, organs, and organ-systems in vertebrates. *Lec* 2, *Lab* 4, *Cr* 4. MR. MUN

†***37 (137). Comparative Embryology.***—A comprehensive approach to the early embryological phases of selected invertebrate and vertebrate forms, with emphasis on living development and embryological techniques. Prerequisite, two years of Zoology. *Lec* 2, *Lab* 4, *Cr* 4. MR. MUN

39 (139). Mammalogy.—The characteristics of mammals, their life histories and economic importance. Lectures supplemented by laboratory study of skins and mounted specimens. *Lec* 2, *Lab* 3, *Cr* 3. MR. BARDEN

51 (151). Histology.—Microscopic anatomy of animal tissues and methods of preparing microscopic slides. *Lec* 2, *Lab* 4, *Cr* 4. MR. ZUSI

53 (153). Invertebrate Zoology.—The morphology, physiology, life histories, phylogenetic relationship, and economic importance of invertebrates exclusive of insects. *Lec* 2, *Lab* 4, *Cr* 4. MR. MEYER

58 (158). Animal Parasitology.—The life histories, economic importance, methods of control, host autopsy and the preparation of parasites for study and identification. *Lec* 2, *Lab* 4, *Cr* 4. MR. MEYER

60 (160). Ornithology.—The characteristics of birds, their life histories and economic importance. Lectures, laboratory study of skins and mounted specimens, and field identifications. *Lec* 2, *Lab* 4, *Cr* 4. MR. BARDEN, MR. ZUSI

63 (163). Principles of Genetics.—The nature of hereditary factors and the mechanisms which control their transmission. Prerequisite, Zoology 3; 4. *Lec* 3, *Cr* 3. MRS. SPEICHER

64. Genetics Laboratory.—Practical experience in the rearing of some genetically important laboratory species, and analysis of the resulting data. Prerequisite, Bt 45 or Zo 63. *Cr* 2. MR. SPEICHER

71 (171). Fish Management.—Modern methods of fish management including propagation and distribution, fisheries legislation, biological surveys, and environmental improvements. Prerequisite, Zoology 32 and Entomology 26. *Lec* 2, *Lab* 4, *Cr* 4. MR. EVERHART

77 (177). Animal Physiology.—Physiological processes in vertebrates with emphasis on the integration of organ systems. Prerequisite, Zo 33 and at least one year of chemistry. *Lec* 2, *Lab* 4, *Cr* 4. MR. MAJOR

78 (178). General Physiology.—The vital phenomena common to all organisms. Membrane properties are treated at length. Prerequisite, Zo 77 and Organic Chemistry. *Lec* 2, *Lab* 4, *Cr* 4. MR. MAJOR

87. 88. Problems in Zoology.—Open to juniors and seniors who have special interest and qualifications in some branch of zoology. Admission by permission of the head of the Department. *Cr, Ar.* THE STAFF

95. 96. Zoology Seminar.—Oral reports and discussion by class members. The first semester is usually devoted to the study of general endocrinology; the second to approved zoological topics. Required of all senior majors. *Rec* 2, *Cr* 1. THE STAFF

GRADUATE STUDY IN ZOOLOGY

The Department offers work leading to the degree of Master of Science, the general requirements for which are listed under Graduate Study. The program

normally requires four semesters, of which at least two must be spent in residence.

A reading knowledge of French or German, preferably the latter, is a requirement for the advanced degree. In the major field, all courses numbered 200 or over are given primarily for graduate credit. All courses numbered 100 to 200 may likewise be taken for graduate credit, with the added requirement of an assigned problem in the subject. Students may be required to take, without graduate credit, certain undergraduate courses which they lack.

Specific fields of interest for thesis subjects include cytology, ecology, experimental embryology, fishery biology, general physiology, genetics, invertebrate zoology, and parasitology.

Graduate Courses in Zoology

†***237. Experimental Embryology.***—Analysis of cell multiplication, organogenesis and growth in embryonic systems. Integration with regeneration, normal and abnormal tissue growth and autonomous single cell organisms. Prerequisite, Zoology 36, or permission of instructor. *Rec* 2, *Lab* 4, *Cr* 4. MR. MUN

†***252. General Cytology.***—The problems of cell structure, cell division and the interrelation of cytology and genetics. Prerequisite, Zoology 51 and genetics, or permission of instructor. *Lec* 2, *Lab* 4, *Cr* 4. MR. SPEICHER

‡***255. Faunistic Zoology.***—The collection, preservation, and identification of fresh-water and terrestrial invertebrates (exclusive of insects) and of lower vertebrates; habits and life histories of selected forms. Prerequisite, Zoology 53 or permission of instructor. *Lec* 2, *Lab* 4, *Cr* 4. MR. MEYER

‡***256. Animal Ecology.***—The interrelationships between animals and their physical and biotic environment. Topics include essentials of existence, food, reproduction, populations, communities, migration, distribution, succession, rhythms, adaptations and applications. Prerequisite, Zoology 255 or permission of instructor. *Lec* 2, *Lab* 4, *Cr* 4. MR. BARDEN

†***280. Comparative Physiology.***—The physiological variations found in the animal kingdom and an interpretation of these variations in terms of evolutionary significance, anatomical changes and ecological conditions. Prerequisite, Zoology 77 or permission of instructor. *Lec* 3, *Cr* 3. MR. MAJOR

Graduate Problems

258. Problems in Parasitology.—Prerequisite, Zoology 58. *Cr, Ar.* MR. MEYER

260. Problems in Ornithology.—Prerequisite, Zoology 60. *Cr, Ar.* MR. BARDEN, MR. ZUSI

263. Problems in Genetics.—Prerequisite, Zoology 63 or Botany 45, *Cr, Ar.* MR. SPEICHER

277. Problems in Physiology.—Prerequisite, Zoology 77. *Cr, Ar.* MR. MAJOR

291. 292. Problems in Zoology.—*Cr, Ar.* THE STAFF

299. Graduate Thesis.—*Cr* 6-10. THE STAFF

COLLEGE OF EDUCATION

MARK R. SHIBLES, DEAN

COLLEGE OF EDUCATION

The College of Education offers four-year programs designed for the preparation of elementary, junior and senior high school teachers; also teachers of physical education, athletics, health and recreation. Within the four-year undergraduate program a student may start his preparation for such positions as a specialist in reading, guidance counselor, principal, supervisor, and school administrator. These programs are usually completed during a period of graduate study.

The College of Education also provides instruction, on a service basis, in the professional subjects essential to the preparation for teaching, to undergraduate students from other divisions of the University and also for students registered with the Faculty of Graduate Study.

GENERAL INFORMATION

The College of Education concerns itself only with those students who are planning for a career in the field of education. All of its undergraduate programs are designed so that each student will include a substantial amount of college work in the humanities, a concentration of academic work closely related to the area of special teaching interest, and basic professional work in education and psychology. No undergraduate student in the College of Education will be recommended for a degree until he has fulfilled these requirements.

ADMISSION

Students are ordinarily admitted to the College of Education as first-year students in the four-year program. The specific admission requirements are given on page 27 of this catalog. Any deficiencies in these requirements must be made up during the student's first two years. A student admitted with advanced standing must satisfy all basic entrance requirements during his first year in the College of Education.

DESCRIPTION OF THE FOUR-YEAR PROGRAM

The booklet, "A Four-Year Program in the College of Education," describing in detail the special requirements in general education, the courses needed for the development of various teaching fields, and the required work in professional education, has been prepared for students who desire to enter education.

A copy of this booklet may be obtained by writing to the Director of Admissions or the Dean of the College of Education.

ADMISSION WITH ADVANCED STANDING

Students from other institutions who have already completed a portion of a teacher-education program or who desire to change their professional plans and enter education are invited to apply for admission by transfer. Each such case will be considered on its own merits. When such students are accepted, they will be given advanced standing in the College of Education for work already completed which meets the established standards of quality and the specific course requirements of the program to which they are seeking admission.

The procedure for admission to advanced standing varies slightly according to the type of institution involved. This is explained below:

A. **From the Various Colleges of the University of Maine**

Students in the College of Arts and Sciences, Agriculture, and Technology who desire to change their professional or vocational plans and enter education may be accepted for transfer to the College of Education. (This does not apply to students who expect to teach agriculture or home economics. The direction of their professional work remains in the College of Agriculture.) When students from other Colleges of the University are admitted to the College of Education, work previously completed will be accepted insofar as it applies to the proposed program in the College of Education, and meets the minimum standards of quality established by the University.

Students from any other college of the University of Maine who desire to consider such a transfer are invited to consult with the Dean of the College of Education. The actual transfer is initiated by the student through the office of the Director of Admissions.

B. **From Institutions other than the University of Maine**

1. **Maine Normal Schools and Teachers Colleges.**—Undergraduate students from Maine teacher colleges will be considered for admission by transfer with advanced standing provided they are recommended by the institution involved.

Graduates of the three-year courses in the normal schools who have had teaching experience, provided they have the recommendation of the institution, may be admitted to senior standing, and may be graduated on the satisfactory completion of one year of work. This program is ordinarily restricted to elementary school teachers, supervisors, and administrators who plan to remain in the elementary school field.

Normal school and teachers college students who are interested in entering the College of Education should request application forms from the Director of Admissions of the University.

2. **All other Institutions.**—Students who desire to transfer from another institution to the University of Maine for the purpose of preparing to teach should apply for admission to the College of Education. Initial correspondence concerning such admission should be with the Director of Admissions. Applicants accepted by transfer with advanced standing to the College of Education will be responsible for fulfilling the same general requirements as those students coming as freshmen directly from secondary schools.

Summer Session and Extension Class Students.—Students whose only work to date in the College of Education has been, and those whose first work in the College of Education will be, in the summer session, by class extension, at the various Extension centers, are strongly urged to apply for admission to the University exactly as they would if they expected to enroll for resident work during the regular school year. This recommendation applies both to students who expect to work for a degree in the College of Education and also those who have not yet fully decided on the matter.

Among the advantages which come to a student by reason of being admitted to the University are: Immediate assignment of a major adviser to counsel on registration, requirements, etc.; and eligibility for guidance and counseling service. Students who expect their work to be in the summer session should apply prior

to their first registration; students whose first work is to be by class extension should apply during their first extension course.

Application for admission should be made directly to the Director of Admissions, University of Maine. (See sections immediately above.)

GUIDANCE SERVICE FOR STUDENTS

A guidance and testing service is provided for all students enrolled in the College of Education. This service is briefly described below.

Testing.—Students admitted to the College of Education may be expected to take a series of tests, either prior to or immediately after their first registration in a regular session.

These tests will cover general scholastic ability and achievement in broad academic fields. In addition, tests, scales, and inventories in such areas as personality, interests and aptitudes, will be available for those students who desire this service.

The results of these tests will be made known to the individual student through his adviser. These test results will be used by the adviser as a basis for counseling.

Counseling.—Immediately upon admittance to the College of Education each student is assigned a staff member to act as his major adviser. The major adviser will assist the student in the selection of a field of concentration, advise with him on the selection of specific courses, check registration and graduation requirements and counsel with personal and vocational problems.

GRADUATION REQUIREMENTS

The completion of the required work of the College of Education leads to the degree of Bachelor of Science in Education (B.S. in Ed.).

A total of 128 degree hours of college work, exclusive of credit for basic military training, is required for graduation. In addition, each student must accumulate a total number of "grade points" equal to 2 times the number of hours in which he receives grades. Grade points are computed by multiplying each hour of the letter grade by a factor as follows: A by 4, B by 3, C by 2, and D by 1.

Included in the 128 semester hours required for graduation for those who follow the *elementary teacher* program, are a minimum of 50 degree hours in general education, 24 degree hours of courses in professional subjects, and 30 hours in a major academic field. Special work in appropriate fields (such as art, music, speech, psychology, child growth and development, and health and physical education) is also required.

All courses taken in the student's academic teaching field and in his professional work must be completed with a 2.0 (C) average to be eligible for a degree. In addition, a student must likewise acquire a 2.0 (C) average in all work taken before the degree may be awarded.

Those who follow the *secondary teacher* program, are required to complete a minimum of 50 degree hours in general education, 18 degree hours in professional education, and a minimum of 60 degree hours in the field of concentration. The foregoing are included in the 128 hours required for a degree.

Students who expect to qualify to teach in a specialized field, such as physical education, will use the work in this special area as their field of concentration.

General Education Subjects Required.—Information concerning the specific

courses required in general education is available from the Office of the Dean. The subjects and credit hours are:

English	12 credit hours
*Speech	2-4 credit hours
Social Studies	8-10 credit hours
Science	6-8 credit hours
Fine Arts	6-10 credit hours
*General Psychology	6 credit hours
Elective in the above areas to total	50 credit hours

In addition to their regular subjects, teachers generally participate in the direction of student activities such as music, debating, dramatics, clubs, and games. Each student in the College of Education should develop some proficiency in at least one of these fields.

Professional Subjects Required.—The professional subjects required for a degree from the College of Education also meet the current state requirements for a teaching certificate. Students who desire to qualify for general teaching in the junior and senior high school only are required to complete 18 credit hours in professional education in addition to courses in general psychology. Students who desire to qualify for general teaching in the elementary school are required to complete 24 credit hours in professional education plus general psychology.

The required professional subjects are designed to acquaint the student with the general aims of education and the techniques and principles of teaching. These courses are arranged so that they culminate in the course, *Observation and Supervised Student Teaching.* Two plans are provided for this student teaching experience. In one, the student spends one half of each day for one semester in regular college work and the other half-day as a student teacher in a local school; under the second plan, the student spends full days in regular college work for one half of the semester, and full days as a student teacher in the public schools for the other half semester.

The sequence of courses for each plan for student teaching is given below.

GENERAL SECONDARY ONLY

Plan I—Observation and Student Teaching for half days for full semester

Plan II—Observation and Student Teaching for full days for half semester

Freshman Year

FALL SEMESTER

Ed A 2 Orientation 0

Sophomore Year

FALL SEMESTER

Py 1 Gen. Psych. ..... 3 hrs.

SPRING SEMESTER

Py 2 Gen. Psych. ..... 3 hrs.
Ed B 2 The American School 3 hrs.

FALL SEMESTER

Py 1 Gen. Psych. ..... 3 hrs.

SPRING SEMESTER

Py 2 Gen. Psych. ..... 3 hrs.
Ed B 2 The American School 3 hrs.

Junior Year

FALL SEMESTER
Ed B 3 Human Growth & Development ..... 3 hrs.

SPRING SEMESTER
Ed B 4 The Teaching Process 3 hrs.

FALL SEMESTER
Ed B 3 Human Growth & Development ..... 3 hrs.

SPRING SEMESTER
Ed B 4 The Teaching Process 3 hrs.

plus a Special Methods Course selected from the following:

Eh 84 The Teaching of English in the Secondary School ..... 3 hrs.
Ed M 41 Teaching Social Studies in the Sec. School ..... 3 hrs.
Ed M 42 Teaching Science in the Sec. School ..... 3 hrs.
Ms 49 Mathematics for Teachers ..... 3 hrs.
Fl 66 The Teaching of Foreign Languages ..... 3 hrs.

Senior Year

FALL SEMESTER
Ed M 93 Half-Day Student Teaching ..... 4 to 6 hrs.

SPRING SEMESTER
Ed M 93 Half-Day Student Teaching ..... 6 hrs.

FALL SEMESTER
*Ed M 91 Full-Day Student Teaching ..... 6 hrs.

SPRING SEMESTER
*Ed M 91 Full-Day Student Teaching ..... 6 hrs.

*The student will enroll for 9 semester hours of academic work given either the first 8 weeks or the second 8 weeks of the semester.

GENERAL ELEMENTARY ONLY

Plan I—Observation and Student Teaching for half days for full semester

Plan II—Observation and Student Teaching for full days for half semester

Sophomore Year

FALL SEMESTER
Py 1 Gen. Psych. ..... 3 hrs.

SPRING SEMESTER
Py 2 Gen. Psych. ..... 3 hrs.
Ed B 2 The American School 3 hrs.

FALL SEMESTER
Py 1 Gen. Psych. ..... 3 hrs.

SPRING SEMESTER
Py 2 Gen. Psych. ..... 3 hrs.
Ed B 2 The American School 3 hrs.

Junior Year

FALL SEMESTER
Ed B 3 Human Growth & Development ..... 3 hrs.
Ed M 14 Teaching Arithmetic in Elem. School ..... 2 hrs.
Ed M 30 Teaching the Language Arts ..... 3 hrs.

SPRING SEMESTER
Ed B 4 The Teaching Process 3 hrs.
Ed M 15 Teaching Social Studies in the Elem. School ..... 2 hrs.
Ed M 16 Teaching Science in the Elementary School ..... 2 hrs.

FALL SEMESTER
Ed B 3 Human Growth & Development ..... 3 hrs.
Ed M 14 Teaching Arithmetic in Elem. School 2 hrs.
Ed M 30 Teaching the Language Arts ..... 3 hrs.

SPRING SEMESTER
Ed B 4 The Teaching Process 3 hrs.
Ed M 15 Teaching Social Studies in the Elem. School ..... 2 hrs.
Ed M 16 Teaching Science in the Elementary School ..... 2 hrs.

Senior Year

FALL SEMESTER
*Ed M 92 Half-day Stud. Teach. (Elem.) ..... 4 to 6 hrs.

SPRING SEMESTER
*Ed M 92 Half-day Stud. Teach. 6 hrs.

FALL SEMESTER
Ed M 90 Full-day Stud. Teach. (Elem.) ..... 6 hrs.

SPRING SEMESTER
Ed M 90 Full-day Stud. Teach. (Elem.) ..... 6 hrs.

Ed M 92 to be taken in either but not both of the semesters indicated.

Normally these courses are taken in the years indicated; however, a student who did not start this sequence during his sophomore year may still be admitted to the College of Education. Such students when admitted, must complete these courses in sequence. It may be necessary for such students to use more than the normal eight semesters to satisfy graduation requirements.

Students whose work before entering the College of Education has been at an institution other than the University of Maine, will be expected to complete the above requirements, or their equivalent.

RESIDENCE REQUIREMENTS

A minimum of thirty semester hours of credit must be earned while in residence at the University to qualify a candidate for a degree. This requirement may be met by one academic year of residence, or by attendance in summer sessions. For students who are enrolled in correspondence, extension and summer session courses, the thirty hours of residence credit may be obtained over an extended period of time and need not be continuous; however, such candidates must enroll for the last six hours of credit on the campus. Work taken at the Extension Centers is considered resident credit for undergraduate students in the College of Education. Off-campus students, before enrolling for a correspondence or extension course, should ascertain from the Dean of the College of Education the amount of such work which is allowed toward fulfilling the requirements for the degree. In all cases, this requirement of thirty hours of residence work must be met after the student has become a candidate for a degree in the College of Education.

Exceptions to these rules will not be permitted except by a vote of the faculty.

EDUCATION COURSES IN THE SUMMER SESSION, BY EXTENSION, OR CORRESPONDENCE

Numerous education courses are offered during the Summer Session, and by correspondence and class extension; however, students admitted to a degree program on or after September 1, 1960, are not granted degree credit for correspondence study. Detailed information regarding the Summer Session and General Extension Courses may be obtained by communicating with the Director, Mark R. Shibles, College of Education, Orono, Maine.

BUREAU OF EDUCATIONAL RESEARCH AND SERVICE

Organized as an integral part of the College of Education, the Bureau of Educational Research and Service is available to render specialized service in connection with testing programs, surveys, and counseling, both on campus and to the

schools of the State. Information concerning these services, including appointments and fees, may be obtained from the Director.

In addition to being available for consultation on special problems, the Bureau maintains the regular services listed below.

Testing Service on the University Campus.—An International Business Machine Test scoring machine is available for campus use with either standardized or informal tests. Sample tests and catalogs of test publishers are available for study by members of the University faculty. Answer sheets, scoring keys, special pencils, and other materials, as well as information booklets on the construction of informal tests for machine scoring, are carried in stock.

Scoring and reporting the results of Freshman Week Tests are also carried on by the Bureau.

Testing Service Off-Campus.—The Bureau is available for consultation by school officials of the State in planning testing programs. Arrangements may be made for scoring tests used in such programs. Basic materials for use with the International Business Machine scoring machine can be rented from the Bureau.

AUDIO-VISUAL SERVICE

The Audio-Visual Service, under the auspices of the College of Education, maintains a lending library of educational motion pictures, and renders assistance in their selection and use. These materials and services are available to the schools of the State, responsible civic groups, student organizations, and campus classes at the University.

A small rental or service fee is charged for these materials when they are sent off campus; no fee is charged for their educational use on the campus. In addition, projection equipment, and a staff of student operators, are available for campus use. A projection room is provided in the College of Education Building, for use when suitable classroom space is unavailable.

In order to assist in the selection and use of audio-visual teaching aids, interested persons are invited to inspect these materials, and also the catalogs and descriptive publications of the various manufacturers. The Office will be glad to arrange previews of any of its material.

Details of this service are contained in a separate bulletin which is available on request. For this bulletin, or other information, address the Office of the Director of Audio-Visual Center, College of Education Building.

CERTIFICATES FOR TEACHERS

It should be clearly understood that the State Department of Education has sole authority to issue certificates for teaching. The Office of the Dean of the College of Education, however, is in a position to advise prospective teachers concerning certificates.

In order to provide for the many types of school positions, the State Department issues several types of certificates. Most types of certificates are issued in three grades—Provisional Grade B, Provisional Grade A, and Standard—depending upon the amount and type of work presented by the applicant. The graduation requirements of the College of Education are established so that all students who are graduated from the College will meet or excede the requirements for the Provisional Grade A certificate of the particular type involved.

In addition to furnishing courses for its own students, the College of Edu-

cation acts as a service agency to provide professional training for students from other teaching units of the University who wish to qualify for a teaching certificate. Such students are enrolled in the same classes with students from the College of Education and if they follow the same pattern will receive the same grade certificate. This pattern is given on pages 189-191. Occasionally, students from other units of the University desire to qualify initially for the Provisional Grade B certificate. The 15 hours of basic work (Ed B 2, 3, and 4) meet the professional subject requirements for the General Secondary Provisional Grade B certificate. Students who wish to meet the requirements for the General Elementary Provisional Grade B certificate are required to complete 12 additional hours in courses in elementary school methods and materials. These 12 hours are made up of:

Ed M 30	Teaching Language Arts	3 credit hours
Ed M 14	Teaching of Arithmetic	2 credit hours

and 3 hours from among other courses in elementary school methods and materials. Students who expect to apply for the general secondary certificate must fulfill the requirement of a *teaching field*. This teaching field requirement refers to subjects or areas commonly taught in secondary schools and may be met by either of the following patterns:

Pattern A

(1) A minimum of *thirty* semester credit hours in a subject field, excepting Latin or Mathematics which are recognized upon the completion of *eighteen* semester credit hours, together with (2) a minimum of *twenty-one* semester credit hours in a second subject field *or* a minimum of *twelve* semester credit hours each in not less than two additional subject fields, excepting Latin or Mathematics which are recognized upon the completion of *eight* semester credit hours.

Pattern B

A minimum of *fifty* semester credit hours within an area of specialization (i.e., social studies, English, science and mathematics, the sciences) in which at least three common subject fields are represented.

Information concerning requirmeents for certificates to teach physical education differ from the above, and may be obtained upon inquiry at the office of the College of Education.

Students who expect to obtain the general elementary certificate must satisfactorily complete a minimum of *twenty-four* semester credit hours in a subject field selected from the following: history, government, sociology, English, speech, economics, natural sciences, languages, mathematics, psychology.

PLACEMENT FOR TEACHERS

The University of Maine Placement Bureau includes among its services assistance to prospective teachers in finding teaching positions and in facilitating promotion of teachers in service. Information regarding this service may be obtained from the University of Maine Placement Bureau, College of Education Building.

COURSES OF INSTRUCTION

Courses numbered 1-99 are for undergraduates; courses numbered 200 and above are primarily for graduates. Courses numbered below 100 which have been approved for graduate credit are indicated by a graduate designation, in parentheses, after the regular course number.

For descriptions of courses in Psychology required in programs in Education see page 171.

PROFESSORS SHIBLES, CRAWFORD, RANKIN, SUPPLE AND DAVIS; ASSOCIATE PROFESSORS FREEMAN, CAUGHRAN, MACCAMPBELL, OLSON, AND FINK; ASSISTANT PROFESSORS CARPENTER, SANFORD, BAILEY, PORTER-SHIRLEY, REARDON, MYERS, HART, AND PRESCOTT; MR. FOBES, MRS. BOYCE, MISS MACPHERSON, AND MR. BOONE

Appraisal—Pupil Adjustment and Personnel Practices (Ed A)

1 (101). Statistical Methods in Education.—Use of statistical techniques as guides and controls in the solution of problems in education. *Cr* 3. [Formerly numbered Ed 40] MR. PRESCOTT

31 (131). Use of Standard Tests.—Selection, administration, interpretation, and use of standardized tests in Grades 1 through 12. *Cr* 2 [Formerly numbered Ed 42] MR. CRAWFORD, MR. FINK, MR. PRESCOTT

52 (152). Group Guidance.—Analysis of the meaning of group experience. Examination and evaluation of guidance techniques, materials, and programs with groups at all grade levels. *Cr* 3. [Formerly numbered Ed 45A] MR. FREEMAN

53 (153). Occupational and Educational Information.—Sources and nature of occupational and educational information; collection, evaluation, and use of informational materials with individuals and groups. *Cr* 3. [Formerly numbered Ed 46] MR. FREEMAN, MR. SANFORD

54 (154). Organization and Administration of Pupil Personnel Services.—Scope and general character of pupil personnel services; the duties of the director, organization and administration of the program and the interrelationship and functioning of various aspects of the service. *Cr* 2. [Formerly numbered Ed 47] MR. SANFORD

55 (155). Principles and Techniques of Counseling.—The functions of the guidance counselor in educational-vocational-personal counseling; methods of gathering data and interviewing. *Cr* 3. [Formerly numbered Ed 48] MR. FREEMAN

Basic Professional Courses (Ed B)

2. The American School.—The purposes, background, status and curricula of the elementary and secondary schools; organization and control of education in the United States. This is one of the courses prerequisite to student teaching in all regular undergraduate programs. *Cr* 3.

MR. SUPPLE, MR. HART, MR. OLSON, MR. BAILEY, MISS MACPHERSON

3. Human Growth and Development.—The pupil and his learning processes, including learning theories, pupil growth patterns, and selected techniques for the study of pupil development. This is one of the courses prerequisite to student teaching in all regular undergraduate programs. *Cr* 3.

MR. SANFORD, MR. FREEMAN, MR. DAVIS, MR. GUILO, MISS MILES

4. The Teaching Process.—The procedures of instructional planning, including such items as improved use of small groups, classroom space, and appropriate teaching materials; measurements, evaluation, and reporting of pupil learning. This is one of the courses prerequisite to student teaching in all regular undergraduate programs. *Cr* 3.

MR. FINK, MR. CAUGHRAN, MRS. BOYCE, MR. REARDON, MR. PRESCOTT

Curriculum and Instructional Materials (Ed C)

11 (111). Planning the Elementary School Curriculum.—Aims and philosophy of elementary education; present status of the curriculum; factors affecting curriculum changes, curriculum development and modern child psychology. *Cr* 3. [Formerly numbered Ed 20C] MISS MACPHERSON

21 (121). Planning the Secondary School Curriculum.—Plans of curriculum reorganization designed to bring the curriculum into harmony with needs of modern life. Prerequisite, Ed C 1 or equivalent course, or a year of teaching experience. *Cr* 3. [Formerly numbered Ed 25F] MR. HART

34 (134). Laboratory in Teacher-Made Instructional Materials.— Production and planning for inexpensive instructional materials; includes planning and producing materials for elementary and secondary subject areas; selection of various media and their execution into finished products, such as posters, charts, film, radio and TV programming, and tape recording; no textbook needed in this course, but there will be a charge for materials used. MR. REARDON, MR. BOONE

Graduate-Level Courses (Ed G)

200. Seminar: Education in the United States.—This seminar is intended to provide a common background of understandings in the philosophy and issues of modern education. Another purpose is to provide experience in library research techniques and report writing. Required of all students in the Master of Education program. *Cr* 3. MR. CRAWFORD

201. Seminar in Reading.—Discussions and individual reports on problems related to better reading programs. Prerequisite, Ed M 13, Teaching Reading in the Elementary School, or Ed M 50, Newer Practices in Reading, or equivalent course. *Cr* 2. [Formerly numbered Ed 212A] MR. OLSON, MR. CAUGHRAN

202. Seminar in Arithmetic.—Study and reports on special problems in arithmetic instruction. Prerequisite, Ed M 51, Newer Practices in Arithmetic, or equivalent course. *Cr* 2. [Formerly numbered Ed 212B] MRS. BOYCE

203. Seminar in Social Studies (Elementary).—Problems in the development of the curriculum, materials, resources, and methods of social studies in elementary schools. Prerequisite, Ed M 15, Teaching Social Studies in the Elementary School, or equivalent course. *Cr* 2. [Formerly numbered Ed 212C] MR. SUPPLE

204. Seminar in Science (Elementary).—Problems in curriculum, materials, resources, and methods of science in the elementary school. Prerequisite, Ed M 16, Teaching Science in the Elementary School, or equivalent course. *Cr* 2. [Formerly numbered Ed 212D] MR. DAVIS

207. Seminar in Language Arts.—Discussions and experiences designed to improve the practices and the background in Language Arts. Prerequisite, Ed

M 18, Teaching Language Arts in the Elementary School. *Cr* 2. [Formerly numbered Ed 212G] MR. CAUGHRAN

215. Seminar in Methods of Teaching.—Study and reports on specific problems in the area of teaching. Prerequisite, a basic course in methods or a year of teaching experience. *Cr* 2. [Formerly numbered Ed 215]

216. Seminar in Audio-Visual Aids.—Special problems or projects in the field of audio-visual aids to instruction selected to meet the needs of the individual student. Prerequisite, Ed C 2, Audio-Visual Instructional Materials, or equivalent course. *Cr* 2. [Formerly numbered Ed 216] MR. REARDON

221. Seminar in Social Studies (Secondary).—Problems in curriculum, materials, resources and methods in social studies in the secondary school. Prerequisite, Ed M 41, Teaching Social Studies in the Secondary School, or equivalent course. *Cr* 2. [Formerly numbered Ed 219C] MR. HART

222. Seminar in Science (Secondary).—Problems in curriculum, materials, resources, and methods in science in the secondary school. Prerequisite, Ed M 42, Teaching Science in the Secondary School, or equivalent course. *Cr* 2. [Formerly numbered Ed 219D] MR. DAVIS

231. Seminar in Elementary School Curriculum.—Study and reports on specific problems in the field of curriculum construction and curriculum reorganization. Prerequisite, a basic course in the curriculum field or a year of teaching experience. *Cr* 2. [Formerly numbered Ed 220]

MR. DAVIS, MR. HART, MISS MACPHERSON

232. Seminar in Secondary School Curriculum.—Study and reports on specific problems in the fields of curriculum construction and curriculum reorganization. Prerequisite, a basic course in the curriculum field or a year of teaching experience. *Cr* 2. [Formerly numbered Ed 220] MR. DAVIS, MR. HART

241. Seminar in Supervision.—Problems related to the improvement of instruction. In general, the problems studied will be determined by the needs of the class. Prerequisite, Ed L 1, Supervision of Instruction, or equivalent course, or administrative or supervisory school experience. *Cr* 2. [Formerly numbered Ed 230] MR. CARPENTER, MR. PORTER-SHIRLEY

242. Seminar in School Administration.—Problems related to the operation and control of the school. Prerequisite, Ed L 2, School Organization and Administration, or equivalent course, or administrative or supervisory school experience. *Cr* 2. [Formerly numbered Ed 250] MR. PORTER-SHIRLEY

251. Seminar in Measurement and Evaluation.—The use of measurement and evaluation in problems of improvement of instruction, pupil counseling and guidance, and research in education. Prerequisite, Ed A 11, Measurement in the Elementary School, or equivalent course. *Cr* 2. [Formerly numbered Ed 241]

MR. CRAWFORD, MR. FINK, MR. PRESCOTT

261. Seminar in Guidance.—Study of current problems in guidance and the development of individual projects in guidance activities. Prerequisite, Ed A 51, Principles and Techniques of Guidance, or equivalent course. *Cr* 2. [Formerly numbered Ed 245] MR. FREEMAN

291. Graduate Apprenticeship.—Apprenticeship training available in such areas as administration, supervision and guidance. A minimum of thirty clock hours of work is required for each hour of credit. *Cr* 2-6. [Formerly numbered Ed 208] MR. PORTER-SHIRLEY, MR. FREEMAN, MR. SANFORD, MR. APOSTLE

297. Educational Research.—Evaluation of selected examples of research in education, with special attention to appropriateness of design to the stated

purpose of the study; the selection and presentation of a research problem with special attention to its design and to studies related to it. *Cr* 3.

MR. CRAWFORD, MR. PRESCOTT, MR. FINK

School Leadership (Ed L)

1 (101). Supervision of Instruction.—Nature and scope of democratic supervision; improvement of the teaching-learning situation; observational and evaluation techniques. *Cr* c. [Formerly numbered Ed 30] MR. PORTER-SHIRLEY

2 (102). School Organization and Administration.—Scope and general character of the American public school system; its organization and pattern of general control; selected problems in areas such as personnel policies, finance, reports, and public relations. *Cr* 3. [Formerly numbered Ed 50] MR. BAILEY

11 (111). The Elementary School Principalship.—Organization and administration of the elementary school with special emphasis upon the duties of the elementary school principal. *Cr* 3. [Formerly numbered Ed 51C]

MR. PORTER-SHIRLEY

21 (121). The Secondary School Principalship.—Organization and administration of the secondary school with special emphasis upon the duties of the secondary school principal. *Cr* 3. [Formerly numbered Ed 51F]

MR. PORTER-SHIRLEY

31 (131). School Law.—A study of the legal bases of public education in the State of Maine. *Cr* 2. [Formerly numbered Ed 56D] MR. BAILEY

Methods (Ed M)

13. Teaching Reading in the Elementary School.—General background for teaching reading in the elementary school; reading readiness, phonetics, seatwork, study skills, recreational reading, and testing. An introductory course. *Cr* 3. [Formerly numbered Ed 12A] MR. OLSON, MR. CAUGHRAN

14 (114). Teaching Arithmetic in the Elementary School.—The arithmetic curriculum in the elementary school; methods and techniques in teaching arithmetic; the arithmetic readiness program; instructional and evaluation material. An introductory course. *Cr* 2. [Formerly numbered Ed 12B] MRS. BOYCE

15 (115). Teaching Social Studies in the Elementary School.—Methods and materials for social studies in the elementary school; ways of relating the work of the social studies class to the understanding of practical problems of the community. *Cr* 3. [Formerly numbered Ed 12C] MR. SUPPLE

16 (116). Teaching Science in the Elementary School.—Materials, methods, devices, and activities appropriate to the program of science in the elementary school. *Cr* 3. [Formerly numbered Ed 12D] MR. DAVIS

17 (117). Teaching Literature in the Elementary School.—Methods of teaching, selection and organization of the materials for literature in the elementary school. Special emphasis will be given to the problem of providing for individual needs. *Cr* 3. [Formerly numbered Ed 12F] MISS MACPHERSON

18 (118). Teaching Language Arts in the Elementary School.—Current methods and materials in teaching handwriting, spelling, oral and written composition; analysis and correction of basic difficulties; fusion of the language arts with other school subjects. *Cr* 3. [Formerly numbered Ed 12G]

MR. CAUGHRAN

30. Teaching the Language Arts.—Methods and materials of all elementary school language arts, with special emphasis on reading and composition;

readiness programs, analysis and correction of learning difficulties; fusion of the language arts with other school subjects. *Cr* 3. MR. OLSON, MR. CAUGHRAN

40 (140). Teaching Reading in the Secondary School.—Appraisal of reading achievement and needs; teaching reading and study skills in the content areas; survey of diagnostic and remedial programs in reading in the junior-senior high school. *Cr* 3. [Formerly numbered Ed 19A] MR. OLSON

41 (141). Teaching Social Studies in the Secondary School.—Current practices in teaching social studies; selection and use of instructional materials; modern trends in curriculum construction for social studies in the secondary school. *Cr* 3. [Formerly numbered Ed 19C] MR. HART

42 (142). Teaching Science in the Secondary School.—Methods and materials in the teaching of science; development of the science curriculum, and equipment, supplies, and supplementary materials for science teaching in the secondary schools. *Cr* 3. [Formerly numbered Ed 19D] MR. DAVIS

60 (160). Correction of Reading Difficulties in the Secondary School.—Causes, diagnosis, and correction of reading difficulties; methods, materials, and procedures for corrective work, both group and individual. Grade 7 through 12. *Cr* 3. [Formerly numbered Ed 19R] MR. OLSON

Observation and Student Teaching

The University's arrangements for Observation and Student Teaching are made semester by semester and are based upon actual need (number, subjects, grades, etc.).

The campus demand for this work has increased to the point where it has become necessary to require written permission from the Director of Student Teaching in order to pre-register for the Student Teaching courses. Normally, this written permission should be obtained during the pre-registration period.

90 (190). Full-Day Student Teaching (Elementary).—A full-day, off-campus internship program in a selected school for one half of the semester; a full-day, on-campus program of college courses is provided for the other half of the semester. *Cr* 6. [Formerly numbered Ed 7C] MR. PORTER-SHIRLEY, MR. CARPENTER, MR. BAILEY, MR. RANKIN, MISS MACPHERSON, MR. MYERS, MR. DAVIS, MR. CAUGHRAN

91 (191). Full-Day Student Teaching (Secondary).—A full-day, off-campus internship program in a selected school for one half of the semester; a full day, on-campus program of college courses is provided for the other half of the semester. *Cr* 6. [Formerly numbered Ed 7F] MR. PORTER-SHIRLEY, MR. CARPENTER, MR. BAILEY, MR. RANKIN, MR. MYERS, MR. DAVIS, MR. CAUGHRAN, MRS. BOYCE, MISS MACPHERSON

92 (192). Half-Day Student Teaching (Elementary).—A half-day program of observation and student teaching in a selected school in the University area. The same four consecutive periods must be free daily in order to schedule this course. *Cr* 4 to 6. [Formerly numbered Ed 8C] MR. PORTER-SHIRLEY, MR. CARPENTER, MR. BAILEY, MR. RANKIN, MR. MACCAMPBELL, MR. MYERS, MR. DAVIS, MR. CAUGHRAN, MRS. BOYCE, MISS MACPHERSON

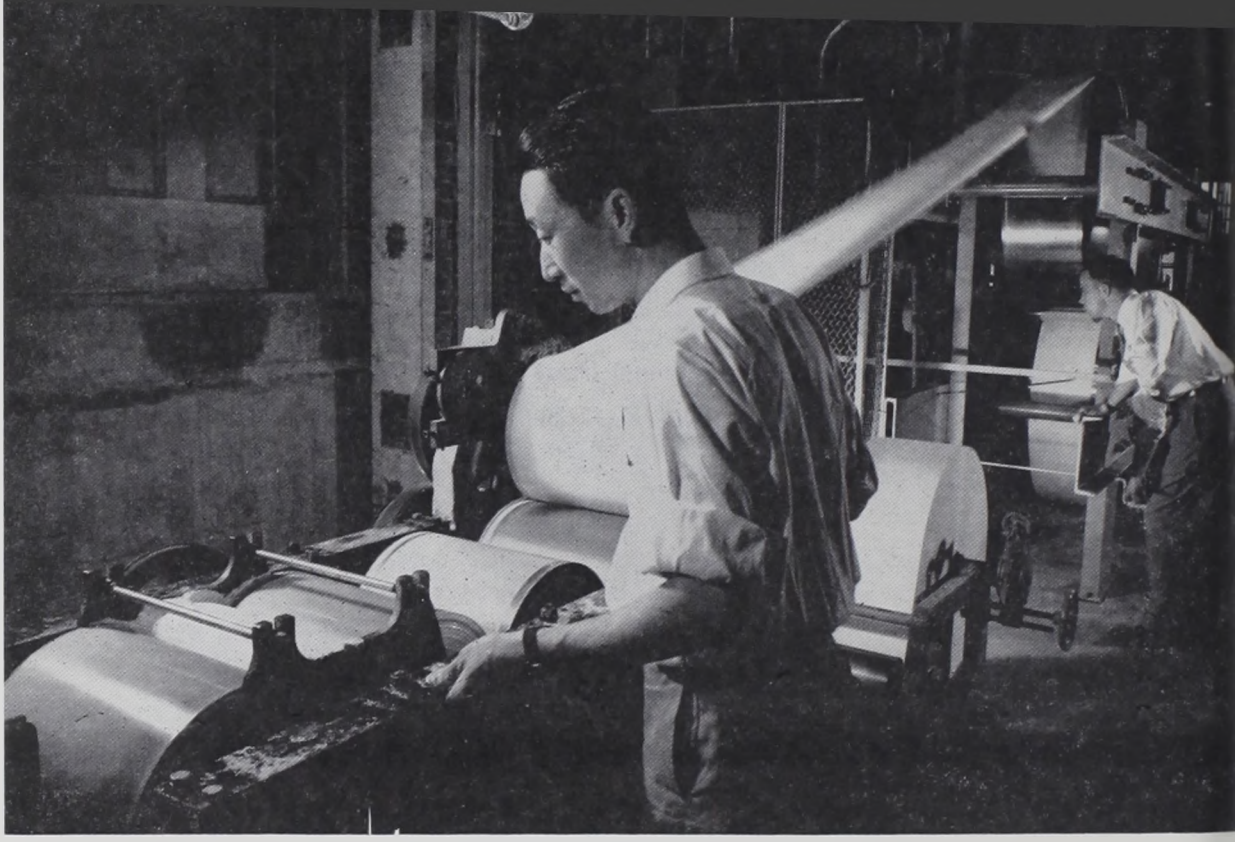
93 (193). Half-Day Student Teaching (Secondary).—A half-day program of observation and student teaching in a selected school in the University

area. The same four consecutive periods must be free daily in order to schedule this course. *Cr* 4 to 6. [Formerly numbered Ed 8F] MR. PORTER-SHIRLEY, MR. CARPENTER, MR. BAILEY, MR. RANKIN, MR. MACCAMPBELL, MR. MYERS, MR. DAVIS, MR. CAUGHRAN, MRS. BOYCE, MISS MACPHERSON

General (Ed X)

98 (198). Problems in Education.—Individual work on a problem of the student's own selection. Primarily for majors in Education. *Cr, Ar* [Formerly numbered Ed 98] MR. CRAWFORD

Teachers observe as children learn French



Upper: Coating paper in the pulp and paper laboratory
Lower: Engineering students work with many types of apparatus

COLLEGE OF TECHNOLOGY

W. S. EVANS, DEAN

COLLEGE OF TECHNOLOGY

The College of Technology, which recommends the degree of Bachelor of Science upon completion of any of its curricula, provides instruction in the following:

- Agricultural Engineering (Jointly with College of Agriculture)
- Chemical Engineering
- Chemistry
- Civil Engineering
  - Highway Engineering
  - Sanitary Engineering
  - Strucutral Engineering
  - Public Management
- Electrical Engineering
  - Communication
  - Power
- Engineering Physics
- Mechanical Engineering
- Pulp and Paper Technology

By special arrangement, a Five-Year Pulp and Paper Management Curriculum may be arranged in conjunction with any of the above curricula or the Forestry curriculum.

For Agricultural Engineering see page 85.

The freshman year is common to all engineering courses and chemistry.

Freshman Year

FALL SEMESTER						SPRING SEMESTER					
Subject			Hours			Subject			Hours		
			Rec	Lab	Cr				Rec	Lab	Cr
Ch	1	Gen. Chemistry	3	3	4	Ch	2	Gen. Chemistry	3	3	4
Eh	1	Freshman Comp.	3	0	3	Eh	2	Freshman Comp.	3	0	3
Eg	1	Engineering Drawing	0	4	2	Eg	2	Engineering Drawing	0	4	2
Ms	12	Anal. Geom. & Cal.	4	0	4	Ms	27a	Calculus	4	0	4
Mt	1	Military Science I	2	1	1½	Mt	2	Military Science I	2	1	1½
Pe	1	Physical Education	0	2	0	Pe	2	Physical Education	0	2	0
Ps	1	General Physics	4	2	5	Ps	2	General Physics	4	2	5

For information on advanced placement, see page 29.

Entering freshmen, especially well prepared in chemistry, may, upon passing a special examination, be permitted to take Ch 2A instead of Ch 1 and Ch 2. If passed with a grade of A or B, this course fulfills the General Chemistry Requirement and carries 8 credit hours.

GRADUATION REQUIREMENTS

(Common to all curricula in the College of Technology)

1. a) Passing grades in all courses required by the major department.
   b) A minimum of 141 degree hours for students taking Ms 12, 27a, 28a, and 29; for all others 143 degree hours. Degree hours shall not be granted for Basic Military Science, Mt 1, 2, 3, and 4, nor for the Advanced ROTC courses, Mt 5, 6, 7, and 8. Degree hour credit is not allowed for courses in which a grade of E is received.
   c) An accumulative average of 1.80.

2. Passing grades in the following courses:
   a) Drawing: Eg 1 and 2, or equivalent.
   b) Language: Eh 1 and 2, or equivalent, Sh 1, Eh 5, or equivalent.
   c) Mathematics: Ms 1, 3, 12, 27, and 28 or equivalent, or Ms 12, 27a, 28a, and 29 or equivalent.
   d) Science: Ch 1 and 2, Ps 1 and 2, or equivalent.
   e) Military Science and Tactics, seven credit hours. Physical Education, two semesters and the satisfactory completion of required tests or four semesters. Veterans may be excused.

3. Passing grades in a minimum of six credit hours in each of the two categories listed, and a minimum of eighteen credit hours total.

   I. Economics, Sociology, Psychology

      Any course may be taken that is listed in the catalog under economics and sociology, business administration, modern society, and psychology, for which the student can qualify.

   II. History, Philosophy, Languages, English Literature, Art, Music

      Any course may be taken that is listed in the catalog under history and government, philosophy, modern languages and classics, English literature, art, or music, for which the student can qualify, excepting Gm 13 & 14 (Scientific German). No more than three credits may be accepted in applied music (e.g., band, chorus, instrumental music lessons, or voice lessons).

Course Expenses

For College of Technology students the minimum and maximum course expenses (inclusive of required equipment, books, and supplies, but exclusive of Military deposit) are indicated in the following table:

Freshmen	$150.00 Per Year, of which approximately $100 will be required for the first semester.
Sophomores	$100.00—140.00 Per Year
Juniors	100.00—160.00 Per Year
Seniors	100.00—160.00 Per Year

In Chemistry and Chemical Engineering courses, students are required to pay for all apparatus broken or lost and for certain non-returnable supplies. Breakage cards at $3.00 each are obtainable at the Treasurer's office. Unused portions will be refunded at the end of the semester on obtaining clearance at the chemistry storeroom.

Graduate Study

Graduates from accredited undergraduate programs are eligible for graduate study in the College of Technology, provided their undergraduate records meet general requirements. (See general requirements in the catalog section on Graduate Study.) Candidates must complete, without credit, any undergraduate courses which may be prerequisite to courses included in the programs of graduate study. In the master's degree program, in general, from six to ten credit hours will be devoted to a thesis in the field of major interest. Selection of courses must conform to a general plan laid down either before study begins or very soon after registration.

DEPARTMENTS OF INSTRUCTION

Courses numbered 1-99 are for undergraduates; courses numbered 200 and above are primarily for graduates. Courses numbered below 100 which have been approved for graduate credit are indicated by a graduate designation, in parentheses, after the regular course number.

One number is used for a course which is given both fall and spring.

When a dash is used between the two numbers (e.g., 1-2), both semesters must be taken to obtain credit; when a semicolon is used (e.g., 1; 2), the first semester may be taken by itself, but the second cannot be taken unless the first is taken previously; when a period is used (e.g., 1. 2), either semester may be taken for credit.

Courses offered in 1962-63 and alternate years are indicated by the sign (‡) placed before the number of the course; courses offered in 1961-62 and alternate years are indicated by the sign (†) placed before the number of the course.

CHEMICAL ENGINEERING

(including Pulp and Paper Technology)

PROFESSORS JENNESS, DURST, ZIEMINSKI; ASSOCIATE PROFESSORS A. CHASE, BOCKUS; ASSISTANT PROFESSORS GORHAM, R. CHASE

The Chemical Engineering curriculum is designed to provide the education necessary to prepare men for successful living in the modern world, for those who wish to undertake professional work in the design, operation, and improvement of the processes of chemical industry. The curriculum provides a broad background in the humanities and in the fundamentals of science and engineering, and affords the opportunity for the application of these fundamentals in professional courses.

Since it is essential that chemical engineers have a sound basic training in chemistry, the curriculum in the sophomore and junior years includes all the fundamental courses in the Chemistry curriculum. In order that the student may gain an early understanding of the significance of his major field, professional Chemical Engineering courses are introduced in the sophomore year and are continued through the last three years in logical sequence. The great majority of the course work in the senior year is made up of these professional courses. Necessary basic knowledge of electrical and mechanical engineering is provided by courses in the appropriate departments. The curriculum leads to the degree of Bachelor of Science in Chemical Engineering.

An important activity of this department is the Division of Pulp and Paper Technology. Students who intend to enter the Pulp and Paper industry or allied fields may elect to take a senior year curriculum largely composed of specialized professional subjects in the pulp and paper field, the other years being identical with the general Chemical Engineering curriculum. This curriculum leads to the Bachelor of Science degree in Pulp and Paper Technology. It is possible for certain students, who do not desire a B.S. degree, to register as special students for a series of related Pulp and Paper and Chemical Engineering courses.

A five year program with emphasis on courses in management is available to students who expect to enter the field of production of Pulp and Paper. This curriculum contains the required courses of the four year curricula in Chemical

Engineering and Pulp and Paper Technology. It also includes selected courses in Economics and Business Administration. It leads to the degree of Bachelor of Science in Chemical Engineering and a certificate indicative of the curriculum.

Graduate Work in Chemical Engineering

Candidates for the degree of Master of Science must have received the degree of Bachelor of Science. They must also have completed a curriculum consistent with the requirements of the American Institute of Chemical Engineers, or take the necessary courses to accomplish that objective without receiving graduate credit for them. Graduate credit for the advanced degree generally consists of twenty hours of professional courses and ten hours of investigation and thesis. Some industrial fellowships and assistantships are available to graduate students. A candidate who accepts either of these usually requires two years to complete the requirements for the Master of Science degree.

Graduate work leading to the Master of Science degree is also offered in the Pulp and Paper Division. Candidates who complete the five year program in Pulp and Paper may receive graduate credit for twenty hours of suitable courses taken in the fifth year.

CURRICULUM IN CHEMICAL ENGINEERING

Freshman Year. See Page 202.

Sophomore Year

FALL SEMESTER

Subject		Hours Rec	Lab or Comp	Cr
Ch 51	Organic Chemistry	3	4	5
ChE 1	Fund. of Chem. Eng.	2	4	4
Ms 27	Calculus	5	0	5
Mt 3	Military Science II	2	1	2
Pe 3	Physical Education	0	2	0
	Hum. Elective	—	—	—

SPRING SEMESTER

Subject		Hours Rec	Lab or Comp	Cr
Ch 41	Quantitative Anal.	2	3	3
Ch 52	Organic Chemistry	3	4	5
ChE 2	Fund. of Chem. Eng.	2	4	4
Ms 28	Calculus	5	0	5
Mt 4	Military Science II	2	1	2
Pe 4	Physical Education	0	2	0

Junior Year

		Rec	Lab or Comp	Cr
Ch 71	Physical Chemistry	2	6	5
ChE 37	Intro. to Thermodynamics	3	0	3
ChE 64	Elem. of Chem. Eng.	3	0	3
Eh 5	Technical Comp.	2	0	2
Me 53	Applied Mechanics	3	0	3
	Hum. Elective	—	—	—

		Rec	Lab or Comp	Cr
Ch 72	Physical Chemistry	2	6	5
ChE 65	Elem. of Chem. Eng.	3	0	3
ChE 81	Chem. Eng. Lab.	1	4	3
Me 54	Applied Mechanics	3	0	3
Sh 1	Public Speaking	2	0	2
	Hum. Elective	—	—	—

Senior Year

FALL SEMESTER

	Subject	Hours Rec	Lab or Comp	Cr
ChE 77	Chem. Process Industries	3	0	3
ChE 82	Chem. Eng. Lab.	1	4	3
ChE 96	Process Control and Instrumentation	3	0	3
*ChE 99	Thesis	0	2	1
Ee 41	Electric Circuits	2	0	2
	Hum. Elective	—	—	—

SPRING SEMESTER

	Subject	Hours Rec	Lab or Comp	Cr
ChE 78	Chem. Process Industries	3	0	3
ChE 94	Chem. Eng. Thermodynamics	3	0	3
*ChE 99	Thesis	0	4	2
ChE	Elective	3	0	3
Ee 43	Applied Electronics or Electrical Machinery	1½	1	2
Me 41	Mechanical Lab.	0	3	1½
	Hum. Elective	—	—	—

* Recommended elective.

CURRICULUM IN PULP AND PAPER TECHNOLOGY

Freshman Year. See Page 202.

Sophomore and **Junior Years,** Identical with Chemical Engineering with the exception of Ch 71 and Ch 72 which are recommended electives.

Senior Year

		Lab Rec	or Comp	Cr
Ee 41	Electric Circuits	2	0	2
Pa 65	Pulp Technology	3	0	3
Pa 73	Pulp Manufacture and Testing	0	8	4
Pa 89	Pulp & Paper Mill Inspections	0	4	2
*Pa 99	Thesis	0	2	1
	Hum. Elective	—	—	—

		Lab Rec	or Comp	Cr
ChE 81	Chem. Eng. Lab.	1	4	3
Ee 43	Applied Electronics or Electrical Machinery	1½	1	2
Pa 66	Paper Technology	3	0	3
Pa 72	Pulp & Paper Equipment	3	0	3
Pa 74	Paper Manufacture and Testing	0	8	4
*Pa 99	Thesis	0	4	2

* Recommended elective.

CURRICULUM IN FIVE YEAR PULP AND PAPER MANAGEMENT OPTION

Freshman Year. See Page 202.

Sophomore and **Junior Years,** Identical with Chemical Engineering

Senior Year

		Lab Rec	or Comp	Cr
Be 9	Elem. Accounting	3	0	3
ChE 77	Chem. Process Industries	3	0	3
ChE 82	Chem. Eng. Lab.	1	4	3
Ee 41	Electric Circuits	2	0	2
Be 33	Labor Organ. & Legislation	3	0	3
Pa 65	Pulp Technology	3	0	3
	Hum. Elective	—	—	—

		Lab Rec	or Comp	Cr
ChE 78	Chem. Process Industries	3	0	3
ChE 94	Chem. Eng. Thermodynamics	3	0	3
Ee 43	Applied Electronics or Electrical Machinery	1½	1	2
Me 41	Mechanical Lab.	0	3	1½
Pa 66	Paper Technology	3	0	3
	Hum. Elective	—	—	—

Fifth Year

FALL SEMESTER

	Subject	Hours Rec	Lab or Comp	Cr
Be 51	Corp. Finance	3	0	3
ChE 96	Process Control and Instrumentation	3	0	3
Pa 84	Paper Mill Mgt.	3	0	3
Pa 73	Pulp Manufacture and Testing	0	8	4
Pa 89	Pulp and Paper Mill Inspections	0	4	2
Pa 295	Seminar	1	0	½
Pa 99	Thesis	0	2	1
	Hum. Elective	—	—	—

SPRING SEMESTER

	Subject	Hours Rec	Lab or Comp	Cr
Be 55	Business Law	3	0	3
Ms 19	Statistics or	3	0	3
Ms 31	Math. Statistics	3	0	3
Pa 72	Pulp & Paper Mill Equipment	3	0	3
Pa 74	Paper Manufacture and Testing	0	8	4
Pa 295	Seminar	1	0	½
Pa 99	Thesis	0	4	2
	Elective	—	—	—

Courses in Chemical Engineering

(In each laboratory course a breakage card is required.)

1; 2. Fundamentals of Chemical Engineering.—A quantitative correlation of basic concepts of chemistry, physics, and mathematics necessary for the analysis of problems in chemical engineering operations and processes. Prerequisite, Ch 2. *Rec* 2, *Lab* 4, *Cr* 4. MR. JENNESS, MR. R. C. CHASE

33. Stoichiometry.—Application of the principles of heat and material balances to the solution of problems in combustion and industrial chemistry. Transfer students only. Prerequisite, Ch 2. *Rec* 3, *Cr* 3.

37. Introduction to Thermodynamics.—Development of the first law of thermodynamics and its application to engineering problems of both the batch and the flow type. Consideration of the second law. Prerequisite, Ch 2; Ms 8. *Rec* 3, *Cr* 3. MR. DURST, MR. R. C. CHASE

43. Plastics Technology.—An introductory course in the chemistry and physics of high polymeric substances. Practical applications and commercial practice in this field are considered. Lectures, demonstrations, reports. Prerequisite, Ch 51. *Rec* 3, *Cr* 3.

64; 65 (164; 165). Elements of Chemical Engineering.—Basic principles of the Unit Operations and their application to engineering problems. Prerequisite, Ms 8, and either ChE 2 or ChE 33. *Rec* 3, *Cr* 3. MR. ZIEMINSKI, MR. A. J. CHASE

70 (170). Chemical Engineering of Pulp and Paper Manufacture.—An advanced course in those unit operations of particular importance in the manufacture of pulp and paper; e.g., flow of fluids, heat transfer, absorption, evaporation, drying, etc. Prerequisite, Ch 72; ChE 65. *Rec* 3, *Cr* 3. MR. JENNESS

76 (176). Nuclear Engineering.—Reactor design and operation. Preparation and processing of fuels. Special attention to fluid flow and heat transfer problems. Waste treatment and radiation hazards. Applications of nuclear energy to industrial engineering. Prerequisite, Ps 70, Thermodynamics and heat transfer. *Rec* 3, *Cr* 3. MR. DURST

77. 78. Chemical Process Industries.—Representative industrial chemical processes. Quantitative and qualitative evaluations of the processes and proposed changes and improvements are stressed. *Rec* 3, *Cr* 3. MR. ZIEMINSKI

81; 82 (181; 182). Chemical Engineering Laboratory.—Application of the principles of the unit operations in the laboratory, using pilot scale equipment.

Emphasis is placed upon the preparation of formal reports. Prerequisite, ChE 64 for 81, ChE 65 for 82. *Rec* 1, *Lab* 4, *Cr* 3. MR. DURST

84 (184). Nuclear Engineering Laboratory.—A study of the fundamentals of reactor operation including monitoring, measurement of absorption, thermal cross-sections, neutron flux, neutron temperature, critical mass, temperature coefficient and related characteristics. Prerequisite, ChE 76 or taken concurrently. *Rec* 1, *Lab* 3. MR. DURST

87. 88 (187. 188). Chemical Engineering Mill Practice.—Group investigations of the operation of commercial equipment in neighboring industrial plants. Open only to seniors and graduate students. *Time and credit arranged.* MR. DURST

94. Chemical Engineering Thermodynamics.—Development and quantitative application of the second law of thermodynamics. Considerations of heat engines, the concept of availability, chemical equilibrium, etc. Prerequisite, ChE 37, 65. *Rec* 3, *Cr* 3. MR. DURST

96. Process Control and Instrumentation.—Techniques employed by process engineers for the control of unit operations and chemical processes. Control theory, operating principles and application of industrial instruments, principles and methods of automatic control. Prerequisite, ChE 37. *Rec* 3, *Cr* 3. MR. GORHAM

99. Undergraduate Thesis.—Original investigation of a chemical engineering problem, and reporting of the results. Open only to seniors. *Cr, Ar.* THE CHEMICAL ENGINEERING STAFF

Graduate Courses

242. Colloid Technology.—*Rec* 3, *Cr* 3.

246. Fuels and Combustion.—*Rec* 3, *Cr* 3.

275. Chemical Engineering Plant Design.—*Rec* 3, *Cr* 3.

277. Economic Balance.—*Rec* 3, *Cr* 3.

286. Advanced Unit Operations.—*Rec* 1, *Lab* 4, *Cr* 3.

295. Graduate Seminar.—*Rec* 1, *Cr* ½.

299. Graduate Thesis.—*Cr, Ar.*

Courses in Pulp and Paper Technology

40s. Summer Mill Practice.—The obtaining of practical mill experience is encouraged of students who have completed their junior year and contemplate senior work in pulp and paper technology. *Cr* 2. MR. JENNESS

65 (165). Pulp Technology.—A course in the manufacture of various kinds of wood pulps and the chemistry involved in present-day pulp making. Prerequisite, Ch 2. *Rec* 3, *Cr* 3. MR. A. J. CHASE

66 (166). Paper Technology.—A course in the processes of manufacturing paper. Prerequisite, Pa 65. *Rec* 3, *Cr* 3. MR. BOCKUS

72 (172). Pulp and Paper Equipment.—A lecture and recitation course involving the description, and production calculations, of pulping, stock preparation, stock flow, paper formation, power plant, and auxiliary equipment. Prerequisite, Pa 65. *Rec* 3, *Cr* 3. MR. GORHAM

73 (173). Pulp Manufacture and Testing.—A laboratory course involving the production and testing of chemical and semi-chemical wood pulps. Prerequisite, Ch 40, Pa 65 (can be taken simultaneously). *Lab* 8, *Cr* 4. MR. BOCKUS, MR. A. J. CHASE

74 (174). Paper Manufacture and Testing.—A laboratory course in the manufacture of paper, including beating, jordaning, sizing, etc., and physical, chemical, and microscopical testing. Prerequisite, Ch 40, Pa 66 (can be taken simultaneously). *Lab* 8, *Cr* 4. MR. A. J. CHASE, MR. BOCKUS

84 (184). Pulp and Paper Mill Management.—The operating departments of a paper mill are discussed from the standpoint of their function and management at various levels. *Rec* 3, *Cr* 3. MR. BOCKUS

89 (189). Pulp and Paper Mill Inspections.—Mill visits involving the observation of operations in various types of pulp and paper plants. *Lab* 4, *Cr* 2. This course requires a laboratory fee of approximately $20.00. MR. BOCKUS

99. Undergraduate Thesis.—Original investigation of a pulp and paper problem and reporting of the results. Open only to seniors. *Cr, Ar.*

THE CHEMICAL ENGINEERING STAFF

Graduate Courses

295. Graduate Seminar.—*Rec* 1, *Cr* ½.

299. Graduate Thesis.—*Cr, Ar.*

CHEMISTRY

PROFESSORS BEAMESDERFER, DOUGLASS, DUNLAP; ASSOCIATE PROFESSORS BOGAN, BRAUNSTEIN, MARTIN, PETTIT, WOLFHAGEN; ASSISTANT PROFESSOR GEORGITIS; MRS. HESS, MR. HESS, MR. HILL, MR. HILTON, MR. THOMAS

The Chemistry curriculum is designed to give the student a thorough understanding of the fundamental nature of all material substances, the changes they undergo and the laws governing such changes. It also aims to develop skill in those laboratory techniques required to synthesize and to analyze substances and to study their properties.

Because a knowledge of chemistry is fundamental to successful work in so many fields, the Chemistry curriculum affords an unusual opportunity for a wide choice of electives so that the Chemistry major may adapt his program to his individual interests and future needs. The curriculum leading to American Chemical Society certification prepares the student, upon graduation, for employment in chemical production and control, research, or for graduate study in chemistry. The proper choice of electives will enable the student to enter the related fields of industrial management, technical sales and service, or teaching, and will qualify him for admission to medical school. Students interested in any of these fields may obtain from the Chemistry Department specimen curricula showing recommended elective sequences.

Students intending to major in Chemistry who have a special interest in mathematics, physics, nuclear science, geology, or the biological sciences may also obtain specimen curricula designed to help them attain their educational goals.

The Chemistry major student, in order to qualify for certification to the American Chemical Society Committee on Professional Training, must complete courses 1, 2, 31, 40, 51, 52, 54, 64, 71, 72, 85, 90. Additional requirements include one year of physics, a reading knowledge of German, mathematics through differential and integral calculus and 16-18 hours of non-specialized courses other than the physical sciences, exclusive of German and freshman English.

COLLEGE OF TECHNOLOGY

Superior students should give serious consideration toward continuing their studies at the graduate level and should plan on meeting only minimum ACS requirements so that they can include in the undergraduate program a second language, advanced mathematics, and advanced physics.

For Chemistry courses in the Summer Session, see the Summer Session Bulletin.

For a description of courses in biochemistry, see the list of courses given by the Department of Biochemistry.

GRADUATE WORK IN CHEMISTRY

The Department of Chemistry offers a program of study and research leading to the M.S. and Ph.D. degrees. The general requirements for advanced degrees are described in the general section of the Bulletin of the Graduate Division. Specific requirements for admission to advanced study in Chemistry and information about the programs of study offered are given in the Chemistry section of the Bulletin.

CHEMISTRY CURRICULUM

Freshman Year. See Page 202.

Sophomore Year

FALL SEMESTER

	Subject	Hours Rec	Lab or Comp	Cr
Ch 31	Qualitative Analysis and Inorganic Chem.	2	6	4
Ch 51	Organic Chemistry	3	4	5
Ms 28a	Calculus	4	0	4
Mt 3	Military Science II	2	1	2
Pe 3	Physical Education	0	2	0
	Elective Economics, Sociology or Psychology			3

SPRING SEMESTER

	Subject	Hours Rec	Lab or Comp	Cr
Ch 40	Quantitative Anal.	2	6	4
Ch 52	Organic Chemistry	3	4	5
Ms 29	Calculus	4	0	4
Mt 4	Military Science II	2	1	2
Pe 4	Physical Education	0	2	0
Sh 1	Public Speaking	2	0	2
	Elective Economics, Sociology or Psychology			3

Junior Year

		Rec	Lab or Comp	Cr
Ch 71	Physical Chemistry	3	5	5
*Ch 64	Int. Quant. Anal.	1	8	4
Gm 11	Scientific German (Elementary)	3	0	3
	Hum. Elective			3
	Other Elective			3-4

		Rec	Lab or Comp	Cr
Ch 72	Physical Chemistry	3	5	5
*Ch 90	Intermediate Organic Chemistry Lab.	1	4	3
Gm 12	Scientific German (Elementary)	3	0	3
	Hum. Elective			3
	Other Elective			3-4

Senior Year

FALL SEMESTER					SPRING SEMESTER				
Subject		Hours Rec	Lab or Comp	Cr	Subject		Hours Rec	Lab or Comp	Cr
	5 Chem. Literature	2	0	2	*Ch	54 Adv. Inorganic Chemistry	3	0	3
Ger	13 Scientific German (Intermediate)	3	0	3	Eh	5 Technical Comp.	2	0	2
	*Hum. Elective			3		Other Electives			10-11
	Other Electives			7-8					

* For American Chemical Society certification.

Courses in Chemistry

(In each laboratory course a breakage card is required.)

1; 2. General Chemistry.—The principles of general chemistry, Ch 2 is largely devoted to an introduction to the elements of qualitative analysis. *Rec* 3, *Lab* 3, *Cr* 4. STAFF

2A. General Chemistry.—Open, by special examination, to students who have excellent preparation in chemistry. Covers in one semester the essential topics of General Chemistry and, if completed satisfactorily, meets the Ch 1, 2 requirement. Admission carries 4 hours of provisional advanced standing credit conditioned on the student's earning A or B grade. *Rec* 3, *Lab* 3, *Cr* 4. MR. DOUGLASS

7. General Chemistry.—For Three Year Nursing students only. An introduction to the principles of inorganic and organic chemistry. *Rec* 2, *Lab* 2, *Cr* 3. MRS. HESS

31. Qualitative Analysis and Inorganic Chemistry.—An introductory course in inorganic chemistry and a systematic study of the principles of analysis of the common ions. Prerequisite, Ch 2. *Rec* 2, *Lab* 6, *Cr* 4. MR. BEAMESDERFER

40 (140*). Quantitative Analysis.—An introductory course illustrating the fundamental principles of gravimetric and volumetric analysis. Prerequisite, Ch2. *Rec* 2, *Lab* 6, *Cr* 4. MR. BOGAN

41. Quantitative Analysis.—Same course as Ch 40 except that fewer laboratory determinations are made. Prerequisite, Ch 2. *Rec* 2, *Lab* 3, *Cr* 3. MR. HILL

51; 52 (151; 152*). Organic Chemistry.—An introduction to the chemistry of carbon compounds. Prerequisite, Ch 2. *Rec* 3, *Lab* 4, *Cr* 5. MR. DOUGLASS

54 (154). Advanced Inorganic Chemistry.—Advanced theoretical and descriptive inorganic chemistry emphasizing periodic relationships. Prerequisite, Ch 2, 31 and 40. *Rec* 3, *Cr* 3. MR. BOGAN

64 (164*). Intermediate Quantitative Analysis.—A continuation of Ch 40, involving some of the more difficult volumetric and gravimetric methods. Prerequisite, Ch 40. *Rec* 1, *Lab* 8, *Cr* 4. MR. BOGAN

71; 72 (171; 172*). Physical Chemistry.—A detailed study of fundamental principles of chemistry and their applications. Prerequisite, Ch 40 or 41, Ps 2, and Ms 29. *Rec* 3, *Comp* 1, *Lab* 4, *Cr* 5. MR. DUNLAP, MR. BRAUNSTEIN

* Not for graduate students in chemistry and chemical engineering. For others, graduate credit with the approval of the student's adviser.

77 (177). Intermediate Physical Chemistry.—A more rigorous treatment of chemical principles than is attempted in Ch 71, 72. Designed to meet the needs of first-year graduate students. Prerequisite, Ch 72. *Rec* 3, *Cr* 3.

MR. DUNLAP

78 (178). Intermediate Physical Chemistry.—A discussion of the modern topics of physical chemistry not covered in Ch 71, 72. Designed to meet the needs of first-year graduate students. Prerequisite, Ch 72. *Rec* 3, *Cr* 3.

MR. BEAMESDERFER

79 (179). Advanced Physical Chemistry Laboratory.—An advanced laboratory course with emphasis on the use of physico-chemical methods. Prerequisite, Ch 72. *Lab* 6 or 8, *Cr* 3 or 4.

MR. BEAMESDERFER, MR. BRAUNSTEIN, MR. DUNLAP

80 (180). Radiochemistry.—Chemical aspects of nuclear properties and processes. Application of the techniques involving radioactivity to chemical problems. Prerequisite, Ch 72. *Rec* 1, *Lab* 4, *Cr* 3. MR. BRAUNSTEIN

84. Metallurgy.—A theoretical and descriptive course dealing with ferrous and non-ferrous metals and emphasizing the theory of binary alloys. Prerequisite, Ch 2. *Rec* 3, *Cr* 3. MR. MARTIN

85 (185). Chemical Literature.—A study of methods for searching the chemical literature. Prerequisite, Ch 52 and Elementary German. *Rec* 2, *Cr* 2.

MR. MARTIN

89 (189). Advanced Organic Laboratory.—Advanced laboratory techniques as applied to types of syntheses not encountered in elementary organic chemistry courses. Prerequisite, Course 52. *Lab* 6 or 8, *Cr* 3 or 4. MR. PETTIT

90 (190). Intermediate Organic Chemistry Laboratory.—An introduction to the isolation, identification and semi-micro scale preparation of organic compounds. Prerequisite, Ch 52. *Rec* 1, *Lab* 4, *Cr* 3. MR. PETTIT

91 (191). Intermediate Organic Chemistry.—A detailed study of the preparation of the more complex organic compounds and of newer synthetic methods than are considered in Ch 51-52. Prerequisite, Ch 52. *Rec* 3, *Cr* 3.

MR. WOLFHAGEN

95 (195). Chemical Thermodynamics.—A brief study of the laws of thermodynamics as applied to chemical problems. Prerequisite, Ch 72. *Rec* 3, *Cr* 3. MR. BRAUNSTEIN

99. Undergraduate Thesis.—The thesis will embody the result of an original investigation carried out in the library and in the laboratory. Open only to seniors with the consent of the department head. *Cr* 1 to 3. CHEMISTRY STAFF

Graduate Courses in Chemistry

†***213. The Chemistry of Cellulose and Wood Components.***—*Rec* 3, *Cr* 3.
251. Topics in Advanced Organic Chemistry.—*Rec* 2, *Cr* 2.
‡***253. The Chemistry of Organic Sulfur Compounds.***—*Rec* 2, *Cr* 2.
‡***254. The Chemistry of Heterocyclic Compounds.***—*Rec* 2, *Cr* 2,
†***256. Theoretical Organic Chemistry.***—*Rec* 3, *Cr* 3.
271. Topics in Advanced Physical Chemistry.—*Rec* 2, *Cr* 2.
273. Statistical Thermodynamics.—*Rec* 3, *Cr* 3.
‡***274. Colloid and Surface Chemistry.***—*Rec* 2, *Cr* 2.
†***276. Physico-Chemical Methods.***—*Rec* 2, *Cr* 2.
290. Organic Qualitative Analysis.—*Lab* 8, *Cr* 4.

295. Graduate Seminar.—Rec 1, *Cr* 1.
298. Graduate Research.—Cr, Ar.
299. Graduate Thesis.—Cr, Ar.

CIVIL ENGINEERING

PROFESSORS TREFETHEN, WADLIN; ASSOCIATE PROFESSORS TAYLOR, GORRILL, SPROUL; ASSISTANT PROFESSOR HAMILTON; MR. DOTEN; *MR. NIGHTINGALE; MR. MACDOWELL

The Civil Engineering curriculum has been revised to provide a broader understanding of engineering problems in general and at the same time provide for greater specialization in several branches of Civil Engineering and in the field of Public Management. While the new curriculum is broad enough to qualify graduates with the Bachelor of Science Degree to start in any field of Civil Engineering, special emphasis is placed upon Highway Engineering, Sanitary Engineering, and Structural Engineering. While graduates with the Bachelor of Science Degree go directly into Town Management, the Public Management option specifically prepares graduates for a fifth year in the Department of History and Government at the end of which they receive degrees of Master of Arts in Public Management.

While the foundation of all engineering is highly technical, an attempt is made throughout to help the student sense the broader aspects of engineering problems. In addition to this, studies in the social sciences and humanities are included to assist the graduate to assume an administrative position in his chosen field.

Graduate Work in Civil Engineering

Graduate programs are well established in the fields of Public Management, Sanitary Engineering, Highway Engineering, and Structural Engineering. The Public Management program for the fifth year is listed on page 215.

In the other above-mentioned special fields, the graduate program is flexible enough to meet the student's personal desires. The general program will include advanced courses in the student's major field which will constitute about half of his requirements. The other half of the program will consist of advanced courses in mathematics, non-technical courses, and the graduate thesis. This general program leads to the Degree of Master of Science in Civil Engineering.

* On leave of absence 1960-62.

CIVIL ENGINEERING CURRICULUM

Freshman Year. See Page 202.

Sophomore Year

FALL SEMESTER

		Subject	Hours Rec	Lab	Cr
Ce	5	Surveying	2	3	3
Ee	5	Elec. Engineering Fundamentals	2	2	3
Ms	27	Calculus	5	0	5
Mt	3	Military Science II	2	1	2
Pe	3	Physical Education	0	2	0
Sh	1	Public Speaking	2	0	2
		Hum. Elective			3

SPRING SEMESTER

		Subject	Hours Rec	Lab	Cr
Gy	16	Geology for Engrs.	2	1½	2½
Ee	6	Elec. Engineering Fundamentals	2	2	3
Eg	3	Descriptive Geom.	0	4	2
Me	50	Mechanics (Statics)	3	0	3
Ms	28	Calculus	5	0	5
Mt	4	Military Science II	2	1	2
Pe	4	Physical Education	0	2	0
		Hum. Elective			3

Junior Year

			Rec	Lab	Cr
Ce	26	Hydraulics	2	3	3
Ce	29	Intro. to High. Engrg.	3	0	3
Ce	31	Intro. to San. Engrg.	3	0	3
Gy	17	Geology for Engrs.	2	1½	2½
Me	51	Strength of Mat.	4	0	4
		Hum. Elective			3

			Rec	Lab	Cr
Ce	20	Materials	2	3	3
Ce	32	San. Engrg. Design	2	3	3
Ce	52	Struc. Anal. & Design	3	0	3
Me	43	Heat Engineering	3	0	3
Me	52	Dynamics	3	0	3
		Hum. Elective			3

Senior Year

			Rec	Lab	Cr
Eh	5	Tech. Comp.	2	0	2
Ce	61	Eng. Relations	2	0	2
Ce	57	Reinf. Concrete	3	0	3
		Hum. Elective			3
		Option			9

			Rec	Lab	Cr
Ce	58	Theory of Struc.	3	0	3
Ce	6	Computer Programming	2	0	2
		Hum. Elective			3
		Option			9

Highway Engineering Option

			Rec	Lab	Cr
Ce	63	High. Adm. & Traffic Eng.	3	0	3
Ce	65	Soil Mechanics	2	2	3
Ce	68	Highway Engrg.	3	0	3

			Rec	Lab	Cr
Ce	69	Structural and Highway Materials	1	6	3
Ce	72	Highway Engrg.	3	0	3
Ce	76	Soils Engrg.	3	0	3

Structural Option

			Rec	Lab	Cr
Ce	59	Structural Design	0	9	3
Ce	65	Soil Mechanics	2	2	3
Ms	57	Engineering Math.	3	0	3

			Rec	Lab	Cr
Ce	60	Structural Design	0	9	3
Ce	76	Soils Engrg.	3	0	3
Ce	92	Adv. Th. of Struc.	3	0	3

Sanitary Engineering Option

			Rec	Lab	Cr
By	27	Gen. Bacteriology	3	4	5
Ce	71	Sanitary Engrg.	2	3	3

			Rec	Lab	Cr
Ce	34	Sanitary Engrg.	2	6	4
Ce	74	Sanitary Engrg.	2	3	3
Ms	31	Statistics	3	0	3

Public Management Option

The Public Management Option is based on a five-year program, the fifth year being taken in the College of Arts and Sciences. As prerequisites for this fifth year, the following subjects should be taken during the sophomore, junior, and senior years:

			Semester Hours
Be	9	Accounting	3
Gt	1; 2	American Government	6
Gt	7; 8	Maine Government	2
Gt	33	Municipal Government	3
Gt	34	Municipal Administration	3
Gt	40	Community Planning	2
Gt	51; 52	Public Administration	6

P. Mgt. 93—Internship between Junior and Senior years

Fifth Year

For M.A. in Public Management Degree

FALL SEMESTER

Subject			Hours Rec	Lab	Cr
Be	61	Personnel Mgt.	3	0	3
Be	71	Public Finance	3	0	3
Ce	68	Highway Engrg.	3	0	3
		or			
Ce	71	Sanitary Engrg.	2	3	3
Gt	41	Police and Fire Adm.	2	0	2
Gt	44	Public Relations	2	0	2
Gt	83	Amer. Constitution	3	0	3

SPRING SEMESTER

Subject			Hours Rec	Lab	Cr
Ce	72	Highway Engrg.	3	0	3
		or			
Ce	74	Sanitary Engrg.	2	3	3
Gt	42	Public Works Adm.	2	0	2
Gt	46	Municipal Law	3	0	3
Gt	58	Public Opinion	3	0	3
Gt	84	Amer. Constitution	3	0	3

P. Mgt. 203 Internship ..... 3 Sem. Hours
Thesis ..... 6 Sem. Hours

See Page 150.

Courses in Civil Engineering

5. Surveying.—Surveying instruments and their use and the various methods commonly used for plane surveying. Prerequisite, Ms 1. *Rec* 2, *Lab* 3, *Cr* 3.
MR. DOTEN, MR. HAMILTON

6. Computer Programming.—Flow charting, study of computer equipment and operation. Applications to civil engineering problems with practice on equipment at the University computer center. Prerequisite, Ms 27. *Rec* 2, *Cr* 2.
MR. WADLIN

10. Curves and Earthwork.—The geometry of simple, compound, and reverse circular curves, transition curves, vertical curves, and earthwork. Prerequisite, Ce 5. *Rec* 2, *Cr* 2.
MR. DOTEN

20. Materials.—The properties of materials which are significant in building construction and how they are determined. The selection of materials to fulfill given requirements. Prerequisite, Me 51. *Rec* 2, *Lab* 3, *Cr* 3.
MR. MACDOWELL

26. Hydraulics.—An elementary course presenting fundamental principles of fluid flow and their applications to engineering problems. Includes study of

hydrostatics, liquid measuring devices, and channel and pipe flow. Prerequisite, Me 50. *Rec* 3, *Lab* 3, *Cr* 4. MR. MACDOWELL

29. Introduction to Highway Engineering.—The geometry of simple and compound curves and spirals; parabolic curves; earthwork computations; drainage; types of pavements and their suitability to various conditions of traffic, soil and climate. Prerequisite, Ce 5. *Rec* 3, *Cr* 3. MR. DOTEN

31. Introduction to Sanitary Engineering.—Methods and applications of engineering principles involved in providing sewers and sewage treatment, swimming pools, stream pollution programs, garbage and waste disposal, and safe and sanitary water and food supply. Prerequisite, Ce 5. *Rec* 3, *Cr* 3. MR. SPROUL

32. Sanitary Engineering Design.—Study and design problems involved in providing municipal water supplies, sewers, sewage treatment and stream pollution control. Prerequisite Ce 31 and Ce 26. *Rec* 3, *Cr* 3. MR. SPROUL

†34. Sanitary Engineering.—Principles, techniques, and interpretation of quantitative analytical chemical theory and tests as related to water, sewage and industrial wastes. Prerequisite, Ce 31. *Rec* 2, *Lab* 6, *Cr* 4. MR. SPROUL

52. Structural Analysis and Design.—The determination of maximum stresses and strains, the proportioning of members and the design of connections, for beams, girders, and trusses. Prerequisite, Me 51. *Rec* 3, *Cr* 3. MR. HAMILTON

****55 (155). Hydrology.***—Application of statistical analysis to rainfall and runoff. The collection and presentation of factors affecting rainfall and runoff data. Methods for developing hydrographs and flood routing. Prerequisite, Ce 33 and 26 or the equivalent. *Rec* 2, *Cr* 2. MR. SPROUL

57. Reinforced Concrete.—The theory underlying the design of plain and reinforced concrete structures such as buildings, retaining walls, footings and short span bridges. Prerequisite, Ce 52. *Rec* 3, *Cr* 3. MR. WADLIN, MR. HAMILTON

58. Structural Theory.—Determination of stresses due to unsymmetrical bending. Development and use of moment distribution, shear center, and shear flow. Special topics on section kerns, combined stresses, S-Polygon, and plastic design theory. Prerequisite, Ce 52. *Rec* 3, *Cr* 3. MR. HAMILTON, MR. TAYLOR

59; 60. Structural Design.—The designing and detailing of steel and reinforced concrete structures. Prerequisite, Ce 52. *Lab* 9, *Cr* 3. MR. TAYLOR

61 (161). Engineering Relations.—Business phases of engineering. The ethical and legal relations among the parties affected by the making of an engineering contract. Specifications for elementary portions of engineering works. Prerequisite, Ce 20 and 52. *Rec* 3, *Cr* 3. MR. TAYLOR

63 (163). Highway Administration and Traffic Engineering.—The various functions state highway department has to perform; organization to carry out these functions; financing of highways; traffic studies and geometric designs to control and handle traffic. Prerequisite, Ce 29. *Rec* 3, *Cr* 3. MR. HAMILTON

65 (165). Soil Mechanics.—The fundamental physical properties of soils and their effect on the solution of common problems that arise in practical engineering design and construction. Prerequisite, Me 51. *Rec* 2, *Lab* 2, *Cr* 3. MR. GORRILL

68 (168). Highway Engineering.—Highway location and relocation, including plans of proposed improvement; subgrade structure; base courses and low type pavements. Prerequisite, Ce 29. *Rec* 3, *Cr* 3. MR. GORRILL

69. Structural and Highway Materials.—Methods of testing, characteris-

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* Not offered each year.

tics of, and specifications for the materials commonly used for highway purposes; design of mixes. Prerequisite, Me 51. *Rec* 1, *Lab* 6, *Cr* 3. MR. DOTEN

70 (170). Soils Laboratory.—The technique of performing the usual types of soil tests. Prerequisite, Ce 65. *Lab* 6, *Cr* 2. MR. GORRILL

71 (171). Sanitary Engineering.—Sewerage and the theory and design of sewage disposal works, followed by brief studies of municipal and rural sanitation. Prerequisite, Ce 33. *Rec* 2, *Lab* 3, *Cr* 3. MR. SPROUL

72 (172). Highway Engineering.—Various highway problems; rights of way; traffic engineering; drainage; high type pavements and maintendance. Prerequisite, Ce 68. *Rec* 3, *Cr* 3. MR. GORRILL

74 (174). Sanitary Engineering.—Continuation of study begun in Ce 71 of rural and municipal sanitation, followed by study of water purification and design of water treatment plants. Prerequisite, Ce 71. *Rec* 2, *Lab* 3, *Cr* 3. MR. SPROUL

76 (176). Soils Engineering.—The methods of treating certain foundation problems to which soil mechanics provides a solution. Prerequisite, Ce 65. *Rec* 3, *Cr* 3. MR. GORRILL

81 (181). Seminar.—Written and oral reports with discussions on assigned topics in any special branch of Civil Engineering. *Rec* 1-3, *Cr* 1-3. STAFF

92 (192). Advanced Structural Theory.—The analysis of indeterminate beams, trusses, and frames using the methods of moment-area, elastic weights, conjugate beam, 3-moment theorem, elastic center, column analogy, slope-deflection, and moment distribution. Prerequisite, Ce 52. *Rec* 3, *Cr* 3. MR. WADLIN

99. Thesis.—The study of and report upon some original investigatiion or design. Time to be arranged. *Cr* 2, or 3.

Graduate Courses

226. Advanced Hydraulics.—*Rec* 3, *Cr* 3.
229. Water and Waste Treatment.—*Rec* 3, *Lab* 3, *Cr* 4.
270. Advanced Soils Laboratory.—*Lab* 6, *Cr* 2.
276. Foundations and Underground Structures.—*Rec* 3, *Cr* 3.
290. Vibrations of Structures.—*Rec* 3, *Cr* 3.
291. Numerical Analysis of Structures.—*Rec* 3, *Cr* 3.
292. Indeterminate Structures.—*Rec* 3, *Cr* 3.
299. Graduate Thesis.

GEOLOGY AND GEOGRAPHY

PROFESSOR TREFETHEN; ASSOCIATE PROFESSOR OSBERG; ASSISTANT PROFESSORS BORNS, HOWD; MR. HAGAR; MRS. TREFETHEN

For Courses see Page 147.

ELECTRICAL ENGINEERING

PROFESSORS ARMINGTON, CRABTREE, PARSONS, LIBBEY; ASSOCIATE PROFESSORS CROSBY, TURNER, MACFARLAND; ASSISTANT PROFESSORS BROWN, YOUNG, SLOCUM; MR. EDE, MR. DE SOUZA

The Electrical Engineering curriculum consists of a logical sequence of courses which, beginning with the basic principles of electric circuits and machines

and electronic apparatus, progresses in the advanced courses into the design and operating characteristics of equipment involved in both power and communication systems, as well as the functioning of systems as a whole.

Course work in electro-acoustics, illuminating engineering, feedback control, circuit analysis, and engineering management gives breadth to the curriculum. The principles of vacuum tubes, transistors, and their associated circuits developed in the study of radio, television, and ultra-high-frequency systems provide a substantial background of theory and laboratory experience in modern electronics. Opportunity is provided for the student to concentrate his work in either the power or communication division, but many students prefer to elect some courses in each and so achieve a broader training.

It is the aim of this curriculum to train the student in those fundamental principles which not only find application in electrical research, development, design, and other work of a strictly engineering character, but also serve as basic training for advancement to commercial and administrative positions with electric power and communication utilities, governmental agencies, and various manufacturing and industrial organizations.

Graduate Work in Electrical Engineering

A program of graduate study is available for a limited number of students. As a condition for acceptance as a candidate for the degree of Master of Science in Electrical Engineering, the student must have obtained honor grades in a large portion of his major undergraduate work.

Freshman Year. See Page 202.

Sophomore Year

FALL SEMESTER

		Subject	Hours Rec	Lab or Comp	Cr
Ee	1	Elements of Elec. Eng.	3	4	5
Ms	27	Calculus	5	0	5
Mt	3	Military Science II	2	1	2
Pe	3	Physical Education	0	2	0
Py	1	General Psychology	2	2	3
Sh	1	Public Speaking	2	0	2
		Hum. Elective			3

SPRING SEMESTER

		Subject	Hours Rec	Lab or Comp	Cr
Ee	2	Elements of Elec. Eng.	3	4	5
Eh	9	Modern Literature	2	0	2
Ms	28	Calculus	5	0	5
Mt	4	Military Science II	2	1	2
Pe	4	Physical Education	0	2	0
Ps	36	Modern Physics	3	0	3
		Hum. Elective			3

Junior Year

			Rec	Lab or Comp	Cr
Ee	13	Electronics	2½	1½	3
Ee	21	Elem. of Communication	2	0	2
Ee	23	D-C Machinery	2	0	2
Ee	29	A-C Networks	2	2	3
Me	55	Statics and Strength of Materials	3	0	3
Ms	57	Eng. Mathematics I	3	0	3
		Hum. Elective			3

			Rec	Lab or Comp	Cr
Ee	14	Electronics	2½	1½	3
Ee	24	D-C Machine Lab.	0	3	1
Ee	32	Waves and Fields	2½	1	3
Ee	52	A-C Machinery	3	0	3
Eh	5	Technical Comp.	2	0	2
Me	52	Applied Mechanics	3	0	3
		Hum. Elective			2
		Options—one required			
Ee	26	Wire Communication Sys.	2	0	2
Ms	58	Eng. Mathematics II	3	0	3

Senior Year (Power Engineering)

FALL SEMESTER

	Subject	Hours Rec	Lab or Comp	Cr
Ee 65	Elec. Power Systems	2	3	3
Ee 75	Electric Power Lab.	1	3	2½
Ee 77	Adv. Electric Machinery	2	2	3
Ee 95	Electromagnetic Fields	2	0	2
Me 33	Thermodynamics	3	0	3
	Options—one required			
Ee 91	Illuminating Eng.	2½	1	3
*Ee 99	Thesis			1-3
†Ms 59	Vector Analysis	3	0	3

† Strongly recommended

SPRING SEMESTER

	Subject	Hours Rec	Lab or Comp	Cr
Ee 66	Elec. Power Systems	2	2-3	3
Ee 78	Adv. Electric Machinery	2	2	3
Me 62	Heat Trans. and Fluid Flow	3	0	3
	Humanistic Elective			2
	Options—two required			
Ee 64	Elec. Motive Power	3	0	3
Ee 90	Servomechanism Funds.	3	0	3
Ee 94	Eng. Administration	3	0	3
Ms 58	Eng. Mathematics II	3	0	3

* By permission of department

Senior Year (Communication Engineering)

		Rec	Lab or Comp	Cr
Ee 75	Electric Power Lab.	1	3	2½
Ee 85	Radio Freq. Electronics	2	2	3
Ee 87	Radio Laboratory	0	3	1½
Ee 95	Electromagnetic Fields	2	0	2
Me 33	Thermodynamics	3	0	3
	Options—two required			
Ee 81	Communication Eng.	0	4	2
Ee 89	Electro-Acoustics	3	0	3
Ee 91	Illuminating Eng.	2½	1	3
†Ms 59	Vector Analysis	3	0	3

† Strongly recommended

		Rec	Lab or Comp	Cr
Ee 84	Pulse Techniques	2	0	2
Me 62	Heat Trans. and Fluid Flow	3	0	3
	Hum. Elective			2
	Options—three required			
Ee 82	R-F Energy Trans.	1	4	3
Ee 88	Radio Laboratory	0	3	1½
Ee 90	Servomechanism Funds.	3	0	3
Ee 94	Eng. Administration	3	0	3
*Ee 99	Thesis			1-3
Ms 60	Adv. Eng. Math.	3	0	3

* By permission of department

Courses in Electrical Engineering

1; 2. Elements of Electrical Engineering.—Fundamentals of electric, magnetic and dielectric circuits; single phase a-c circuits; electrical measurements. Prerequisite, Ps 2 and Ms 12. *Rec* 3, *Comp* 2, *Lab* 2, *Cr* 5.

5; 6. Electrical Engineering Fundamentals.—Elementary treatment of electric, magnetic, and dielectric circuits with d-c and a-c excitation; electric power apparatus; basic electronics; electrical measurements. Prerequisite, Ms 12 and Ps 2. *Rec* 2, *Lab* 2 *or* 3, *Cr* 3.

7; 8. Electric Circuits and Machines.—Theory of electric circuits; characteristics and applications of electric machinery. Prerequisite, Ms 12 and Ps 2. *Rec* 2½, *Lab* 1½, *Cr* 3.

11. Basic Electrical Engineering.—Basic theory of electric circuits and machinery. More thorough course than Ee 41. Prerequisite, Ms 28. *Rec* 2½, *Lab* 1½, *Cr* 3.

13. Electronics I.—Theory of vacuum tubes, gas tubes; photoelectric cells, and magnetic amplifiers; structure and general behavior of semi-conductors exemplified by crystal rectifiers and transistors; analysis and design of associated

circuits; measuring techniques. Prerequisite, Ee 2, 8, or 11. *Rec* 2½, *Lab* 1½, *Cr* 3.

14. Electronics II.—Tube and solid state power rectifiers; multistage audio-frequency and direct current amplifiers; feedback; audio-frequency oscillators and power amplifiers; laboratory examples. Prerequisite, Ee 13. *Rec* 2½, *Lab* 1½, *Cr* 3.

15. Electronics.—The circuitry associated with vacuum tubes, transistors, and other solid state devices; principles of analysis and design. Prerequisite, Ps 66 and Ee 29. *Rec* 2½, *Lab* 1½, *Cr* 3.

21. Elements of Communication.—Characteristics of the auditory and vocal systems; elements of image analysis and vision; colorimetry; visual and aural aspects of information transfer, information theory; coding and decoding of information; noise; storage of information; principles of feedback and automation. Prerequisite, Ps 2 and Ms 12. *Rec* 2, *Cr* 2.

23. Direct Current Machinery.—Theory, construction, operating characteristics, and control of direct current motors and generators; introductory study of rotating amplifiers and control circuits in which they are applied. Prerequisite, Ee 2. *Rec* 2, *Cr* 2.

24. D-C Machine Laboratory.—Experimental study of d-c machines to illustrate principles outlined in course Ee 23. Prerequisite, Ee 23. *Lab* 3, *Cr* 1.

26. Wire Communication Systems.—Principles of wire communication; typical transducers; types of signals; transmission of these signals over wire lines; applications in communication and control. Prerequisite, Ee 29. *Rec* 2, *Cr* 2.

29. Alternating Current Networks.—Solution of network equations; network theorems; coupled circuits; balanced and unbalanced multiphase circuits; introduction to symmetrical components. Prerequisite, Ee 2. *Rec* 2, *Comp or Lab* 2, *Cr* 3.

32. Waves and Fields.—Steady-state and transient analysis of circuits utilizing complex waveforms; introduction of the complex frequency concept; review of basic field principles with application of vector algebra. Prerequisite, Ee 29. *Rec* 2½, *Comp* 1, *Cr* 3.

41. Electric Circuits.—Basic course for non-electricals in direct current circuits; magnetic circuits; induced electromotive force; alternating current circuits. *Rec* 2, *Cr* 2.

43. Applied Electronics.—Theory and applications of electron tubes. Elementary laboratory tests. Prerequisite, Ee 8, 11 or 41. *Rec* 1½, *Lab* 1, *Cr* 2.

46. Electric Machinery.—Theoretical principles and operating characteristics of direct and alternating current machinery. Prerequisite, Ee 41. *Rec* 2, *Cr* 2.

52. Alternating Current Machinery.—Theory, construction, and operating characteristics of alternating-current motors, generators, transformers, and rectifiers. Utilization of polyphase power. Prerequisite, Ee 23 and 29. *Rec* 3, *Cr* 3.

64 (164). Electromotive Power.—Problems of power requirement and control in railway transportation and other industrial applications with particular attention given to the use of electronic, magnetic, and rotating control devices. Prerequisite, Ee 52. *Rec* 3, *Cr* 3.

65; 66 (165; 166). Electric Power Systems.—Introduction to current practice in the generation, transmission, and distribution of electric power, with emphasis on the technical problems of long lines and system networks. Prerequisite, Ee 52. *Rec* 2, *Comp or Lab* 2 *or* 3, *Cr* 3.

75. Electric Power Laboratory.—Experimental study of polyphase networks. Commercial tests and laboratory investigations of alternating current generators, motors, transformers, and converters. Prerequisite, Ee 52. *Rec* 1, *Lab* 3, *Cr* 2½.

77; 78 (177; 178). Advanced Electric Machinery.—Advanced study of the principles of d-c and a-c machines, supported by laboratory practice, with some applications of these principles to the theory of machine design. Prerequisite, Ee 52. *Rec* 2 or 2½, *Comp or Lab* 2 or 1½, *Cr* 3.

81 (181). Communication Engineering.—Network analysis by use of propagation and image transfer constants; network losses; design of attenuators, equalizers, and filters. Prerequisite Ee 29. *Comp* 4, *Cr* 2.

82 (182) Radio Frequency Energy Transmission.—High frequency lossy and lossless lines; propagation of waves in free space; antennas; wave guides. Prerequisite, Ee 95. *Rec* 1, *Comp* 4, *Cr* 3.

84 (184). Pulse Techniques.—Non-sinusoidal signals in electronic circuits; wave shaping; switching; pulse generation and amplification; selected applications in modern electronic systems. Prerequisite, Ee 14 or 15. *Rec* 2, *Cr* 2.

85 (185) Radio Frequency Electronics.—Radio frequency circuit elements; mathematical analysis of radio frequency circuits and methods of excitation; amplitude, frequency, and phase modulation and detection. Prerequisite, Ee 14 or 15. Ee 87 is required concurrently. *Rec* 2, *Comp* 2, *Cr* 3.

87; 88 (187; 188). Radio Laboratory.—Frequency measurements; radio-frequency amplifiers; tests of tube transmitters and receivers; speech input systems; filters; modulation; radio direction finding; antenna arrays; field strength measurements. Ee 85 required concurrently with 87. *Lab* 3, *Cr* 1½.

89 (189). Electro-Acoustics.—Physiology of speech and hearing; acoustic waves; dynamical systems of microphones, and loud speakers; sound recording; studio and theater acoustics. Prerequisite, Ee 21. *Rec* 3, with 4 Lab periods substituted for equivalent class time. *Cr* 3.

90 (190). Servomechanism Fundamentals.—The study of feedback control systems with special emphasis on servo systems; demonstration of basic feedback control system design using classical solution of differential equations and Laplace transformations. Prerequisite, Ee 7, 11, or 29 and Ms 55 or 57. *Rec* 3, *Cr* 3.

91 (191). Illuminating Engineering.—General illumination theory; different types of lamps; light, photometry, illumination calculations; problems of interior and exterior lighting. Prerequisite, Ee 21. *Rec* 2½, *Lab* 1, *Cr* 3.

94 (194). Engineering Administration.—Executive techniques in engineering organizations, including capitalization and amortization, engineering surveys and planning, labor relations and utilization, time and motion study, statistical quality control, technical purchasing and inventory control, safety programs, and patent applications. Open only to juniors and Seniors. *Rec* 3, *Cr* 3.

95. (195). Electromagnetic Fields.—Solution of static electric and static magnetic field problems by the methods of vector analysis; boundary value conditions; derivation of Maxwell's equations; introduction to time-varying electromagnetic fields. Prerequisite, Ee 32. *Rec* 2, *Cr* 2.

99. Thesis.—The study of and report upon some original investigation or design. See regulations regarding degrees. *Cr* 1-3.

circuits; measuring techniques. Prerequisite, Ee 2, 8, or 11. *Rec* 2½, *Lab* 1½, *Cr* 3.

14. Electronics II.—Tube and solid state power rectifiers; multistage audio-frequency and direct current amplifiers; feedback; audio-frequency oscillators and power amplifiers; laboratory examples. Prerequisite, Ee 13. *Rec* 2½, *Lab* 1½, *Cr* 3.

15. Electronics.—The circuitry associated with vacuum tubes, transistors, and other solid state devices; principles of analysis and design. Prerequisite, Ps 66 and Ee 29. *Rec* 2½, *Lab* 1½, *Cr* 3.

21. Elements of Communication.—Characteristics of the auditory and vocal systems; elements of image analysis and vision; colorimetry; visual and aural aspects of information transfer, information theory; coding and decoding of information; noise; storage of information; principles of feedback and automation. Prerequisite, Ps 2 and Ms 12. *Rec* 2, *Cr* 2.

23. Direct Current Machinery.—Theory, construction, operating characteristics, and control of direct current motors and generators; introductory study of rotating amplifiers and control circuits in which they are applied. Prerequisite, Ee 2. *Rec* 2, *Cr* 2.

24. D-C Machine Laboratory.—Experimental study of d-c machines to illustrate principles outlined in course Ee 23. Prerequisite, Ee 23. *Lab* 3, *Cr* 1.

26. Wire Communication Systems.—Principles of wire communication; typical transducers; types of signals; transmission of these signals over wire lines; applications in communication and control. Prerequisite, Ee 29. *Rec* 2, *Cr* 2.

29. Alternating Current Networks.—Solution of network equations; network theorems; coupled circuits; balanced and unbalanced multiphase circuits; introduction to symmetrical components. Prerequisite, Ee 2. *Rec* 2, *Comp or Lab* 2, *Cr* 3.

32. Waves and Fields.—Steady-state and transient analysis of circuits utilizing complex waveforms; introduction of the complex frequency concept; review of basic field principles with application of vector algebra. Prerequisite, Ee 29. *Rec* 2½, *Comp* 1, *Cr* 3.

41. Electric Circuits.—Basic course for non-electricals in direct current circuits; magnetic circuits; induced electromotive force; alternating current circuits. *Rec* 2, *Cr* 2.

43. Applied Electronics.—Theory and applications of electron tubes. Elementary laboratory tests. Prerequisite, Ee 8, 11 or 41. *Rec* 1½, *Lab* 1, *Cr* 2.

46. Electric Machinery.—Theoretical principles and operating characteristics of direct and alternating current machinery. Prerequisite, Ee 41. *Rec* 2, *Cr* 2.

52. Alternating Current Machinery.—Theory, construction, and operating characteristics of alternating-current motors, generators, transformers, and rectifiers. Utilization of polyphase power. Prerequisite, Ee 23 and 29. *Rec* 3, *Cr* 3.

64 (164). Electromotive Power.—Problems of power requirement and control in railway transportation and other industrial applications with particular attention given to the use of electronic, magnetic, and rotating control devices. Prerequisite, Ee 52. *Rec* 3, *Cr* 3.

65; 66 (165; 166). Electric Power Systems.—Introduction to current practice in the generation, transmission, and distribution of electric power, with emphasis on the technical problems of long lines and system networks. Prerequisite, Ee 52. *Rec* 2, *Comp or Lab* 2 *or* 3, *Cr* 3.

75. Electric Power Laboratory.—Experimental study of polyphase networks. Commercial tests and laboratory investigations of alternating current generators, motors, transformers, and converters. Prerequisite, Ee 52. *Rec* 1, *Lab* 3, *Cr* 2½.

77; 78 (177; 178). Advanced Electric Machinery.—Advanced study of the principles of d-c and a-c machines, supported by laboratory practice, with some applications of these principles to the theory of machine design. Prerequisite, Ee 52. *Rec* 2 or 2½, *Comp or Lab* 2 or 1½, *Cr* 3.

81 (181). Communication Engineering.—Network analysis by use of propagation and image transfer constants; network losses; design of attenuators, equalizers, and filters. Prerequisite Ee 29. *Comp* 4, *Cr* 2.

82 (182) Radio Frequency Energy Transmission.—High frequency lossy and lossless lines; propagation of waves in free space; antennas; wave guides. Prerequisite, Ee 95. *Rec* 1, *Comp* 4, *Cr* 3.

84 (184). Pulse Techniques.—Non-sinusoidal signals in electronic circuits; wave shaping; switching; pulse generation and amplification; selected applications in modern electronic systems. Prerequisite, Ee 14 or 15. *Rec* 2, *Cr* 2.

85 (185) Radio Frequency Electronics.—Radio frequency circuit elements; mathematical analysis of radio frequency circuits and methods of excitation; amplitude, frequency, and phase modulation and detection. Prerequisite, Ee 14 or 15. Ee 87 is required concurrently. *Rec* 2, *Comp* 2, *Cr* 3.

87; 88 (187; 188). Radio Laboratory.—Frequency measurements; radio-frequency amplifiers; tests of tube transmitters and receivers; speech input systems; filters; modulation; radio direction finding; antenna arrays; field strength measurements. Ee 85 required concurrently with 87. *Lab* 3, *Cr* 1½.

89 (189). Electro-Acoustics.—Physiology of speech and hearing; acoustic waves; dynamical systems of microphones, and loud speakers; sound recording; studio and theater acoustics. Prerequisite, Ee 21. *Rec* 3, with 4 Lab periods substituted for equivalent class time. *Cr* 3.

90 (190). Servomechanism Fundamentals.—The study of feedback control systems with special emphasis on servo systems; demonstration of basic feedback control system design using classical solution of differential equations and Laplace transformations. Prerequisite, Ee 7, 11, or 29 and Ms 55 or 57. *Rec* 3, *Cr* 3.

91 (191). Illuminating Engineering.—General illumination theory; different types of lamps; light, photometry, illumination calculations; problems of interior and exterior lighting. Prerequisite, Ee 21. *Rec* 2½, *Lab* 1, *Cr* 3.

94 (194). Engineering Administration.—Executive techniques in engineering organizations, including capitalization and amortization, engineering surveys and planning, labor relations and utilization, time and motion study, statistical quality control, technical purchasing and inventory control, safety programs, and patent applications. Open only to juniors and Seniors. *Rec* 3, *Cr* 3.

95. (195). Electromagnetic Fields.—Solution of static electric and static magnetic field problems by the methods of vector analysis; boundary value conditions; derivation of Maxwell's equations; introduction to time-varying electromagnetic fields. Prerequisite, Ee 32. *Rec* 2, *Cr* 2.

99. Thesis.—The study of and report upon some original investigation or design. See regulations regarding degrees. *Cr* 1-3.

Graduate Courses

235; 236. Advanced Electric Power Systems.—*Rec* 2 or 3, *Cr* 2 or 3.
240; 241. Communication Networks.—*Rec* 2, *Cr* 2.
242. Electromagnetic Waves.—*Rec* 2, *Cr* 2.
247; 248. Circuit Laboratory.—*Lab* 4, *Cr* 2.
280. Pulse and Digital Circuits.—*Rec* 3, *Cr* 3.
283. Microwave Circuits.—*Rec* 2, *Cr* 2.
292; 293. Transients in Linear Systems.—*Rec* 2, *Cr* 2.
295. Communication Seminar.—*Rec* 2, *Cr* 2.
298. Advanced Control Systems.—*Rec* 3, *Cr* 3.
299. Graduate Thesis.—*Cr* 6-12.

ENGINEERING GRAPHICS

PROFESSOR MCNEARY; ASSISTANT PROFESSOR WESTFALL; MR. DESCHANES, MR. KEENE, MR. PARK

The thoughts and computations of engineers and all other persons engaged in design must be put down eventually on paper in a form intelligible to the craftsman who is to do the actual construction. Making drawings for this form of communication is the most familiar phase of engineering graphics. All Technology students, and many students from other Colleges in the University who have an interest in design, take the basic courses in engineering drawing.

Another phase of engineering graphics concerns itself with problem-solving rather than the delineation of objects for manufacture or construction. Descriptive geometry and nomography are two sciences that fall in this category.

The Department of Engineering Graphics does not have major students, but offers service courses to students majoring in other curricula, principally Technology and Forestry.

1; 2. Engineering Drawing.—Creative exercises in instrumental drawing, multi-view drawing, freehand technical sketching, and lettering. Course 2 introduces instrumental and freehand pictorial drawing, and concludes with the preparation of working drawings for elementary design problems requiring creative thinking. *Rec* & *Lab* 4, *Cr* 2. THE STAFF

3. Descriptive Geometry.—The solution of problems of a three-dimensional nature by graphic methods. Theoretical and applied problems are given. Prerequisite, Course 1. *Rec* & *Lab* 4, *Cr* 2. THE STAFF

5. Architectural Drawing.—The preparation of floor plans, elevations, sections, and pictorial renderings of homes and small buildings. Prerequisite, Course 1. *Rec* & *Lab* 4, *Cr* 2. MR. WESTFALL

12. Forestry Drawing.—A further study of orthographic and pictorial drawing with applied problems in wood utilization, topographical drawing, and other fields related to forestry. Prerequisite, Course 1. *Rec* & *Lab* 4, *Cr* 2. MR. WESTFALL

50 (150). Nomography.—The construction of graphical representations of equations which must be solved repeatedly. Topics include stationary adjacent scales, special slide rules, and alignment charts. Prerequisite Eg 1, Ms 12 or Ms 6. *Rec* 1, *Lab* 2, *Cr* 2. MR. MCNEARY

ENGINEERING PHYSICS

PROFESSORS BENNETT AND BISCOE; ASSOCIATE PROFESSORS COFFIN AND KRUEGER; ASSISTANT PROFESSORS TODD, WYLIE, THOMAS, AND CARR; MR. RICH

This curriculum is an answer to the growing demand on the part of industry for college men trained in physics in an engineering atmosphere. It recognizes the fact that for certain students undergraduate specialization in a single engineering field is not a rigid requirement for success in industrial work. In such cases, however, concentration on the scientific principles underlying engineering is assumed. This program is basically one of applied science supplemented by a strong elective minor, consisting of a sequence of technical electives, in one or more of the well-defined engineering or science fields. It is developed around a framework of required courses in intermediate and advanced physics, mathematics, and chemistry in addition to certain strictly engineering courses, some required and some elected in the last two years. Thus the emphasis is placed upon both engineering and physics.

The curriculum is also suited for those students who, by virtue of their ability and interest, may be preparing to do graduate work. Graduates have successfully pursued graduate study in Physics and in various fields of Engineering.

Graduate Work in Physics

Graduate opportunities and requirements for the Master of Science degree in Physics are given on page 171 and in the catalog section on Graduate Study.

Freshman Year. See Page 202.

Sophomore Year

FALL SEMESTER

Subject			Hours Rec	Lab or Comp	Cr
*Be	1	Prin. of Economics or other Hum. Elective I	3	0	3
*Gm	11	Scientific German (Elem.) or other Hum. Elective II	3	0	3
Me	7	Machine Tool Lab.	1	2	1½
Ms	27	Differential Calculus	5	0	5
Mt	3	Military Science II	2	1	2
Pe	3	Physical Education	0	2	0
Ps	17	Intermed. Physics	2	4	4
Sh	1	Public Speaking	2	0	2

SPRING SEMESTER

Subject			Hours Rec	Lab or Comp	Cr
*Be	2	Prin. of Economics or other Hum. Elective I	3	0	3
*Gm	12	Scientific Gerrman (Elem.) or other Hum. Elective II	3	0	3
Ch	41	Quant. Anal	2	3	3
Ms	28	Integral Calculus	5	0	5
Mt	4	Military Science II	2	1	2
Pe	4	Physical Education	0	2	0
Ps	18	Intermed. Physics	2	4	4

Junior Year

FALL SEMESTER

Subject		Hours Rec	Lab or Comp	Cr
Eh 5	Technical Comp.	2	0	2
Me 55	Statics & Str. of Mat.	3	0	3
Ms 57	Eng. Math. I	3	0	3
Ps 53	Elec. Meas.	0	4	2
Ps 55	Elec. and Mag.	3	0	3
	Hum. Elective	3	0	3
†Technical Electives (choose one field)				—
†ChE 1	Fund. Chem. Eng.	2	4	4
†Ch 71	Physical Chemistry	2	6	5
†Ee 11	Basic Elec. Eng.	2	3	3
†Me 33	Thermodynamics	3	0	3

SPRING SEMESTER

Subject		Hours Rec	Lab or Comp	Cr
Me 52	App. Mech. Dyn.	3	0	3
Ms 58	Eng. Math. II	3	0	3
*Ps 66	Electronic Phen.	3	0	3
Ps 72	Optics	3	0	3
Ps 76	Phys. Meas.	0	4	2
	Hum. Elective	3	0	3
†Technical Electives (choose one field)				—
†ChE 2	Fund. Chem. Eng.	2	4	4
†Ch 72	Physical Chem.	2	6	5
†Ee 29	A.C. Circuits	2	2	3
†Me 34	Thermodynamics	3	0	3

Senior Year

		Rec	Lab or Comp	Cr
Ee 11	Basic Elec. Eng.	2	3	3
*Ms 59	Vector Anal.	3	0	3
Ps 69	Modern Physics	3	0	3
*Ps 70	Nuclear Physics	2	1	3
Ps 81	Advanced Lab.	0	6	3
*Ps 91	Math. Physics I	3	0	3
Ps 98a	Seminar	1	0	½
†Technical Electives (same field as chosen in junior year)				
†ChE 64	Elem. Chem. Eng.	3	0	3
†Ch 51	Organic Chem.	3	4	5
†Ee 15	Electronics	2	3	3
†Me 59	Fluid Mechanics	3	0	3

		Rec	Lab or Comp	Cr
**Ch 84	Metallurgy (required unless Ch 71 is elected)	3	0	3
**Ee 29	A.C. Circuits	2	2	3
*Ms 60	Adv. Eng. Math.	3	0	3
Ps 62	Heat and Thermo.	3	0	3
Ps 82	Advanced Lab.	0	6	3
*Ps 92	Math Physics II	3	0	3
Ps 98b	Seminar	1	0	½
†Technical Electives (same field as chosen in junior year				
†ChE 65	Elem. Chem. Eng.	3	0	3
†Ch 52	Organic Chem.	3	4	5
†Ee	Elective			3
†Me 92	Aerodynamics	3	0	3

* The asterisk designates courses which are recommended electives. Approved substitutions can be made. See page 203 for humanity requirements in Bands I and II. It is expected that during the junior and senior years a normal registration will be from 18 to 20 hours each semester. Students who may continue with graduate work will do well to take at least one year of German.

† Under Technical Electives the student is expected to complete in the junior and senior years an informal "minor" consisting of approximately 12 hours (or no less than 3 semester courses) in a given field of Engineering or Science. In a given field it is recommended that a sequence of courses be followed, commencing with the course listed under "Technical Electives" in the junior year but substitutions can be made. Students choosing the field of Electrical Engineering may count the required courses Ee 11 and Ee 29 as technical electives. Students choosing the field of Mechanical Engineering should try to include some mechanical laboratory work in the senior year.

** The double asterisk designates courses which are required unless suitable substitutions are made.

Courses in Engineering Physics. See Page 168.

MECHANICAL ENGINEERING

PROFESSORS PRAGEMAN, SPARROW, HILL; ASSOCIATE PROFESSORS SULLIVAN, LYMAN, CLIFFORD; ASSISTANT PROFESSORS CHAPMAN, CLARK, KOEHLER, GRANT; MR. HOPKINS, MR. LASKEY, MR. LORD, MR. VEST

The Mechanical Engineering curriculum is broad, highly technical, and designed to give the student the necessary background to prepare him for various types of positions available in industry. Emphasis is placed on the fundamental principles underlying the numerous fields of mechanical engineering and their application to practical engineering problems. The fields of mechanical engineering include aeronautical, automotive, steam power, transportation, refrigeration, heating and air conditioning, Diesel engines, industrial safety, sales, research, and management. The mechanical engineer may be responsible, either directly or in an administrative capacity, for the design, development, production, installation, operation and maintenance of machines for industries in the various fields.

Courses in electrical engineering are included in the curriculum to provide the student with a background for this phase of engineering, which he probably will encounter in industry. Non-technical courses are included in the program to broaden the student's perspective and to prepare him for the administrative responsibilities he will assume later.

An option in pulp and paper management, a five-year course, is available to mechanical engineers who are interested in this field of work. This option includes all of the required courses for the four-year curriculum in mechanical engineering plus essential courses in chemistry, chemical engineering, and pulp and paper, as well as selected courses in business administration. It leads to the Bachelor of Science degree in Mechanical Engineering and a certificate indicative of the Management Option in Pulp and Paper.

Graduate Work in Mechanical Engineering

The program for graduate study will vary in each case since the courses required as a background for the thesis will depend upon the specific phase of mechanical engineering chosen for the investigation. Advanced courses in mathematics are usually required in all programs.

Freshman Year. See Page 202.

Sophomore Year

FALL SEMESTER

Subject			Hours Rec	Lab or Comp	Cr
Eg	3	Desc. Geometry	0	4	2
Me	1	Mfr. Tools & Proc.	1	2	1½
Me	21	Engr. Mats. & Metall.	3	0	3
Ms	27	Calculus	5	0	5
Mt	3	Military Science II	2	1	2
Pe	3	Physical Education	0	2	0
		Hum. Elective			6

SPRING SEMESTER

Subject			Hours Rec	Lab or Comp	Cr
Sh	1	Public Speaking	2	0	2
Me	22	Elem. of Mech. Eng.	3	0	3
Me	26	Mechanical Lab.	0	3	1½
Me	50	Appl. Mechanics, Statics	3	0	3
Ms	28	Calculus	5	0	5
Mt	4	Military Science II	2	1	2
Pe	4	Physical Education	0	2	0
		Hum. Elective			3

Junior Year

FALL SEMESTER

	Subject	Hours Rec	Lab or Comp	Cr
Me 7	Mach. Tools & Mfr. Proc.	1	2	1½
Me 23	Kinematics	3	3	4
Me 33	Thermodynamics	3	0	3
Me 37	Mechanical Lab.	0	3	1½
Me 51	Strength of Materials	4	0	4
Ms 57	Eng. Math.	3	0	3
	Hum. Elective	—	—	—

SPRING SEMESTER

	Subject	Hours Rec	Lab or Comp	Cr
Eh 5	Technical Comp.	2	0	2
Ee 7	Elec. Cir. & Machines	2	3	3
Me 8	Mach. Tools & Mfr. Proc.	1	2	1½
Me 24	Machine Design	2	3	3
Me 34	Thermodynamics	3	0	3
Me 38	Mechanical Lab.	0	3	1½
Me 52	Appl. Mechanics, Dynamics	3	0	3
	Hum. Elective	—	—	—

Senior Year

		Rec	Lab or Comp	Cr
Ee 8	Elec. Cir. & Mach.	2	3	3
Me 59	Fluid Mechanics	3	0	3
Me 71	Mechanical Lab.	0	3	1½
Me 87	Adv. Mach. Design	1	3	2
	Hum. Elective	—	—	—
	Tech. electives, two required			
Me 81	Modern Turbines	2	3	3
Me 91	Heating & Air Cond.	3	0	3
Me 93	I. C. Engines	3	0	3

		Rec	Lab or Comp	Cr
Ee 43	Appl. Electronics	1½	1	2
Me 60	Heat Transfer	3	0	3
Me 72	Mechanical Lab.	0	3	1½
Me 86	Power Plants	3	0	3
Me 96	Seminar	1	0	1
	Hum. Elective	—	—	—
	Tech. electives, one required			
Me 58	Adv. Strength of Materials	3	0	3
Me 84	Industrial Mgt.	3	0	3
Me 92	Aerodynamics	3	0	3

PULP AND PAPER MANAGEMENT OPTION IN MECHANICAL ENGINEERING

Five Year Program

The first three years of this program are the same as the regular mechanical engineering program, as stated above, including all specified courses through the junior year.

Senior Year

		Rec	Lab or Comp	Cr
Ee 8	Elec. Cir. & Mach.	2	3	3
Me 59	Fluid Mechanics	3	0	3
Me 71	Mechanical Lab.	0	3	1½
Me 87	Adv. Mach. Design	1	3	2
Pa 65	Pulp Technology	3	0	3
	Tech. electives, one required			
Me 81	Modern Turbines	2	3	3
Me 91	Heating & Air Cond.	3	0	3
Me 93	I. C. Engines	3	0	3
	Hum. Elective	—	—	—

		Rec	Lab or Comp	Cr
Ee 43	Appl. Electronics	1½	1	2
Me 72	Mechanical Lab.	0	3	1½
Me 84	Industrial Mgt.	3	0	3
Me 86	Power Plants	3	0	3
Ch 41	Quant. Analysis	2	3	3
Be 9	Elem. Acctg.	3	0	3
Pa 66	Paper Technology	3	0	3

Fifth Year

FALL SEMESTER

		Subject	Hours Rec	Lab or Comp	Cr
Be	51	Corp. Finance	3	0	3
Pa	73	Pulp Mfr. & Test.	0	8	4
Pa	84	Mgt. and Operation Paper Mills	3	0	3
Pa	89	Pulp & Paper Mill Inspection	0	4	2
		Hum. Elective	—	—	—
		Tech. electives, one required			
Me	81	Modern Turbines	2	3	3
Me	91	Heating & Air Cond.	3	0	3
Me	93	I. C. Engines	3	0	3

SPRING SEMESTER

		Subject	Hours Rec	Lab or Comp	Cr
Ms	31	Math. Statistics	3	0	3
Me	60	Heat Transfer	3	0	3
Me	96	Seminar	1	0	1
Pa	72	Pulp & Paper Equip.	3	0	3
Pa	74	Paper Mfr. & Testing	0	8	4
		Engrg. Project			3
		Elective	—	—	—

A student desiring to elect this option must submit his application before May 1st of his junior year.

Courses in Mechanical Engineering

1. Manufacturing Tools and Processes.—Modern tools and processes. engineering nomenclature and terminology. Discussions of usual shop processes and machines; production processes, their possibilities and limitations as applied to pattern work and foundry processes. Gages used in unit-production and mass-production system measurements. *Rec and Lab* 3, *Cr* 1½. MR. LASKEY

7; 8. Machine Tools and Manufacturing Processes.—Discussion of various machine tools and materials employed in modern manufacturing processes. Use of basic machine tools, stressing the selection or feeds, speeds, depth of cuts and workability for various metals in different operations. *Rec and Lab* 3, *Cr* 1½. MR. HOPKINS

21. Engineering Materials and Metallurgy.—A study of ferrous and non-ferrous metals; the theory of binary alloy equilibrium microstructures; properties and their relationship to composition, mechanical work, heat treatment. *Rec* 3, *Cr* 3. MR. LYMAN AND STAFF

22. Elements of Mechanical Engineering.—Elementary thermodynamics, mechanical apparatus, power plant equipment; engineering calculations relative to heat, power, work, and mechanical and electrical energy. *Rec* 3, *Cr* 3.

23. Kinematics.—An analysis of the motions of machine parts, including such machine elements as linkwork, cams, gears, belts, and trains of transmission. *Rec* 3, *Comp* 3, *Cr* 4. MR. PRAGEMAN, MR. CHAPMAN, MR. VEST

24. Machine Design.—Application of the laws of applied mechanics and strength of materials to the design of machine parts. Safety and economic considerations are included. Prerequisite, Me 23 and 51. *Rec* 2,*Comp* 3, *Cr* 3. MR. PRAGEMAN, MR. CLIFFORD

26. Mechanical Laboratory.—Slide Rule computations and laboratory experiments on calibration and testing of mechanical equipment. *Lab* 3, *Cr* 1½.

33. Thermodynamics.—The thermodynamic system, properties, equations relating properties, processes, the First and Second Laws and their corollaries. Prerequisite, Ms 28 and Ps 1, 2. *Rec* 3, *Cr* 3. MR. HILL, MR. LYMAN

34. Thermodynamics.—The application of the concept and laws of Me 33.

Selected topics in the following areas: steam power plants, internal combustion engines, refrigeration, compressors, nozzles and turbines, flow measurement of compressible and incompressible fluids; combustion and air conditioning. Prerequisite, Me 33. *Rec* 3, *Cr* 3. MR. HILL, MR. LYMAN

37; 38. Mechanical Laboratory.—Applications of the principles and laws of thermodynamics and mechanics of materials in experiments on various types of mechanical equipment and engineering materials. Me 33, 51, 34 are required concurrently. *Lab* 3, *Cr* 1½. MR. SPARROW AND STAFF

41. Mechanical Laboratory.—For non-mechanical engineers. Calibration of instruments; testing strength of materials; testing of steam engines, gas engines, hydraulic testing. Prerequisite, Me 43 or ChE 37. *Lab* 3, *Cr* 1½.

43. Heat Engineering.—A short course for non-mechanical engineers covering the laws of thermodynamics and their application to heat motors, air compressors, refrigerating machinery, and power-plant equipment. Prerequisite, Ms 28 and Ps 2. *Rec* 3, *Cr* 3.

50. Applied Mechanics, Statics.—The study of forces acting on objects in equilibrium. Two and three dimensional systems, moments, couples, force analyses of structures; friction: distributed forces, first and second moments, centroids. Prerequisite, Ms 27. *Rec* 3, *Cr* 3. MR. SULLIVAN, MR. CLARK AND STAFF

51. Strength of Materials.—The principles of mechanics of materials and their application to practical problems. Stresses and strains in objects subject to tension, compression and torsion; beam theory including deflections; columns; combined stresses. Prerequisite, Me 50. *Rec* 4, *Cr* 4. MR. SULLIVAN AND STAFF

52. Applied Mechanics, Dynamics.—The velocities, accelerations, and forces accompanying the motion of objects. Work, energy, impulse, momentum; application to engineering problems. Prerequisite, Me 50. *Rec* 3, *Cr* 3.
MR. SULLIVAN AND STAFF

55. Statics and Strength of Materials.—The basic principles of statics and their applications in strength of materials. Equilibrium of various systems. Stresses and deformations of axially loaded members, connections, circular shafts, beams and columns. Prerequisite, Ms 27. *Rec* 3, *Cr* 3.

57 (157). Advanced Dynamics.—Dynamics of a particle, free and forced vibrations, numerical methods. Energy, momentum, engine balancing, flywheels. Vibrations of masses with single, two, and n-degrees of freedom; viscous damping. Gyroscopic motion. Prerequisite, Ms 28 and Me 52. *Rec* 3, *Cr* 3. MR. SULLIVAN

58 (158). Advanced Strength of Materials.—Limitations of elementary stress formulas, theories of failure, unsymmetrical bending, curved flexural members, flat plates, torsion of non-circular bars, thick-walled cylinder, stress concentrations, energy methods, and introduction to theory of elasticity. Prerequisite, Ms 28 and Me 51. *Rec* 3, *Cr* 3. MR. SULLIVAN

59 (159). Fluid Mechanics.—Statics and dynamics of fluids. Compressible and non-compressible fluids. Measurement of fluid flow. Laws of dynamic similitude. Laminar and turbulent flow. Applications to lubrication, aerodynamics, and hydrodynamics. Prerequisite, Me 34 and 52. *Rec* 3, *Cr* 3.

60 (160). Heat Transfer.—The laws of conduction, convection, and radiation of heat energy and their application to engineering problems. The analytical, numerical, and graphical solution of one, two, and three dimensional problems. Prerequisite, Me 33, 59. *Rec* 3, *Cr* 3.

62. Heat Transfer and Fluid Flow.—For non-mechanical engineers. The laws of conduction, convection, and radiation of heat energy. Principles of fluid

flow for non-viscous and viscous fluids. Application of the principles of heat transfer and fluid flow to engineering problems. Prerequisite, Me 33 or 43. *Rec* 3, *Cr* 3.

71; 72. Mechanical Laboratory.—Application of basic laws and theory in tests on condensers, boilers, air compressors, fans, hydraulic equipment, heating equipment, internal combustion engines, turbines, and fuels. Special projects. Prerequisite, Me 38. *Lab* 3, *Cr* 1½. MR. SPARROW AND STAFF

81 (181). Modern Turbines.—A continuation of Me 33 and 34, dealing with steam and gas turbines; considerations affecting the design and efficiency of operation of the various types. Prerequisite, Me 34. *Rec* 2, *Comp* 3, *Cr* 3. MR. HILL

84. Industrial Management.—The management of industrial enterprises, layout of industrial buildings, time and motion study, wage systems and selection of personnel, labor problems, and finance. Prerequisite, M. E. senior. *Rec* 3, *Cr* 3. MR. HILL

86 (186). Power Plants.—Design, construction, and operating theory of steam, diesel, and hydroelectric power plants, and the application of engineering economics. Prerequisite M.E. senior. *Rec* 3, *Cr* 3. MR. CLIFFORD

87 (187). Advanced Machine Design.—A continuation of Me 24, including the execution of the design of some pieces of mechanical equipment. Emphasis is given to the development of creative ability. Prerequisite, Me 24. *Rec* 1, *Comp* 3, *Cr* 2. MR. PRAGEMAN, MR. CLIFFORD, MR. SULLIVAN

88 (188). Dynamics of Machines.—The forces due to reciprocating and rotating masses with special application to balancing high-speed machinery, designing governors and flywheels. Prerequisite, Me 23, 24, and 87. *Rec* 2, *Cr* 2.

90 (190). Advanced Thermodynamics.—Mathematical relationships; equations of state; equilibrium considerations; thermodynamics of combustion. Prerequisite, Me 93. *Rec* 3, *Cr* 3. MR. HILL

91 (191). Heating and Air-Conditioning.—Determination of transmission coefficients for various wall construction. Heat losses from buildings, costs of heating. Design of heating, ventilating, and air-conditioning systems. Prerequisite, Me 34 or 43. *Rec* 3, *Cr* 3.

92 (192). Aerodynamics.—Flow of an ideal fluid; application of dimensional analysis to engineering problems; properties of airfoils; engine and propeller characteristics; airplane performance calculations; propeller theory. Prerequisite, Me 52 and 59. *Rec* 3, *Cr* 3. MR. SULLIVAN

93 (193). Internal Combustion Engines.—Application of thermodynamic laws and principles to internal combustion engine cycles; theory of design and operation; fuels and combustion; carburetion, detonation, cooling, and lubrication. Prerequqisite, Me 34. *Rec* 3, *Cr* 3. MR. CLIFFORD

94. Hydraulic Machinery.—Prerequisite, Me 52 and 59. *Rec* 3, *Cr* 3.

96. Seminar.—Coordination of various mechanical engineering courses, with the basic principles involved applied to the solution of comprehensive problems. Industrial safety is also covered in this course. *Rec* 1, *Cr* 1.

99. Thesis.—*Cr, Ar.*

Graduate Courses

201. Metallography.—*Cr, Ar.*

291. Mechanical Engineering Projects.—*Cr, Ar.*

Upper: Students work in laboratory at Portland Campus.
Lower: Professor lectures in Payson Smith Hall.

UNIVERSITY OF MAINE IN PORTLAND

WILLIAM L. WHITING, ACTING DEAN

UNIVERSITY OF MAINE IN PORTLAND

By an act of the Maine Legislature, the University of Maine in Portland was established as an integral part of the University of Maine on August 28, 1957, through a merger with Portland Junior College.

Since 1933, Portland Junior College had effectively served the educational needs of many young men in the Portland area. The academic program and campus facilities of the former institution are now being expanded to further extend the educational opportunities for young men and women in the Portland area who are seeking basic college work (of the first two years) within commuting distances of their homes.

The University of Maine in Portland, with offices at 96 Falmouth Street, is located in the central section of the city on an eighteen-acre campus. Present buildings include a small office building which houses the offices of the Cumberland County Extension staff; Payson Smith Hall, a classroom, laboratory, and office building with cafeteria, bookstore, and library facilities; West Hall; East Hall; and North Hall. On the central site there is also an auditorium-gymnasium building. A dean's residence is located at 257 Deering Avenue.

ACADEMIC PROGRAM

The University of Maine in Portland is a fully accredited institution.

Basic courses of the first two college years parallel to those at Orono are offered in subject-matter areas essential for continuation to upper class work in degree programs on the Orono campus. For students planning to continue beyond the first two years, programs have been designed to allow continuation at the several colleges of the University in Orono or upper division work at other colleges. Since present facilities do not permit the offering of all second-year courses in preprofessional curricula, transition to Orono for work in some specialized curricula will be necessary after one year at the University of Maine in Portland.

Basic programs are provided for students in the Colleges of Agriculture, Arts and Sciences, Education, and Technology. Curricula covering work of the first two years are available in Arts and Sciences and Education. At the end of the first year, transition to the Orono campus will be necessary for those students who wish to continue programs in the College of Agriculture, the College of Technology, or in certain preprofessional programs such as Chemistry, Physics, Premedicine, etc., which require courses or course sequences not yet available at the University of Maine in Portland.

ADMISSION

Application for admission and all inquiries concerning admission to the University of Maine in Portland should be addressed to the Director of Admissions, 96 Falmouth Street, Portland, Maine. Application blanks should be filled out and returned promptly, together with the application fee of $10.00 which cannot be refunded, and mailed to the Director of Admissions, Wingate Hall, University of Maine, Orono, Maine. Information for veterans may be procured from the Registrar's Office, Payson Smith Hall.

The same requirements for admission prevail at both the Orono and Portland campuses of the University. Please see page 27 for these Requirements for Admission.

FINANCIAL INFORMATION

The student expenses outlined below are the anticipated charges for 1961-62. Changing costs may require an adjustment of these charges.

Tuition and Fees for the Academic Year

Regular Students	Residents of Maine	Non-Residents of Maine
Tuition	$400.00	$800.00
Special Students		
Tuition for *each semester hour*	$16.00	$32.00

Special Fees.—A fee of $10.00 is required with the application for admission. This fee cannot be refunded.

When an applicant is notified that he has been accepted for admission, a *matriculation fee* of $25.00 is required if he is registering for the first time as a candidate for a degree. This fee is non-refundable. At the same time, a deposit of $25.00 must be made, which will be applied toward the student's account when he registers. This deposit will be refunded if the applicant notifies the Director of Admissions of withdrawal prior to July 1. After that date the deposit is forfeited.

A fee of $10.00 is charged for late registration.

Each student provides his own books and supplies, including a physical education uniform. The semester cost varies from $30.00 to $60.00. Students in laboratory courses are required to pay for apparatus broken or lost and for certain supplies.

Payment of Bills.—Charges for tuition are due and payable on or before registration day for each semester. Full tuition will be charged for more than ten semester hours.

Installment Program.—Students whose circumstances are such that payment of their semester bills in full at the time of registration would work a real hardship will be permitted to use the following schedule:

Fall Semester

½ the total semester charge at registration
⅙ the total semester charge on October 1
⅙ the total semester charges on November 1
⅙ the total semester charge on December 1

Spring Semester

½ the total semester charge at registration
⅙ the total semester charge on March 1
⅙ the total semester charge on April 1
⅙ the total semester charge on May 1

For the 1961-62 academic year no extra assessment will be made to students using the above deferment schedule, but if it is found that too many take advantage of its provisions it will become necessary in the future to make a service charge for its use.

Refunds.—Students leaving the University before the end of a semester, if they are using the Installment Program, are not entitled to a refund of tuition

because the timing of the installment payments is correlated with the charges. Those who have prepaid their semester charges will be refunded all the money they have prepaid in excess of the amounts specified by the Installment Program.

HEALTH SERVICE, ACCIDENT, AND SICKNESS INSURANCE

A limited health service will be offered at the University of Maine in Portland for the college year 1961-62. A graduate nurse will be on duty two hours each morning, Monday through Friday, to give first aid and assist in minor ailments.

Since the University of Maine in Portland does not offer full-time health services such as are available on the Orono campus, the University will carry accident insurance on each regularly enrolled student. This insurance will give compensation for accident coverage as listed in the master policy on file in the office of the Dean. It will be effective for all students from the date of registration in September through final examinations for the spring semseter.

In addition to the accident insurance mentioned above, sickness insurance covering illnesses not caused by accident is available on a voluntary basis. A circular describing this insurance will be sent to each student. This is similar to the type of insurance offered on a voluntary basis to students at the Orono campus. Those desiring to purchase this sickness insurance will pay the full amount of the year's premium when registering for the fall semester.

PHYSICAL EXAMINATIONS

At the time of registration each student must present a report showing he has had a physical examination, preferably by the family physician. These reports are made on forms furnished by the University. A physical examination may be required of any student at any time during his attendance at the college.

Each year through the cooperation of the Maine Department of Health and Welfare chest X-rays are made available to all students without charge.

PHYSICAL EDUCATION FOR MEN

Prescribed courses in physical education are required of all non-veteran freshmen and sophomores.

PHYSICAL EDUCATION FOR WOMEN

The physical education requirement for freshman and sophomore women is waived on the Portland Campus because of the lack of facilities. Women students continuing from Portland to the University of Maine in Orono are normally exempt from the physical education program by institution authorities to the extent indicated below: Women transferring and accepted as juniors and seniors or for graduate work are not required to enroll in physical education; women transferring and accepted as sophomores are required to take one year of physical education; women transferring and accepted as freshmen are required to take physical education.

STUDENT ACTIVITIES

Students organize and take part in many activities during the year. The athletic program and club activities are financed by tuition fees.

The Athletic Department of the University of Maine in Portland sponsors varsity basketball, baseball, and golf teams which compete with small college and freshman teams throughout New England. The University of Maine in Portland is a member of the Southwestern Maine Small College Conference.

The Physical Education Department supervises various intramural and informal sports.

All student activities other than athletics are organized under the leadership of the Student Council, a group of elected student representatives who control the expenditure of student activity funds by chartered clubs and organizations.

The Student Council members include the class officers plus class representatives at large. Election campaigns are held annually.

Chartered groups at present are as follows:

Camera Club	Circle K	Speech Club	Jazz Club	Bridge Club
Longhair Club	Outing Club	Parliamentarian Cheerleaders	The Umpire	UMP Campus

STUDENT REGULATIONS

It is assumed that all students admitted to the University of Maine in Portland are willing to subscribe to the following: *The University expects from every student respect for order, morality, and the rights of others, and such sense of personal honor as is demanded of good citizens.* It reserves the right to dismiss any student whose conduct or academic standing is regarded by the administration and faculty to be unsatisfactory. (Please see page 22 for additional information.)

COURSES OF INSTRUCTION OFFERED AT PORTLAND

Business and Economics

(See page 135 for course descriptions)

Be	1; 2	Principles of Economics	Cr 3
Be	9; 10	Elementary Accounting	Cr 3

Engineering Graphics

(See page 222 for course description)

Eg	1; 2	Engineering Drawing	Cr 2

English, Journalism, Speech

(See pages 139, 157 and 178 for course descriptions)

Eh	1: 2	Freshman Composition	Cr 3
Eh	3; 4	English Literature	Cr 3
Eh	7; 8	Second-Year Composition	Cr 3
Eh	15; 16	Masterpieces of English and American Literature	Cr 3
Eh	43	American Literature	Cr 3
Eh	67	History of the English Language	Cr 2
Sh	1	Public Speaking	Cr 2
Sh	31	Voice and Diction	Cr 2

Foreign Languages

(See page 143 for course descriptions)

Fr	1-2	Elementary French	Cr 4
Fr	3; 4	Intermediate French	Cr 3
Fr	9. 10	Readings in French Literature	Cr 3
Gm	1-2	Elementary German	Cr 4
Gm	3; 4	Intermediate German	Cr 3
Sp	1-2	Elementary Spanish	Cr 4
Sp	3; 4	Intermediate Spanish	Cr 3

History and Government

(See page 150 for course descriptions)

Hy	3; 4	United States History	Cr 3
Hy	5; 6	History of Western Europe	Cr 3
Hy	21. 22	Current World Problems	Cr 2
Hy	19. 20	Economic History of the United States	Cr 3
Gt	1; 2	American Government	Cr 3

Mathematics

(See page 159 for course descriptions)

As	9	Descriptive Astronomy	Cr 3
Ms	1	Trigonometry	Cr 2
Ms	3	College Algebra	Cr 2
Ms	5; 6	Elements of College Mathematics	Cr 3
Ms	12	Analytic Geometry and Calculus	Cr 4
Ms	15; 16	Elements of Calculus	Cr 3
Ms	27	Calculus	Cr 5
Ms	19	Statistics	Cr 3

Physical Education

(See pages 248 and 252 for course descriptions)

Pe	1; 2	Physical Education	Cr 0
Pe	11, 12	Technique of Team Sports	Cr 1½

Psychology

(See page 171 for course description)

Py	1; 2	General Psychology	Cr 3

Science

(See pages 211, 168, 93, and 182 for course description)

Ch	1; 2	General Chemistry	Cr 4
Ps	3	Descriptive Physics	Cr 3
Ps	1; 2	General Physics	Cr 5
Bt	1	General Botany	Cr 4
Zo	1	General Zoology	Cr 4

Technology

(See page 202 for course description)

Gc	5	Tech Orientation	Cr 0

Courses may be cancelled if the number of students registered is too small.

CONTINUATION AT THE UNIVERSITY OF MAINE IN ORONO

Any degree candidate in good standing at the completion of his program at the University in Portland may continue his education at Orono. Such students should notify the Dean at Portland by mid-year of the major program in which they intend to specialize at Orono.

MILITARY SCIENCE AND TACTICS—ROTC

Students transferring from the University of Maine in Portland to the University of Maine in Orono are normally exempt from the ROTC programs by institution authority to the extent indicated below:

Students transferring and accepted as juniors, seniors, or for graduate work are not required to enroll in Basic Military Science.

Students transferring and accepted as sophomores and not exempt by previous military service are required to take one year of Basic Military Science.

Students transferring and accepted as freshmen and not exempt by previous military service are required to take Basic Military Science.

Students transferring from the Portland Campus to the Orono Campus as sophomores will enroll in Military Science II. In the event such a student desires to apply for the advanced course (ROTC) and is accepted he will enroll in Military Science I and Military Science III in his junior year and in Military Science IV in his senior year.

Advanced Military Science.—Advanced Military Science is elective and is not required by state law. Students admitted to Advanced Military Science must have completed Basic Military Science or receive credit for previous military service (veterans) or ROTC Training, meet the physical standards prescribed by the Department of the Army, and be selected by the Professor of Military Science and Tactics and the President of the University based upon their leadership, scholarship, military ability, and potential as officers in the Army Reserve.

Upper: Students play touch football in front of Payson Smith Hall.
Lower: Modern library facilities are available at UMP.

UNIVERSITY OF MAINE AND PORTLAND UNIVERSITY

The merger of Portland University and the University of Maine was authorized by the 100th Maine Legislature during the spring of 1961 and the Portland institution officially became a part of the State University on September 16, 1961.

As a result of the merger, the School of Law and the School of Business Administration formerly operated by Portland University are now a part of the State University's program in Portland.

Courses in the School of Business Administration are now being offered at the University of Maine in Portland at 96 Falmouth Street. The Law School is being continued at its present site at 68 High Street. Students enrolled in Portland University at the time of the merger are now regularly enrolled students of the University of Maine.

An extensive Evening School program, particularly in the School of Business Administration, is planned as one outgrowth of the merger.

The resolution adopted by the Trustees of Portland University and the University of Maine in connection with the merger was as follows:

"The Trustees of Portland University, incorporated in 1921 and reorganized and chartered as a non-profit, charitable, and educational corporation in 1945 under the laws of the State of Maine, hereby vote to transfer, assign, and convey to the University of Maine all of its physical assets, real and personal, belonging to and used in connection with the obligation of the said Portland University, and the Trustees of the University of Maine hereby vote to accept the same, subject to anthority therefore being granted, the University of Maine will upon authorization of the Legislature of the State of Maine, accept title to the said assets when transferred and conveyed and will thereupon auume the care, control, and disposition of said property of Portland University, together with all its duties and legal obligations and the management of its former affairs.

"Upon transfer and conveyance of said assets, Portland University shall be operated as an integral part of the University of Maine and shall be governed by its Board of Trustees in accordance with the duties and powers conferred upon them by the law. Upon completion of the transfer of assets as stated above, the corporate existence of Portland University shall terminate."

Future teachers receive practical experience.
The ROTC Ball is one of the year's most popular social events.

GRADUATE STUDY

EDWARD N. BRUSH, DEAN

GRADUATE STUDY

Programs of study leading to the degrees of Master of Arts, Master of Science, Master of Education, and Doctor of Philosophy are offered by the University. At the present time, the Ph.D. degree is awarded in the fields of chemistry, American history, animal nutrition, and general-experimental psychology.

Graduate programs in education, and in certain other fields, may be carried on, in whole or in part, during the Summer Sessions. A limited amount of credit toward the degree of Master of Education may be earned in Class Extension courses, offered on the campuses of the University of Maine in Orono and in Portland, at Extension Centers, and elsewhere throughout the state. Candidates for the M.A. degree in English, history, and occasionally in other fields, may find it possible to complete a part of their work in Extension classes. However, only six hours of Extension work can be accepted toward the M.A. and M.S. degrees in Education.

The professional degrees of Chemical Engineer, Civil Engineer, Electrical Engineer, Forest Engineer, or Mechanical Engineer are granted upon completion of appropriate requirements.

The post-master's Certificate of Advanced Study, designed for teachers and school administrators, is awarded for the completion of a program of thirty hours of work beyond the master's degree.

The applicant who wishes to work toward the degree of Master of Arts or Master of Science is ordinarily expected to have had an undergraduate major, or its equivalent, in the field in which he proposes to do his advanced work. Applicants for most programs leading to the degree of Master of Education are expected to have had sufficient work in professional education to qualify for the appropriate type of certification. Teaching experience is also ordinarily expected.

Several scholarships of the value of a year's tuition are available to graduate students with outstanding undergraduate records. A number of departments require the services of graduate assistants who devote part time to study while engaging in teaching or research duties.

No graduate credit is allowed for any work carried on by correspondence.

A thesis is required of all candidates for the M.A. and M.S. degrees, and for the Ph.D. degree.

All work for the M.A. and M.S. degrees must be completed within an eight-year period. For the M.Ed. and the Ph.D. degrees the time limit is ten years.

The Bulletin of the Division of Graduate Study, containing more detailed information concerning the graduate program, may be obtained from the Office of the Dean of Graduate Study, 76 Library.

Students may not register for graduate credit in Summer Session and Extension classes until duly admitted to a program of graduate study, either at the University of Maine, or at another recognized institution.

MISCELLANEOUS

MILITARY SCIENCE

PROFESSOR OF MILITARY SCIENCE (PMS) COLONEL OLSON; ASSOCIATE PROFESSOR LT. COL. REGAN; ASSISTANT PROFESSORS MAJOR BEARD, MAJOR ST. ONGE, CAPTAIN ARCULIS, CAPTAIN CLARK, CAPTAIN EMERSON, CAPTAIN GERVAIS, AND CAPTAIN SMITH; INSTRUCTORS MASTER SERGEANT BELL, MASTER SERGEANT BERGEN, SERGEANT FLOODY; CHIEF OF ADMINISTRATION SERGEANT FIRST CLASS HOLMES; SUPPLY SERGEANTS SERGEANT DUSTIN AND SERGEANT FIRST CLASS SMITH; ARMORER SERGEANT FIRST CLASS BRUNDIGE.

General.—The Department of Military Science conducts the General Military Science Curriculum prescribed by the Department of the Army for the Senior Division, Army Reserve Officers Training Corps. Under this program, Reserve Commissions are awarded in the various branches of the Army after considering the preference and qualifications of the individual and the needs of the service. Commissions in the Regular Army are offered to selected students.

Purpose.—The purpose of the Army ROTC is to train college students as junior officers who have the qualities and the attributes essential to their progressive development as Army officers with particular emphasis on the United States Army Reserve. The senior division provides junior officers for the Regular Army through the selection of a number of Distinguished Military Graduates for direct Regular Army appointment.

Curriculum.—The duration of the complete course of instruction is four adademic years plus a Summer Camp of six weeks between the junior and senior years. The course is organized and correlated in sequence with the various four-year college curricula. For example:

Mt 1 and 2, Freshman Year, 2 hours per week
Mt 3 and 4, Sophomore Year, 3 hours per week
Mt 5, Junior Year, 4 hours per week
Mt 6, Junior Year, 3 hours per week
Summer Camp, End of Junior Year, 6 weeks
Mt 7, Senior Year, 3 hours per week
Mt 8, Senior Year, 4 hours per week

During the Freshman, Junior, and Senior years students must select from a list of approved courses academic courses in the general areas of Science Comprehension, General Psychology, Effective Communication, and Political Institutions and Development. This academic subject must be the equivalent of 30 class hours for Freshmen, 45 class hours for Juniors, and 45 class hours for Seniors.

FALL SEMESTER

No.	Subject	Hours Rec	*Lab	Cr
Mt 1	Military Science, basic	1	1	1
Mt 3	Military Science, basic	2	1	2
Mt 5	Military Science, advanced	3	1	3
Mt 7	Military Science, advanced	2	1	2

SPRING SEMESTER

No.	Subject	Hours Rec	*Lab	Cr
Mt 2	Military Science, basic	1	1	1
Mt 4	Military Science, basic	2	1	2
Mt 6	Military Science advanced	2	1	2
Mt 8	Military Science, advanced	3	1	3

* Drill

REQUIREMENTS

Basic Military Science (Mt 1, 2, 3, 4).—All physically fit male citizens enrolled in the University of Maine are required by state law to complete successfully the Basic Military Science course (2 years) unless exempted by institution authority.

Exemptions.—Students in the following categories are normally exempt from the above requqirements to the extent indicated in each category:

Students presenting evidence of previous Active Military Service or ROTC training as a claim for exception from the required courses are exempted within the following limits:

Active service or active duty for training:

12 months or more, exempt from Mt 1, 2, 3, 4.

6-12 months, exempt from Mt 1, 2.

Less than 6 months, no exemption.

Senior division (College), Army, Air or Naval ROTC training—that part of the course successfully completed.

Military School Division ROTC—partial credit in accordance with Army regulations.

Junior division (high school) ROTC Training:

Mt 1—no exemption

Mt 1 and 2—no exemption

Mt 1, 2, 3, exempt from Mt 1, 2.

Transfer students (not otherwise exempt) accepted as juniors, seniors, or for graduate work, exempt from Mt 1, 2, 3, 4.

Transfer students (not otherwise exempt) accepted as sophomores, exempt from Mt 1 and 2, or Mt 3 and 4.

Transfer students (not otherwise exempt) accepted as freshmen, no exemptions.

Advanced Military Science (Mt 5, 6, 7, 8).—Advanced Military Science is elective and is not required by state law. Students admitted to Advanced Military must: have completed Basic Military Science or have received credit for previous military training, meet the physical standards prescribed by the Department of the Army, and be selected by the PMS and the President of the University based upon their leadership, scholarship, military ability, and potential as an officer in the Army Reserve. The general objective is to provide a basic military education and in conjunction with other college disciplines, to develop individual character, leadership training and attributes essential to an individual.

Credits.—Credit for previous active military service or ROTC training toward admission into Advanced Military Science may be granted on the following basis:

Twelve months or more of military service—credit not to exceed Mt 1, 2, 3, 4.

Six months or more of military service—credit not to exceed Mt 1, 2.

Less than six months of military service—no credit.

Previous training in the Army, Navy, Air Force, or Coast Guard Academies, and in the Naval or Air ROTC—credit for equivalent training.

ADDITIONAL COURSES

Flight Training.—Army ROTC Flight Training is offered to selected Senior ROTC cadets as an extracurricular subject at no cost to the student. Upon completion of thirty-five hours ground instruction and thirty-six and one-half hours in-flight instruction, the cadet is eligible for a CAA Pilot's Certificate and is qualified for further Army Flight Training when on active duty. Flight uniforms are issued to individuals for this instruction.

Judo Training is offered to all Military Science students who desire to improve themselves physically and who volunteer for Judo training.

Rifle Marksmanship Training is offered to all Military Science cadets. The ROTC rifle teams have an enviable record and have won many trophies. Those qualifying may compete in the scheduled Varsity and ROTC rifle matches. Varsity Rifle Team members receive Athletic Letters for their participation.

Emoluments.—Basic Military Science cadets are issued modified officer-type uniforms free of charge for use at drill and other authorized training. These uniforms must be returned to the Military Department at the end of each academic year and upon separation from the University.

Advanced Military Science cadets are provided regulation officer-type uniforms which remain in their custody while enrolled in the course. Upon successful completion of the course and upon graduation these uniforms become their personal property.

Advanced Military Science cadets normally are paid a monetary allowance of approximately ninety cents per day for not to exceed 595 days. For the six-week period of Summer Camp they normally receive the pay of a soldier of the grade E-1 ($78.00 per month), rations, quarters, all necessary uniforms and equipment, and a monetary allowance for transportation at the rate of five cents per mile to and from Camp. Upon completion of Mt 8 and graduation they may be commissioned 2nd Lieutenants, U. S. Army Reserve, dependent upon the needs of the Army.

Deferment.—Universal Military Training and Service Act provides for the deferment of all Advanced Military Science ROTC members and those Basic Military Science ROTC members tentatively selected for enrollment in Mt 5 as prescribed by the Secretary of Defense until completion or termination of the course of instruction.

PHYSICAL EDUCATION AND ATHLETICS

PROFESSOR RANKIN; ASSOCIATE PROFESSORS ROGERS, WOODBURY, CASSIDY, WESTERMAN, AND SEZAK; ASSISTANT PROFESSORS BUTTERFIELD, FINNEGAN, MCCALL, AND STYRNA; MR. CURTIS, MR. CARVILLE, MR. ABBOTT, MR. BENNER, MISS SHAFFER, MR. DUNKLEE

The development of alert minds, strong wills, and healthy, enduring bodies is the goal of physical education at the University of Maine. As one factor in achieving this goal, participation in athletics and/or other forms of physical exercise by all students is strongly encouraged.

Immediate responsibility for instruction, supervision, and guidance in this area rests with the Department of Physical Education and Athletics, a department comprising three divisions: the Division of Physical Education for Men, the Division of Physical Education for Women, and the Division of Intercollegiate Athletics. The Department of Physical Education and Athletics also participates in a professional training program to prepare qualified students to teach health and physical education, to coach athletic teams, and to direct recreational programs. (See page 249.)

PHYSICAL EDUCATION FOR MEN

Prescribed courses in physical education are required of all non-veteran freshmen and sophomores. These courses are designed to improve body control and strength, to stimulate the development of mental and physical alertness, to establish habits of regular exercise, to teach basic motor skills, and to provide experience in various kinds of recreative sports that may be enjoyed while in college and during later years. The program of activities is planned with due regard to individual differences so that it may be suited to the needs and adjusted to the capabilities of individual students. During the fall and spring, emphasis is placed on outdoor activities, while appropriate indoor activities are stressed during the winter.

All students including those out for athletic teams, who have passed Pe 1 and are taking Pe 2, will take a physical efficiency test at the end of the spring term. Students passing this test will be given credit for Pe 3 and 4 requirements. Those not passing the test will register for Pe 3 the following fall. The test will again be given to Pe 3 students, and those passing will be given credit for Pe 4. Any student still not passing will register for Pe 4. All courses must be passed to satisfy the graduation requirement. A student who is excused from Pe 2 for medical reasons will register for Pe 3 and take the test at the end of the semester. The foregoing will also apply for any student who is absent from the test for any reason.

Any student who has failed a Pe course because of lack of attendance will forfeit his right to take the physical efficiency test an dmust register for and pass all four semesters of the required ccurse.

A prescribed uniform is required for all physical education classes, at the approximate cost of $9.00.

The Intramural Athletic Association, composed of one representative from each participating unit and acting under the supervision of the Division of Physical Education for Men, promotes general participation in athletics. Schedules are ar-

ranged in a wide variety of outdoor and indoor sports and each student is given an opportunity to engage in the activities of his choice with others of comparable skill. Teams representing the several dormitories, fraternities, and other housing units compete for championships in their respective leagues. As new interests develop, and when facilities can be made available, new sports are added. The program of intramural athletics is closely co-ordinated with the prescribed courses in physical education and with intercollegiate athletics to the end that "Athletics for All" may be a reality among Maine men.

Pe 1, 2. Physical Education.—These courses or their equivalents are required of all non-veteran freshmen. Outdoor and indoor games, calisthenics, tests, and intramural activities. *Two hours a week, no credit.*

Pe 3, 4. Physical Education.—These courses or their equivalents are required of all non-veteran sophomores who have not passed the physical efficiency test. A continuation of courses 1 and 2. *Two hours a week, no credit.*

PHYSICAL EDUCATION FOR WOMEN

Physical Education is required of all freshman and sophomore women. The courses are designed to help develop and maintain physical health and general fitness through physical activity; mental health through skill in recreational activities, which can provide release from tensions; social attributes which are attained in group activities; and understanding and appreciation of the place which sports, dance, and wholesome recreation activities have in good living.

In general, students will select four of the following five areas of activity: Fundamentals of Gymnastics, Dance, Individual Sports, Team Sports, and Roller Skating. When medical examination findings indicate need for an adaptive program, that will be prescribed according to individual needs. It includes modified or light recreational activity, individual gymnastics or corrective activity for postural or foot conditions, or even prescribed rest periods, as substitutes for regular areas indicated above.

A prescribed uniform is required for all physical education classes.

In addition to the required courses, the Women's Athletic Association, under the guidance of the Division of Physical Education for Women, offers an opportunity for voluntary participation in a broad program of athletics and club activities. Schedules are arranged in a variety of outdoor and indoor sports in order that each student may engage in the activities of her choice. Teams representing classes and dormitories compete for championships in their respective groups.

The Women's Athletic Association is governed by a Council elected by the women students. Membership in the Association is automatic for regular students.

Pe 1, 2. Physical Education.—Required for freshmen. Activities are chosen from two of the following five areas: (1) Team Sports (basketball, field hockey, volleyball, lacrosse); (2) Individual Sports (archery, tennis, golf, skiing, badminton, fencing); (3) Fundamentals of Gymnastics; (4) Dance (modern or folk); (5) Roller Skating. *Two hours a week, no credit.*

Pe 3, 4. Physical Education.—These courses are required for sophomores. Activities are selected from areas not taken in Pe 1, 2. *Two hours a week, no credit.*

Adaptive Physical Education.—Required of freshmen and sophomores for whom individual work for specific needs is prescribed by University Physician, or recommended by Division Head. Includes prescribed exercises for improvement

of muscle tone, correction of postural, foot, weight, menstrual problems, etc., and includes prescribed rest and/or participation in recreational games, e.g., Shuffleboard, bowling, table tennis, quoits, skish, croquet, etc. Substitutes for other Pe 1, 2, 3, or 4 courses.

Pe 21. Healthful Living.—Required of all freshman women in the College of Arts and Sciences and the College of Education. A one semester course designed to give a mature and scientific understanding of the principles of health and to create interest in their application to one's self, and one's social relationships. *Two hours a week. Two credit hours.*

INTERCOLLEGIATE ATHLETICS

As an integral part of the University's program of physical education, intercollegiate athletics serve the general purposes of that program. In addition, they constitute an effective means of maintaining interest in all-round physical fitness; they set standards of excellence in physical efficiency; they provide a wholesome and natural common interest around which University loyalties may be rallied and institutional esprit developed; and they afford experience in emotional control and in the capacity to think quickly and act vigorously while under the pressure of strong opposition.

Intercollegiate athletics are governed by an Athletic Board, the membership of which is representative of the University faculty and administration, the Board of Trustees, the alumni, and the undergraduates. Regular schedules are arranged and expert coaches are provided for the following sports: football, basketball, baseball, track, cross country, golf, tennis, winter sports, rifle, and sailing. Provision is made for Freshman as well as Varsity competition in these sports. In coaching procedures and in all other particulars, the program is conducted with primary concern for the best interests of the individual participant and his relationship toward the broader objectives of the University.

FACILITIES

The University facilities for athletics and physical education are listed on page 16.

PROFESSIONAL TRAINING IN PHYSICAL EDUCATION

The professional curriculum in Physical Education is designed to prepare qualified students to teach health and physical education, to coach athletic teams, and to direct recreational programs. It provides for a major in physical education and a minor in another teaching field to be selected by the student.

Definite evidence of intellectual capacity, positive qualities of character and personality, good health, and reasonable proficiency in motor skills are the factors determinging admission. Applicants who lack any of these qualities, which are considered essential for professional success in physical education, will be advised to enter some other field of study. Applicants are urged to present at least one unit in a laboratory science (chemistry, physics, or biology). Other academic requirements for admission are listed on page 27.

Students desiring to pursue the curriculum in physical education will register in the College of Education. For advice in planning their programs, students will consult with Mr. Rankin, 20 South Stevens Hall, or with Miss Rogers, Women's Gymnasium.

PHYSICAL EDUCATION AND ATHLETICS

The Degree of Bachelor of Science in Education is conferred upon students who successfully complete a total of 128 semester hours as outlined below. The law requires, also, that all non-veteran men complete in addition seven hours of military science during their freshman and sophomore years.

	Semester Hours	
	MEN	WOMEN
Physical Education Techniques	10	10
Physical Education Methods	8	8
Physical Education Theory	18	20
Education	18	18
Psychology	9	9
English (including Speech)	14	14
Social Studies	8	8
Science	8	8
Second Teaching Field	24	24
Electives	11	9
Total	128	128

The normal load for a semester is 15-18 hours. A program of study calling for less than 15 hours or more than 18 hours will be permitted only by special arrangement with the Dean.

The booklet entitled "A Four-Year Program for the Preparation of Teachers" gives specific information with regard to the fulfilling of general education requirements, academic teaching field and subject certification on pages 3 to 14. Professional courses in education required in this program are listed on page 16 in this booklet.

Various extracurricular activities contribute materially to the professional training of teachers of Physical Education, and students are encouraged to participate, within reasonable limitations, in such activities.

CURRICULUM

First Semester

			Rec	Lab	Credit Men	Credit Women
Eh	1	Freshman Composition			3	3
Zo	1	Zoology			4	4
Hy	3	United States History			3	3
Mt	1	1st Yr. Basic Military Science			1½	
Ed A	2	Orientation			0	0
Sh	1	Speech				2
Pe	21	Healthful Living				2
*Pe	11M	Technique in Team Sports	0	3	1½	
*Pe	11W	Technique in Individual Sports	0	3		1½
*Pe	1W	Physical Education Elective				0
Pe	13M	Technique in Gymnastics Elective	0	4	2	

* When Pe course numbers are followed by letters, they have the following significance: M—Men; W—Women.

Second Semester

			Rec	Lab	Credit Men	Credit Women
Eh	2	Freshman Composition			3	3
Sh	1	Speech			2	2
Zo	8	Anatomy and Physiology			4	4
Hy	4	United States History			3	3
Mt	2	1st Yr. Basic Military Science			1½	
Pe	12	Techniques in Rhythmical Activities	0	3	1½	1½
*Pe	12M	Technique in Team Sports	0	3	1½	
*Pe	12W	Technique in Team Sports	0	3		1½
Pe	14M	Technique in Apparatus and Tumbling	0	4	2	
		Elective				

Third Semester

Py	1	Psychology			3	3
Eh	15	Masterpieces of English and American Literature			3	3
Mt	3	2nd Yr. Basic Military Science			2	
*Pe	13W	Technique in Gymnastics	0	4		2
Pe	14	Technique in Play and Game Activities	0	3	1½	1½
Pe	61M	Methods in Sports Activity	2	0	2	
Pe	61W	Methods in Sports Activity	2	0		2
Pe	74	Organization and Administration of Recreational Activities	2	0	2	2
		Elective				

Fourth Semester

Py	2	Psychology			3	3
Eh	16	Masterpieces of English and American Literature			3	3
Ed B	2	The American School			3	3
Mt	4	2nd Yr. Basic Military Science			2	
*Pe	14W	Technique in Modern Dance	0	4		2
Pe	62M	Methods in Sports Activity	2	0	2	
Pe	62W	Methods in Sports Activity	2	0		2
Pe	50	Camp Leadership			2	2
		Elective				

Fifth Semester

Ed B	3	Human Growth & Devel.			3	3
*Pe	63W	Methods in Modern Dance	1	2		2
*Pe	63M	Coaching Football and Basketball	2	0	2	
Pe	71	Principles in Physical Education	2	0	2	2
Pe	73	Athletic Training	1	2	2	
Pe	76	Preventive and Remedial Gym	3	0	3	3
		Elective				

Sixth Semester

Ed B	4	The Teaching Process			3	3
Pe	24	First Aid				2
*Pe	64W	Methods in Physical Education	1	2		2
Pe	72	Tests and Measurements in Physical Education	3	0	3	3
Pe	64M	Coaching Track and Baseball	2	0	2	
Pe	77	Organization and Administration of Physical Education and Athletics	2	0	2	
Pe	78	Health Education	2	0	2	2

Seventh Semester

Ed M91	Observation and Supervised Student Teaching	6	6

Eighth Semester

COURSE DESCRIPTIONS

Pe 11, 12, 13, and 14.—These are courses designed to develop skill in the various activities in which the physical education instructor must be proficient. These courses give a total of ten credit hours through the freshman and sophomore years. STAFF

Pe 24. First Aid.—Course includes fundamentals prescribed by the American Red Cross. Leads to A.R.C. Standard, Advanced, and Instructor certificates in First Aid. *Rec* 3, *Cr* 2. MISS ROGERS

Pe 50. Camp Leadership.—Designed for the training of camp counselors. The course consists of lectures, discussions, practice, and participation in the varied activities of camping education. In addition to the regular two hours per week in the classroom, field trips will be arranged. *Cr* 2. MR. SEZAK

Pe 61M-62M. Methods in Sports Activities (Men).—Designed to acquaint students with methods of organizing and administering intramural programs. Attention is given to individual and recreational activities with stress placed on instruction, appreciation, and officiating. *Rec* 2, *Cr* 2. MR. WOODBURY

Pe 61-62W. Methods in Sports Activities (Individual and Team Sports for Women).—Instruction in sports and games of higher organization including hockey, basketball, volleyball, softball, speedball, soccer, lacrosse, archery, tennis, badminton, golf, skiing and fencing as well as recreational games. *Rec* 1, *Lab* 2, *Cr* 2. STAFF

Pe 63M. Coaching Football and Basketball (Men).—Practical instruction in football and basketball for men preparing to enter the coaching profession. *Rec* 2, *Cr* 2. MR. WESTERMAN AND MR. MCCALL

Pe 63W. Methods in Modern Dance (Women).—Designed for students preparing to teach Modern Dance. Stresses the teaching of techniques in Rhythmical Activities and Dance Composition. Open to Physical Education Majors, others by special permission only. *Rec* 3, *Cr* 2. MISS CASSIDY

Pe 64M. Coaching Track and Baseball (Men).—Devoted to a study of the mechanics of running, jumping, and weight throwing, with discussion of different styles involved; also to a study of approved methods in coaching baseball, in all its phases. *Rec* 2, *Cr* 3. MR. STYRNA AND MR. BUTTERFIELD

Pe 64W. Methods in Physical Education (Women).—A course in practical methods of teaching physical education activities in the elementary and secondary school program. *Rec* 1, *Lab* 2, *Cr* 2. MISS ROGERS

Pe 71 (171). Principles in Physical Education.—An interpretation of the scientific foundations of Physical Education. Open to juniors who are preparing to teach Physical Education. *Rec* 2, *Cr* 2. MR. RANKIN

Pe 72. Tests and Measurements in Physical Education.—A practical course in the use of objective measurements, and statistical methods in physical education and athletics. *Rec* 3, *Cr* 3. MISS SHAFFER

Pe 73. Athletic Training.—Methods necessary to the conditioning of ath-

letes, care of injuries and injury prevention. Diagnosis, prescription, diet, massage, taping, first aid, etc. *Rec* 1, *Lab* 2, *Cr* 2. MR. BENNER

Pe 74 (174). Organization and Administration of Recreational Activities.—Designed to acquaint students with the need, nature, and extent of recreational programs. Special consideration is given to the contribution of physical education to community recreation. *Rec* 2, *Cr* 2. MR. RANKIN

Pe 76 (176). Preventive and Remedial Gymnastics.—The study of body mechanics as they relate to good functional use of the body, postural abnormalities and problems of the atypical student regarding weight, cardiac conditions, posture, menstrual problems, and the programs of activity advised for them *Rec* 3, *Cr* 3. MISS ROGERS

Pe 77 (177). Organization and Administration of Physical Education and Athletics.—Administrative policies and procedures, legal aspects of physical education and athletics, budgets, evaluation and coordination of the several phases of physical education and athletics. *Rec* 2, *Cr* 2. MR. RANKIN

Pe 78 (178). Health Education.—Stress is placed on elements of services, facilities, and instruction at elementary and secondary school levels as they influence habits of positive health. *Rec* 2, *Cr* 2. MISS ROGERS

Pe 80 (180). Physical Education and Health in the Elementary School.—Attention is focused on health and physical education activities in relation to the growth and development of children in the elementary grades. *Rec* 3, *Cr* 3. MR. RANKIN

Memorial Field House and Gymnasium.

Maine's athletic program is varied and outstanding.

EXTENSION COURSES

The University offers numerous extension courses throughout the college year. These courses are administered by the General Extension Division as an additional program of the College of Education. Extension courses are not limited to the field of education but cover several academic areas. Many departments of the University participate in this program. A special Bulletin giving a list of these offerings is available upon request.

Four general types of courses are offered as follows: (1) Correspondence courses which are handled entirely by mail on an individual basis; however, students admitted to a degree program on or after September 1, 1960, may not use correspondence courses for degree credit in the College of Education; (2) extension classes, which may be organized in any community where sufficient demand exists, provided an instructor is available for the course desired; (3) Extension Center classes which are offered at the Portland, Orono, Auburn-Lewiston, Augusta, Presque Isle, and Calais and Machias centers; (4) evening courses which are offered on the campus.

When taken by qualified students, extension courses carry college credit. Subject to the regulations of the department and college in which the student is registered, courses taken by extension may be applied toward the requirements for the bachelor's degree. Appropriate center and evening extension classes given on the campus carry regular residence credit. Undergraduate students who desire to earn credit toward their degree by extension course work should obtain approval from their department or college before they register.

University students who desire to enroll for correspondence study during the summer vacation period may register for such courses at the end of the regular school year. Such courses carry degree credit provided the student was admitted to a degree program prior to September 1, 1960. All lessons and the final examination in such courses must be completed prior to registration for the fall semester. A grade of "dropped" will be reported to the registrar of the University for any such course which is not completed on time. In the event a regular University student decides to withdraw from a correspondence course, a refund of money is made according to the published schedule in the Extension Bulletin, except that after August 15 no refunds are granted. All requests to withdraw from a course should be made in writing and addressed to the Director of Extension.

In some instances, extension work, other than that taken by correspondence, may be used in meeting the requirements for the master's degree. Before enrolling for graduate work by extension, students should verify the amount of such work, if any, that can be used for the particular program in which they are enrolled.

Persons interested in additional information on extension courses, on either a credit or non-credit basis, should write to the Director of General Extension Division, College of Education, Orono, Maine.

SUMMER SESSION

The University offers a Summer Session extending over a period of nine weeks. Professional courses in elementary and secondary education, along with academic subjects, are offered. In addition, special workshops in both elementary and secondary education are conducted for a period of three weeks. Some courses are organized on a three-week basis thereby enabling the student who enrolls for a workshop to complete a full six-week Summer Session schedule. Several conferences on special educational problems, usually lasting for a week, are available for students who are interested in them.

As an integral part of the University organization, the Summer Session has similar standards of academic achievement. The faculty consists of members of the University staff and numerous visiting professors from other institutions.

The Session is primarily for the benefit of teachers and school administrators who desire to take professional courses in the field of education or to pursue other subjects which may be helpful to them in connection with their work. Hence special attention is given to teachers' courses in the various subjects offered.

The Session also affords opportunities for students in the University of Maine or other similar institutions to secure credits toward a degree. Normal-school graduates who are admitted to advanced standing as candidates for the bachelor's degree in the College of Education may do a considerable part of their work in the Summer Session.

The facilities of the Summer Session are open to both men and women, and students are admitted without examinations. The requirements for admission are, in general, the same as those for the other sessions of the University. Students are expected to have completed as a minimum preparation a standard high-school course or its equivalent.

Transcripts for work previously done are necessary only when the student plans to become a candidate for a degree at the University of Maine. New students who expect to become candidates for the master's degree should communicate with Dr. Edward Brush, Dean of Graduate Study.

Classes meet five times a week Monday to Friday inclusive. The normal registration for the six-week session is for two or three courses.

Registration for the Summer Session is held early in June, and the Session terminates about the middle of August. (See, Calendar, page 2.) The Bulletin, describing courses offered during this period, is issued about March 15. For further information concerning the program address Mark R. Shibles, Director of the Summer Session, Orono, Maine.

PERSONNEL

EMERITI

ARNOLD, FRANCES ELIZABETH; B.A., Maine, 1910; M.A., 1923; Associate Professor Emerita of Romance Languages.

ASHBY, STANLEY ROYAL; B.A., Texas, 1904; B.A., Oxford, 1907; M.A., 1923; A.M., Harvard, 1925; Ph.D., 1927; Professor Emeritus of English.

ASHMAN, ROBERT IRVING; A.B., Cornell University, 1913; M.F., Yale, 1929; Sc.D., Maine, 1957; Professor Emeritus of Forestry.

BEVERLY, VERNE CURTIS; B.S., Maine, 1920; County Agent Emeritus.

BOARDMAN, HAROLD SHERBURNE; B.C.E., Maine, 1895; C.E., 1898; Eng.D., 1922; LL.D., Colby, 1927; Eng.D., Rhode Island, 1928; LL.D., Bates, 1929; President Emeritus

BONNEY, LUTHER ISAAC; B.A., Bates, 1906; M.A. (Hon.), 1951; Sc.D. in Ed., Maine, 1959; Dean Emeritus, University of Maine in Portland.

BRANN, BERTRAND FRENCH; B.S., Maine, 1909; M.S., 1911; S.M., Massachusetts Institute of Technology, 1912; Professor Emeritus of Chemistry.

BRAUTLECHT, CHARLES ANDREW; Ph.B., Yale, 1906; Ph.D., 1912; Professor Emeritus of Chemistry and Chemical Engineering.

BRIWA, KATHRYN ELIZABETH; A.B., Vassar, 1915; M.A., Columbia, 1929; Ph.D., 1940; Nutrition Specialist Emerita.

BUZZELL, MARION STEPHANIE; B.A., Maine, 1914; M.A., 1915; Associate Professor Emerita of Romance Languages.

CHADBOURNE, AVA HARRIET; B.A., Maine, 1915; M.A., 1918; A.M., Columbia, 1919; Ph.D., 1928; Professor Emerita of Education.

CLAYTON, MARY MORRIS; B.S., Columbia, 1918; M.S., Rochester, 1926; Ph.D., 1929; Nutritionist Emerita.

CLOKE, PAUL; E.E., Lehigh, 1905; M.S., 1913; Eng.D., Maine, 1934; P.E. (Maine); Dean Emeritus of the College of Technology, and Professor Emeritus of Electrical Engineering.

COMEGYS, ESTHER; B.A., Wellesley, 1921; M.A., University of Pennsylvania, 1926; Ph.D., Radcliffe, 1941; Associate Professor Emerita of Mathematics.

CRANE, PERCY FREMONT; B.S., Bowdoin, 1917; Director of Admissions Emeritus.

CREAMER, WALTER JOSEPH; B.S., Maine, 1918; E.E., 1921; B.A., 1923; Professor Emeritus of Communication Engineering.

CROFUTT, CHARLES BURTON; B.A., Cornell College, 1919; M.S., State University of Iowa, 1920; Ph.D., 1923; Professor Emeritus of Physics.

CROSSLAND, CHARLES EDWARD; B.S., Maine, 1917; Vice President Emeritus, and Clerk, Board of Trustees.

DAY, CLARENCE; M.S., Maine, 1929; Extension Editor Emeritus.

DEERING, ARTHUR LOWELL; B.S., Maine, 1912; Sc.D., 1934; LL.D., Vermont, 1957; Dean of Agriculture Emeritus.

DIRKS, CHARLES ORVILLE; B.S., Kansas State College, 1924; M.S., Iowa State College, 1925; Ph.D., Cornell University, 1935; Professor Emeritus of Entomology.

FOLSOM, DONALD; A.B., Nebraska, 1912; M.A., Minnesota, 1914; Ph.D., 1917; Plant Pathologist Emeritus.

FOSTER, FRANK CLIFTON; B.S., Colby, 1916; B.D., Union Theological Seminary, 1924; M.A., Columbia, 1924; Ph.D., 1933; Professor Emeritus of Education.

GANNETT, JAMES ADRIAN; B.S., Maine, 1908; M.A., 1928; Registrar Emeritus.

GREENE, PEARL STUART; B.A., Northwestern, 1909; B.S., Lewis Institute, 1914; A.M., Columbia, 1923; Professor Emerita of Home Economics.

HALL, HOWE WIGGIN; B.S., Maine, 1914; M.S., 1925; Assistant Professor Emeritus of Animal Husbandry.

HAUCK, ARTHUR ANDREW; A.B., Reed, 1915; Ph.D., Columbia, 1932; LL.D., Lafayette, 1936; LL.D., New Hampshire, 1937; LL.D., Rhode Island, 1943; LL.D., New Brunswick, 1943; LL.D., Reed, 1946; LL.D., Bowdoin, 1947; LL.D., Boston University, 1948; L.H.D., Bates, 1950; L.H.D., Nasson College, 1952; L.H.D., University of Florida, 1953; LL.D., University of Kentucky, 1953; Litt.D., Colby, 1953; LL.D., Maine, 1958; President Emeritus.

HAWKINS, JOHN HENRY; B.S., Illinois, 1926; M.S., Maine, 1927; Ph.D., Cornell University, 1935; Entomologist Emeritus.

HITCHNER, ELMER REEVE; B.S., Pennsylvania State, 1915; M.S., 1916; Ph.D., Wisconsin, 1931; Professor Emeritus of Bacteriology.

HOWELL, CHARLES MANLEY; A.B., Swarthmore, 1919; M.S., Maine, 1922; P.E. (Maine); Professor Emeritus of Paper Technology.

JACKMAN, ERNEST DELMORE; A.B., Colby, 1912; A.M., Columbia, 1924; L.H.D., Colby, 1949; Professor Emeritus of Education.

JENKINS, CHESTER ALBERT; B.S., Dartmouth, 1911; M.S., Maine, 1931; Professor Emeritus of Physical Education.

JOHNSON, JUSTIN OLEY; B.S., Colby, 1927; Assistant Professor Emeritus of Mathematics, University of Maine in Portland.

JORDAN, MAYNARD FRED; B.A., Maine, 1916; M.A., 1921; Professor Emeritus of Astronomy.

LATHROP, FRANK HEIDTMAN; B.S., Clemson, 1913; M.S., Ohio State, 1915; Ph.D., 1923; Entomologist Emeritus.

LENGYEL, HELEN ANNA; Diploma, Sargent School for Physical Education, 1915; B.A., Maine, 1927; M.A., 1936; Professor Emerita of Physical Education.

LUCAS, WARREN STANHOPE; B.A., Maine, 1914; M.A., 1922; Professor Emeritus of Mathematics.

NASON, ESTELLE; B.S., Maine, 1922; Home Demonstration Agent Leader Emerita.

OTTO, CARL EVERETT; B.A., Cincinnati, 1916; M.A., 1920; Ph.D., 1922; Associate Professor Emeritus of Chemistry.

PERKINS, HARRY ROY; Instructor Emeritus of Mechanical Engineering.

SCHRUMPF, WILLIAM ERNEST; B.S., Maine, 1928; M.S., 1930; Associate Agricultural Economist Emeritus.

SHIBLES, LOANA SPEARIN; Castine Normal, 1926; Club Agent Emerita.

SMALL, GEORGE WILLIAM; B.A., Tennessee, 1915; M.A., Johns Hopkins, 1921; Ph.D., 1922; B.Litt., Oxford, 1927; Professor Emeritus of English Language and Literature.

SMITH, CHARLOTTE CLEAVES; B.S., Maine, 1931; Clothing Specialist Emerita.

SMITH, HARRY WOODBURY; B.S., Maine, 1909; M.S., 1922; Ph.D., Rutgers, 1934; Professor Emeritus of Biochemistry.

SMITH, PAYSON; A.M., Tufts, 1903; Litt.D., Bates, 1909; Litt.D., Bowdoin, 1909; Ed.D., Rhode Island State Teachers College, 1926; Ed.D., Colby, 1940; LL.D., Maine, 1908; LL.D., Norwich University, 1928; LL.D., Springfield College, 1934; LL.D., Northeastern University, 1935; Professor Emeritus of Education.

SMYTH, JOHN ROBERT; B.S., Purdue, 1920; M.S., Kentucky, 1928; Professor Emeritus of Poultry Science.

STEINMETZ, FERDINAND HENRY; B.S., Illinois, 1915; M.S., Minnesota, 1921; Ph.D., 1926; Pd.D., Eastern Illinois State College, 1949; Professor Emeritus of Botany.

SWEETMAN, MARION DEYOE; B.S., Iowa State College, 1921; M.S., 1922; Ph.D., Minnesota, 1927; Professor Emerita of Home Economics.

SWIFT, HAROLD CLAYTON; B.S., Maine, 1918; M.S., 1923; Associate Professor Emeritus of Agricultural Engineering.

TALBOT, RICHARD FOSTER; B.S., Maine, 1907; Extension Dairy Specialist Emeritus.

TOBEY, ELMER ROBERT; B.S., Maine, 1911; M.S., 1917; Ch.E., 1920; Chemist Emeritus.

TURNER, ALBERT MORTON; A.B., Harvard, 1912; A.M., 1914; Ph.D., 1920; Professor Emeritus of English and Comparative Literature.

WALLACE, STANLEY MOORE; Diploma, New Haven School of Gymnastics, 1917; Professor Emeritus of Physical Education.

WATSON, HARRY DEXTER; B.S., Maine, 1920; M.S., 1929; P.E. (Maine); Professor Emeritus of Mechanical Engineering.

WEBSTER, FRED LOT; County Agent Emeritus.

WESTON, CHARLES PARTRIDGE; B.C.E., Maine, 1896; C.E., 1899; A.M., Columbia, 1902; Sc.D., Maine, 1941; Professor Emeritus of Mechanics.

WHITMORE, ALBERT AMES; B.S., Maine, 1906; M.A., 1917; Professor Emeritus of History.

YOUNGS, FREDERICK SHAW; B.S., Maine, 1914; B.A., 1928; Treasurer Emeritus.

PERSONNEL*

(Dates in parentheses indicate year of initial appointment)

ABBOTT, WALTER HICKS (1960); B.S., Maine, 1958; Instructor in Physical Education and Assistant Football Coach.

ALLEN, DAVID D. (1958); B.S., Cornell University, 1956; M.S., University of Massachusetts, 1958; Club Agent, Southern Aroostook County.

ALTENBERGER, RUSSELL ALBERT (1961); B.S., New York University, 1950; A.M., University of Pennsylvania, 1951; Assistant Professor of Mathematics and Director of Computer Center.

ANDERSON, CHARLES LOWELL (1955); B.A., University of Utah, 1949; M.A., 1951; Instructor in English.

ANTONITIS, BEVERLY S.; B.A., Maine, 1958; Temporary part-time Instructor, Department of Botany and Plant Pathology.

ANTONITIS, JOSEPH JOHN (1950); A.B., Indiana University, 1946; A.M., Columbia, 1947; Ph.D., 1950; Professor of Psychology.

ARCULIS, SHERWIN (1960); Captain, Infantry, U. S. Army; B.A., The Citadel, South Carolina, 1951; Assistant Professor of Military Science.

ARMINGTON, RALPH ELMER (1961); B.S., Tufts University, 1940; M.S., New York University, 1942; E.E., Pennsylvania State University, 1953; Ph.D., University of Pittsburgh, 1957; P.E. (Pennsylvania); Professor and Head of Department of Electrical Engineering.

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* Officers of the University are listed on pages 4 to 7.

PERSONNEL

BAGLEY, EDWARD FORREST (1956); B.S., Maine, 1943; Club Agent, Waldo County.

BAILEY, RUSSELL MANLEY (1931); B.S., Maine, 1928; Associate Professor of Genetics, Agricultural Experiment Station.

BAILEY, WILLIAM OSCAR (1959); B.S., Bates, 1922; M.Ed., 1940; Assistant Professor of Education.

BAIN, WILLIAM MURRAY (1959); A.B., Indiana University, 1951; M.A., 1952; Ph.D., 1959; Assistant Professor of Bacteriology.

BAKER, GREGORY (1935); B.S., Maine, 1924; M.F., Yale, 1939; Professor of Forestry.

BANASIAK, CHESTER (1960); B.S., Michigan State, 1948; M.S., University of Massachusetts, 1951; Assistant Professor of Game Management.

BARDEN, ALBERT ARNOLD, JR. (1946); A.B., Brown, 1932; Sc.M., 1934; Ph.D., Northwestern, 1941; Associate Professor of Zoology.

BARON, ALAN (1957); B.A., Brooklyn College, 1952; M.S., 1953; Ph.D., University of Oregon, 1957; Associate Professor of Psychology.

BARTLETT, MERRILL DAY (1958-59) (1961); B.A., Maine, 1952; M.A., 1958; Assistant Professor of Business and Economics.

BARUSHOK, JAMES WILLIAM (1956); B.S., Northwestern University, 1951; M.A., 1952; Assistant Professor of Speech.

BASS, HERBERT JACOB (1957); A.B., Boston University, 1950; Ph.D., University of Rochester, 1956; Assistant Professor of History.

BATES, EDWIN HILL (1953); B.S., Maine, 1937; Assistant Director, Cooperative Extension Service.

BATES, HARVEY HARLAN, JR. (1959); B.A., DePauw University, 1951; B.D., Union Theological Seminary, 1954; Director of Religious Affairs.

BEAMESDERFER, JOHN WILLIAM (1947); B.S., Gettysburg College, 1932; M.S., University of Michigan, 1939; Ph.D., 1947; Professor and Head of Department of Chemistry.

BEARD, DARYL A. (1960); Major, Infantry, U. S. Army; BGE, Municipal University of Omaha (Nebraska), 1959; Assistant Professor of Military Science.

BEECHHOLD, HENRY F. (1956); B.S., Oklahoma State University, 1951; M.A., 1952; Ph.D., Pennsylvania State University, 1956; Assistant Professor of English.

BELL, DAVID MALCOLM (1958); Master Sergeant, U. S. Army; Instructor in Military Science.

BELL, EDWARD M. (1961); A.B., University of Miami, 1956; M.A., State University of Iowa, 1959; Instructor in French.

BELL, HARRY ADELBERT (1956); B.S., Maine, 1949; Assistant County Agent, Cumberland County.

BELYEA, PAUL RAYMOND (1958); B.S., Maine, 1956; M.S., 1958; Instructor in Chemistry, Agricultural Experiment Station.

BENNER, EUGENE R. (1961); B.S. in Ed., Wilmington College, 1957; M.S. (Health and Safety), Indiana University, 1961; Instructor in Physical Education and Head Athletic Trainer.

BENNETT, CLARENCE EDWIN (1934); Ph.B., Brown, 1923; Sc.M., 1924; Ph.D., 1930; Professor and Head of Department of Physics.

BERGEN, CHANDLER WAY (1961); Sergeant First Class, U. S. Army; Instructor in Military Science.

BERNEN, GRACE EAMES (1960); A.B., Smith College, 1951; A.M., Radcliffe College, 1952; Instructor in English.

BERRY, THELMA HUFF (1951); B.S., Rhode Island, 1934; M.S., Syracuse, 1935; Associate Professor of Clothing.

BEYER, FRANK KEMP (1947); B.S., Cornell University, 1929; M.S., University of Wisconsin, 1930; Associate Professor of Forestry.

*BILLIAS, GEORGE ATHAN (1954); B.A., Bates, 1948; M.A., Columbia, 1949; Ph.D., 1958; Associate Professor of History.

BIRD, FRANCIS HOWE (1961); B.S., University of Michigan, 1936; Ph.D., University of California, 1948; Professor and Head of Department of Poultry Science.

BISCOE, JONATHAN (1946); B.S., Massachusetts Institute of Technology, 1931; M.S., 1932; Professor of Physics.

BISSELL, LEWIS PROUTY (1949); B.S., New Hampshire, 1940; M.F., Yale, 1947; Forestry Specialist, Cooperative Extension Service.

BLACKMON, CLINTON RALPH (1956); B.S., Clemson A & M College, 1941; M.S., University of Massachusetts, 1949; Ph.D., Rutgers, 1955; Associate Professor of Agronomy.

BLAISDELL, CORINNE MERRILL (1928-38) (1951); B.S., Farmington Normal, 1928; Club Agent, Penobscot County.

BLEASE, JOHN A. (1960); B.S., University of Rhode Island, 1960; Instructor in Biochemistry, Agricultural Experiment Station.

BOCKUS, CLAYTON TURNBULL (1960); B.S., Maine, 1927; P.E. (Maine); Associate Professor of Pulp and Paper Technology.

BOGAN, EDGAR JUNIOR (1929); A.B., Miami (Ohio), 1926; A.M., Princeton, 1929; Ph.D., Ohio State, 1947; Associate Professor of Chemistry.

BOGAN, SALLY PALMER (1928); B.A., Maine, 1927; Circulation Librarian.

BONDURANT, BYRON LEE (1954); B.A.E., Ohio State University, 1949; M.S., University of Connecticut, 1953; P.E. (Maine); Professor and Head of Department of Agricultural Engineering.

BOOKER, LILLIAN (1955); B.S., New Hampshire, 1937; Home Demonstration Agent, Kennebec County.

BOONE, ARTHUR I. (1961); A.B., Virginia State College, 1954; M.S., Indiana University, 1958; Instructor in Education.

BORDA, FRANK (1961); B.A., Maine, 1957; LL.B., University of Colorado, 1960; Legal Counsel.

BORNS, HAROLD WILLIAM, JR. (1955); B.S., Tufts, 1951; M.A., Boston University, 1955; Ph.D., 1959; Assistant Professor of Geology, Department of Civil Engineering.

BOULANGER, LEO WILFRED (1955); B.S., Providence College, 1951; M.S., Cornell University, 1954; Ph.D., 1957; Associate Professor of Entomology.

BOYCE, MARION (1959); B.S., Farmington State Teachers College, 1956; M.Ed., Maine, 1959; Instructor in Education.

BRADBURY, HARRY EDWARD (1958); B.S., Maine, 1954; M.S., Rutgers, 1956; Instructor in Chemistry, Agricultural Experiment Station.

BRANCH, CHARLES F.; M.D., Vermont, 1923; Lecturer in Medical Technology; Central Maine General Hospital, Lewiston.

BRAUNSTEIN, JERRY (1954); B.S., College of City of New York, 1942; M.A., Wesleyan University, 1947; Ph.D., Northwestern University, 1951; Associate Professor of Chemistry.

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* On leave of absence, 1961-62

FRITZ, ROBERT BARTLETT; A.B., Bowdoin, 1959; Part-time Instructor in Biochemistry.

GARDNER, WOFFORD GORDON (1946); A.B., Southwestern College, 1935; M.A., Northwestern University, 1941; Ph.D., 1952; Professor and Head of Department of Speech.

GAUSMAN, HAROLD WESLEY (1955); B.S., Maine, 1949; M.S., University of Illinois, 1950; Ph.D., 1952; Professor of Agronomy.

GEHRING, DONALD C. (1961); B.S., University of Connecticut, 1961; Club Agent, Washington County.

GEORGITIS, WILLIAM J. (1956); B.S., Bowdoin, 1942; M.S., Maine, 1949; Assistant Professor of Chemistry.

GERRY, RICHARD WOODMAN (1948); B.S., Maine, 1938; M.S., Purdue, 1946; Ph.D., 1948; Professor of Poultry Science.

GERSHMAN, MELVIN (1958); B.Sc., Ohio State University, 1954; M.Sc., University of Massachusetts, 1957; Assistant Professor Department of Animal Pathology.

GERVAIS, BERNARD RICHARD (1960); Captain, Ordnance Corps, U. S. Army; B.S., Oklahoma State University, 1951; Assistant Professor of Military Science.

GETCHELL, AMASA STANLEY (1942); B.S., Maine, 1938; M.S., 1940; Associate Professor of Chemistry, Agricutural Experiment Station.

GETCHELL, JOHN SIMMONS (1940); B.A., Maine, 1936; M.S., 1939; Associate Professor of Food Science, Agricultural Experiment Station.

GILLESPIE, JAMES DUFF (1950); B.S., Bradley University, 1949; M.A., 1951; Associate Professor of Speech.

GLANVILLE, ALBERT DOUGLAS (1937); A.B., Cornell University, 1927; M.A., Illinois, 1928; Ph.D., Cornell University, 1932; Professor and Head of Department of Psychology.

GOATER, JOHN CHARLES, JR. (1955); B.S., Virginia Polytechnic Institute, 1948; Livestock Specialist, Cooperative Extension Service.

GOFF, STUART (1961); B.S., California Institute of Technology, 1958; M.S., 1959; Instructor in Mathematics.

GORDON, HARRY WIGHT (1946); A.B., Yale, 1934; Treasurer.

GORHAM, JOHN FRANCIS (1953); B.S., Maine, 1950; M.S., 1952; Associate Professor of Chemical Engineering.

GORRILL, WILLIAM ROY (1948); B.S., Northeastern University, 1948; M.S., Maine, 1956; P.E. (Maine); Associate Professor of Soil Mechanics, Department of Civil Engineering; Soils Engineer, Maine State Highway Commission.

GRADY, RUTH L. (1955); B.S., Maine, 1927; Club Agent, Somerset County.

GRANT, DONALD ANDREW (1956); B.S., Maine, 1956; Assistant Professor of Mechanical Engineering.

GRANT, FREMA S. (1955); B.S., Farmington State Teachers College, 1929; Home Demonstration Agent, York County.

GRAVES, ROBERT A. (1959); M.D., University of Rochester, 1948; Director, University Health Service.

GREAVER, HARRY JONES, JR. (1955); B.F.A., University of Kansas, 1951; M.F.A., 1952; Assistant Professor of Art.

GRIFFIN, RALPH HAWKINS (1956); B.S., Virginia Polytechnic Institute, 1943; M.F., Yale University, 1947; D.F., Duke University, 1956; Associate Professor of Forestry.

GROSS, MARY LOUISE; B.A., Stanford University, 1934; M.A., 1936; Part-time Instructor in Spanish.

GROSS, STUART MURRAY (1948); A.B., Stanford, 1932; M.A., 1936; Associate Professor of Spanish.

GROTH, CLAUSE ROBERT, JR. (1957); B.A., University of Oregon, 1952; M.A., 1956; Assistant Professor of Music.

GULO, ELIOT VAUGHN (1960); A.B., Boston University, 1951; M.A., University of Texas, 1952; Ed.D., Boston University, 1960; Assistant Professor of Psychology.

HAGAN, FRANK WILBUR (1952); B.S., Maine, 1933; County Agent, Oxford County.

HAGAR, DAVID JON (1957); B.A., University of Vermont, 1949; M.S., 1953; Instructor in Geology, Department of Civil Engineering.

HAKOLA, JOHN WILLIAM (1959); B.A., Montana State University, 1950; M.A., 1951; Ph.D., Indiana University, 1961; Assistant Professor of History.

HAMILTON, BROOKS WITHAM (1952); A.B., Bates, 1941; Associate Professor and Head of Department of Journalism.

HAMILTON, WAYNE ANDREW (1960); B.S., Ohio Northern University, 1958; M.S., Case Institute of Technology, 1960; Assistant Professor of Civil Engineering.

HAMM, PHILIP LORD (1952); B.S. in Ed., Maine, 1943; M.A., 1955; Assistant Professor of Mathematics.

HAMMER, MAX; B.S., City College of New York, 1956; Lecturer in Psychology.

HANKINS, JOHN ERSKINE (1956); B.A., University of South Carolina, 1924; M.A., 1925; Ph.D., Yale University, 1929; Professor and Head of Department of English.

HARMON, JAMES ARNOLD (1946-1955) (1956); B.S. in Ed., Maine, 1940; Director of Admissions.

HARPER, JOHN FRANK, JR. (1960); B.S., United States Naval Academy, 1931; M.S., Purdue, 1960; Assistant Professor of Astronomy and Mathematics.

HARRIS, PAUL CHAPPELL (1959); B.Sc., McGill University, 1952; M.S., University of Maryland, 1956; Ph.D., 1959; Assistant Professor of Poultry Science.

*HART, JEAN GRAHAM (1958); B.A., Ohio State University, 1946; M.A., Maine, 1961; Instructor in Mathematics.

HART, RICHARD LAVERNE (1960); B.A., Nebraska Wesleyan University, 1950; M.Ed., University of Nebraska, 1955; Ed.D., 1960; Assistant Professor of Education.

HARTGEN, VINCENT ANDREW (1946); B.F.A., University of Pennsylvania, 1941; M.F.A., 1942; Professor and Head of Department of Art.

HASKELL, STUART PHELPS, JR. (1957); B.A., Maine, 1956; Information Specialist, Department of Public Information and Central Services.

HAWLEY, HENRY CHARLES (1946); A.B., Oberlin, 1923; M.B.A., Harvard, 1925; D.C.S., 1930; Professor of Business and Economics; Acting Head of Department of Business and Economics; Acting Director of School of Business Administration.

HEPLER, PAUL RAYMOND (1956); B.S., Michigan State College, 1948; M.S., University of Illinois, 1950; Ph.D., 1956; Associate Professor of Horticulture.

HERRICK, REBECCA (1961); B.A., Maine, 1945; Instructor in Modern Society, Department of Sociology and Anthropology.

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*On leave of absence, 1961-62.

HESS, CAROL ST. LAWRENCE (1954); B.A., Maine, 1952; M.S., 1954; Instructor in Chemistry.

HESS, JOHN MONROE CONVERSE (1955); B.S., Pennsylvania State University, 1953; M.S., Maine, 1955; Ph.D., 1961; Instructor in Chemistry.

HIGHLANDS, MATTHEW EDWARD (1935-1946) (1947); B.A., Maine, 1928; S.M., Massachusetts Institute of Technology, 1934; Ph.D., University of Massachusetts, 1951; Professor and Head of Department of Food Science, Agricultural Experiment Station.

HILBORN, MERLE TYSON (1935); B.S., Maine, 1932; M.S., 1934; Ph.D., Yale, 1940; Professor of Plant Pathology, Agricultural Experiment Station.

HILL, RALPH ARTHUR (1957); B.S., Maine, 1928; M.S., Vermont, 1930; Ph.D., Columbia, 1942; Research Assistant in Chemistry.

HILL, RICHARD CONRAD (1946); B.S., Syracuse, 1941; P.E. (Maine); Professor of Mechanical Engineering.

HILTON, DONALD BERTRAM (1958); A.B., Boston University, 1955; M.S., Northeastern University, 1958; Instructor in Chemistry.

HOBBS, SHIRLEY (1950); B.S., Farmington State Teachers College, 1929; Assistant Home Demonstration Agent, Cumberland and York Counties.

HODGKINS, LAURENCE WHITNEY (1954); B.S., Maine, 1950; County Agent, Kennebec County.

HOGAN, JOHN M. (1961); B.Sc., Rutgers, 1941; Ph.D., 1949; Associate Professor of Food Science, Agricultural Experiment Station.

HOLMES, EDWARD MORRIS (1956); A.B., Dartmouth, 1933; M.Ed., Maine, 1954; A.M., Brown, 1956; Instructor in English.

HOLMES, FLOYD E. (1960); Sergeant First Class, U. S. Army; Instructor in Military Science.

HOLMES, JANE M. (1957); B.S., Simmons College, 1929; Documents and Serials Librarian.

HOLYOKE, VAUGHN H. (1958); B.S., Maine, 1956; Assistant Crops Specialist, Cooperative Extension Service.

HOPKINS, HARRY SAUNDERS (1957); B.S. (Agr.), Maine, 1942; B.S. (Mech. Eng.), 1947; M.Ed., 1952; Instructor in Mechanical Engineering.

HOWD, FRANK HOWVER (1959); A.B., University of Rochester, 1951; M.S., 1953; Ph.D., State College of Washington, 1956; Assistant Professor of Geology, Department of Civil Engineering.

HUESEN, JOSE VICTORIO (1959); B.A., St. Joseph's University, Beirut, Lebanon; M.A. (Arabic), 1942; M.A. (French), 1944; Instructor in Romance Languages.

HUFF, LOUISE (1958); B.S., Farmington State Teachers College, 1937; Assistant Home Demonstration Agent in Farm and Home Development in Oxford and Androscoggin-Sagadahoc Counties.

HUGHEY, GWENDOLYN (1960); B.S., Maine, 1959; Home Demonstration Agent, Franklin County.

HUNNEWELL, ALICE F. (1956); B.S., Maine, 1953; Home Demonstration Agent, Penobscot County.

HUNTER, JAMES HERBERT (1957); B.S., Maine, 1953; M.S., 1957; Assistant Professor of Agricultural Engineering, Agricultural Experiment Station; Presque Isle, Maine Potato Handling Research Center.

HUNTINGTON, DAVID HANS (1953); B.S., Cornell University, 1946; M.S., 1948;

Ph.D., 1953; Associate Professor of Agricultural Engineering; Assistant Dean of the College of Agriculture.

HUTCHINSON, FREDERICK EDWARD (1953); B.S., Maine, 1953; M.S., 1958; Assistant Professor of Agronomy and Seed Analyst.

HYLAND, FAY (1926); B.S., Michigan State College, 1925; M.S., Maine, 1929; Professor of Botany.

IBBOTSON, LOUIS TAPPE (1928); A.B., Hamilton, 1922; B.L.S., New York State Library School, 1925; Librarian.

IVES, EDWARD DAWSON (1955); A.B., Hamilton College, 1949; M.A., Columbia, 1950; Instructor in English.

JAEGER, GILBERT BEYER (1948); B.S., Cornell University, 1942; County Agent, Knox-Lincoln Counties.

JEFFREY, WILLIAM HARTLEY (1946); A.B., Drew, 1942; M.A., University of Michigan, 1944; Ph.D., University of Colorado, 1950; Professor of History.

JENNESS, LYLE CLAYTON (1923); B.S., New Hampshire, 1922; M.S., Maine, 1925; P.E. (Maine); Professor and Head of Department of Chemical Engineering.

JERVIS, CYNTHIA RODIMON (1961); B.S., University of Connecticut, 1960; Instructor in Nursing.

JEWETT, LLOYD JAY (1956); B.S., Maine, 1956; M.S., 1959; Assistant Professor of Agricultural Economics.

JOHANNES, BARBARA MONA (1961); B.A., Hunter College, 1957; M.A., University of Michigan, 1959; M.A., University of Chicago, 1960; Instructor in English.

JOHNSTON, EDWARD FRANKLIN (1954); B.S., Maine, 1953; M.S., Pennsylvania State University, 1955; Associate Professor of Agricultural Economics, Agricultural Experiment Station; Maine Potato Handling Research Center, Presque Isle.

JONES, HERALD ADDISON; A.B., DePauw University, 1920; Mus.B., University of Rochester, Eastman School of Music, 1936; M.A., Columbia University. Teachers College, 1945; Lecturer in Music.

JONES, NELSON BISHOP (1953); Ph.B., Brown, 1928; Director, Memorial Union.

JORDAN, GLENDON B. (1959); B.S., Maine, 1952; Assistant County Agent, Washington County.

KAPLAN, ARTHUR MARK; B.A., Maine, 1949; M.A., Boston University, 1950; Ph.D., Cornell University, 1956; Lecturer in Psychology.

KAPLAN, DORIS; B.S., Pratt Institute, 1942; M.A., Columbia, 1945; Part-time Instructor in Foods and Nutrition.

KEENE, JAMES THURSTON (1960); B.S., Maine, 1960; Instructor in Engineering Graphics.

KEYO, HOWARD ARTHUR (1946); B.S., Boston University, 1931; Director of Department of Public Information and Central Services.

KIMBALL, SPOFFORD HARRIS (1936); B.S., Denison, 1923; M.A., Pittsburgh, 1925; A.M., Harvard, 1929; Ph.D., 1932; Professor of Mathematics and Head of Department of Mathematics and Astronomy.

KITTRICK, IRENE AGATHA (1961); B.S., Teachers College, Columbia University, 1947; M.S., Simmons, 1958; Assistant Professor of Nursing.

KITTRIDGE, CHARLES W. (1955); B.S., Maine, 1949; Assistant Agricultural Engineer, Cooperative Extension Service.

KOEHLER, STANLEY B. (1961); Sc.B., Brown University, 1947; B.M.E., Rensselaer Polytechnic Institute, 1950; M.S.E., University of Michigan, 1955; P.E. (Illinois); Assistant Professor of Mechanical Engineering.

KONTIO, RAE CLARK (1961); B.S., Maine, 1958; Club Agent, Kennebec County.

KRUEGER, GEORGE CORWIN (1950); A.B., Reed, 1945; Ph.D., Brown, 1951; Associate Professor of Physics.

LADD, DORIS (1954); B.S., Maine, 1925; Acting State Home Demonstration Agent Leader, Cooperative Extension Service.

LAMB, VIRGINIA S. (1958); B.S., Maine, 1928; Club Agent, Cumberland County.

LAMOREAU, FRED LINCOLN (1930); B.A., Maine, 1930; M.A., 1934; Professor of Mathematics.

LARSEN, WILLIAM EDWARD (1961); B.A., Brigham Young University, 1957; M.A., University of Virginia, 1958, Ph.D., 1961; Instructor in History.

LASKEY, HENRY LINDON (1958); B.S., Maine, 1951; P.E. (Maine); Instructor in Mechanical Engineering.

LEONARD, HERBERT ARTHUR (1939); B.S., Maine, 1939; M.S., Cornell University, 1950; Associate Professor of Animal Science and Farm Manager.

LEVINSON, RONALD BARTLETT (1926); A.B., Harvard, 1919; Ph.D., Chicago, 1924; Professor and Head of Department of Philosophy.

LEWIS, TRENT RONALD (1961); B.S., University of Maryland, 1954; M.S., 1957; Ph.D., Michigan State University, 1961; Assistant Professor of Animal Science.

LIBBEY, WALDO MCCLURE (1944); B.S., Maine, 1943; S.M., Massachusetts Institute of Technology, 1951; Professor of Electrical Engineering.

LIBBY, MERTON EUGENE (1952); B.S., Maine, 1948; M.S., 1960; County Agent, Penobscot County.

LIBBY, WINTHROP CHARLES (1934); B.S., Maine, 1932; M.S., 1933; Dean of Agriculture, Dean, College of Agriculture, and Professor of Agronomy.

LINDBERG, JOHN MONSON (1958); B.A., New York State College for Teachers, Albany, 1952; M.A., Wisconsin, 1953; Ph.D., 1956; Instructor in English.

LINDBERG, MARGARET MORTON; B.A., Mt. Holyoke, 1952; M.A., Wisconsin, 1953; Part-time Instructor in English.

LORD, GEORGE EDGAR (1925); B.S., Maine, 1924; M.P.A., Harvard, 1948; Director, Cooperative Extension Service.

LORD, HAROLD WESLEY (1961); B.S.E., University of Michigan, 1960; M.S.E., 1961; Instructor in Mechanical Engineering.

LOVEJOY, KENNETH COUSINS (1928); B.S., Maine, 1928; State Club Leader, Cooperative Extension Service.

LUSH, PAULINE EMMONS (1948); B.S., Farmington State Normal, 1939; M.S., Maine, 1959; Home Management Specialist, Cooperative Extension Service.

LYMAN, JOHN ROBERT (1948); B.S., Tufts College, 1947; P.E. (Maine); Associate Professor of Mechanical Engineering.

LYSETH, HARRISON CLAUDE; A.B., Bowdoin, 1921; Ed.M., Harvard, 1928; Ed.D., 1940; Lecturer in Education, General Extension Division.

MACCAMPBELL, BARBARA BARRETT (1957); B.A., Ohio Wesleyan, 1939; M.A., 1941; M.S.L.S., Western Reserve, 1950; Assistant Reference Librarian.

*MACCAMPBELL, JAMES CURTIS (1957); B.A., Ohio Wesleyan, 1939; M.A., Ohio State University, 1946; Ph.D., 1957; Associate Professor of Education.

MACDOWELL, CARL MORTON (1961); B.S., Maine, 1961; Instructor in Civil Engineering.

MACFARLAND, HOWARD THEODORE (1956); B.S., Massachusetts Institute of Technology, 1950; M.S., 1950; Associate Professor of Electrical Engineering.

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*On leave of absence, 1961-62.

MacLauchlin, Robert Kerwin (1959); B.A., University of Massachusetts, 1954; M.Ed., Bridgewater State Teachers College, 1958; M.S. (Radio and Television), Syracuse University, 1959; Instructor in Speech; Information Specialist, Department of Public Information and Central Services.

MacLean, Jean (1958); B.S., Boston University, 1930; B.N., Yale University School of Nursing, 1933; M.S., University of Chicago, 1948; M.A. (hon.), Yale University, 1954; Professor of Nursing and Director, School of Nursing.

MacPherson, Isabel (1961); B.S. in Ed., Boston University, 1947; M.Ed., 1958; Instructor in Education.

McCall, Joseph Brian (1958); B.S. in Ed., Dayton University, 1949; M.A., Ohio State University, 1951; Assistant Professor of Physical Education, Varsity Basketball Coach and Coach of Tennis.

McClure, Melvin Theodore (1961); B.A., Maine, 1957; M.S., University of Illinois, 1960; Assistant Professor of Business and Economics.

McCrum, Richard Caswell (1957); B.S., University of Arizona, 1951; M.S., Maine, 1953; Assistant Professor of Plant Pathology, Agricultural Experiment Station.

McDaniel, Ivan Noel (1957); B.S., Eastern Illinois State College, 1951; M.S., 1952; Ph.D., University of Illinois, 1958; Assistant Professor of Entomology, Agricultural Experiment Station.

McDaniel, Lois Stansbury; B.S., University of Illinois, 1955; D.V.M., 1957; Assistant Professor of Animal Pathology, Agricultural Experiment Station.

McDonald, Dorothy Smith (1930); B.S., Simmons School of Library Science, 1921; Reference Librarian.

McGuire, Francis Stephen (1946); B.S., Maine, 1931; Director of Plant and Facilities.

*McKay, Edgar Burnham (1947); B.S., Colby, 1930; M.Ed., Maine, 1951; Assistant Professor of Business and Economics.

McNeary, Matthew (1937); B.S., Pennsylvania State, 1932; M.S., Maine, 1941; P.E. (Maine); Professor and Head of Department of Engineering Graphics.

McWard, Gerald Wayne (1960); B.S., University of Illinois, 1956; M.S., 1957; Ph.D., 1960; Assistant Professor of Poultry Science, Agricultural Experiment Station.

Major, Charles Walter (1959); A.B., Dartmouth, 1948; M.S., University of Tennessee, 1954; Ph.D., 1957; Assistant Professor of Zoology.

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Marchione, Frederick James (1961); B.A., Queens College, 1955; M.A., Middlebury College, 1956; Instructor in French.

Martin, Frederic Thurman (1934); Ch.E., Lehigh, 1925; Ph.D., Johns Hopkins, 1929; P.E. (Maine); Associate Professor of Chemistry.

Mawhinney, Eugene Alberto (1948-49) (1959); B.S., Maine, 1947; M.A., 1949; Ph.D., University of Illinois, 1955; Associate Professor of Government.

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* On leave of absence, 1961-62.

MENDALL, HOWARD LEWIS (1937); B.A., Maine, 1931; M.A., 1934; Professor of Game Management; Leader in Wildlife Research.

MENGERS, MARIE CHRISTIANSEN (1947); B.A., University of Nebraska, 1928; Diplome Pour l'Enseignement du Français à l'Etranger, University of Toulouse, France, 1932; M.A., Wellesley, 1933; Ph.D., Columbia, 1949; Professor of French.

MERCHANT, CHARLES HENRY (1924); B.S., Cornell University, 1920; M.S., 1922; Ph.D., 1928; Professor of Agricultural Economics and Head of Department of Agricultural Economics and Farm Management.

MERRILL, EDWARD OSGOOD (1940); B.S., Maine, 1938; Associate Professor of Chemistry, Agricultural Experiment Station.

MESERVE, RUTH (1945); B.A., Maine, 1929; B.S., Simmons College, 1942; Assistant Cataloger in the Library.

METZGER, HOMER BASTIAN (1950); B.S., Pennsylvania State College, 1939; M.S., 1948; Ph.D., 1950; Professor of Agricultural Economics.

MEYER, MARVIN CLINTON (1946); B.S., Southeast Missouri State College, 1932; A.M., Ohio State University, 1936; Ph.D., University of Illinois, 1939; Professor of Zoology.

MILES, EDWIN KENNETH (1933); B.A., Lawrence, 1929; M.A., Northwestern, 1930; Ph.D., University of Pennsylvania, 1933; Professor of German and Head, Department of Foreign Languages and Classics.

MILES, KATHERINE ADELE (1946); B.A., Ohio State, 1925; B.S. in Education, 1925; M.A., 1927; Ph.D., University of Minnesota, 1945; Professor of Child Development.

MILLER, STACY ROSS (1934); B.S., Maine, 1932; Administrative Assistant, Cooperative Extension Service.

MILLETT, BARRY MYRON (1956); B.A., Maine, 1956; M.Ed., Boston University, 1961; Assistant Dean of Men and Director of Freshman Orientation.

MILLETT, FREIDA SMITH (1958); B.S., Maine, 1956; Instructor in Institutional Management.

MILNE, CHARLES MAITLAND (1957); B.S., Massachusetts, 1952; M.S., Purdue, 1954; P.E. (Maine); Assistant Professor of Agricultural Engineering.

**MINOT, MARION ELIZABETH (1958); B.S., Farmington State Teachers College, 1953; M.S., Cornell University, 1958; Assistant Professor of Home Economics Education.

MONROE, MERNA MYRTHA (1931); B.S., Iowa State, 1929; M.S., Kansas State, 1932; Associate Professor of Housing.

MONTVILLE, FRANCIS ELI (1961); B.S., University of Rhode Island, 1954; M.S., 1957; Extension Agricultural Economist, Cooperative Extension Service.

MOSHER, PAUL (1949); B.S., Maine, 1941; Crops Specialist, Cooperative Extension Service.

MOWER, CAROL PRENTISS (1957); B.A., Maine, 1953; M.A., Northwestern University, 1957; Instructor in Speech.

MUN, ALTON MOON (1961); B.A., University of Southern California, 1949; M.S., University of Illinois, 1951; Ph.D., University of Indiana, 1956; Assistant Professor of Zoology.

MURPHY, ELIZABETH FLORENCE (1930); B.A., Maine, 1930; M.A., 1934; Associate Professor of Horticulture, Agricultural Experiment Station.

**On leave of absence, February 1, 1962-January 31, 1963.

MURPHY, HUGH JEROME (1950); B.S., Maine, 1948; M.S., 1950; Associate Professor of Agronomy.

MURRAY, JOSEPH MAGEE (1934); B.A., Maine, 1925; M.A., University of Michigan, 1927; Ph.D., 1929; Dean of the College of Arts and Sciences; Professor of Zoology.

MUSGRAVE, MARGUERITE RUTH (1929); B.S., Columbia, 1925; A.M., 1926; Lecturer in Design.

MYERS, FRANK WILLIAM (1957); B.A., Maine, 1935; M.Ed., 1947; Assistant Professor of Education and Assistant Director of the Summer Session.

NADEL, EDWARD PHILIP (1961); B.A., Queens College, 1954; M.A., Northwestern University, 1958; Assistant Professor of Economics.

NESS, NORMAN RENFREW (1942); B.S., Maine, 1938; Extension Dairyman, Cooperative Extension Service.

NICHOLS, JOHN WILSON (1954); B.A., Western Maryland College, 1948; M.A., University of Florida, 1949; Ph.D., 1954; Associate Professor of Psychology.

NIGHTINGALE, C. HOPE (1958); B.S., Farmington State Teachers College, 1957; Home Demonstration Agent, Southern Aroostook County.

NIGHTINGALE, RICHARD IRVINE (1958); B.S., Maine, 1958; M.S., 1960; Instructor in Civil Engineering.

NIVEN, LEWIS HAMILTON (1948); B.Mus., Whitman College, 1926; M.A., Teachers College, Columbia, 1938; Professor and Head of Department of Music.

NOLDE, JOHN JACOB (1950); B.A., Cornell University, 1941; Ph.D., 1950; Associate Professor of History and Government.

NORMAN, DIANA L. (1960); B.S., Maine, 1960; Club Agent, Aroostook County.

NUTTING, ALBERT DEANE (1931-48) (1958); B.S., Maine, 1927; Director, School of Forestry; Head, Department of Forestry, Agricultural Experiment Station.

OAK, JESSIE LAWRENCE (1955); B.S., Maine, 1928; Home Demonstration Agent, Aroostook County.

OLSON, ARTHUR VICTOR, JR. (1957); B.S. in Ed., Massachusetts State Teachers College (Bridgewater), 1952; M.S., University of Massachusetts, 1954; Ed.D., Boston University, 1957; Associate Professor of Education.

OLSON, LESTER KEITH (1959); Colonel, Infantry, U. S. Army; B.A., University of South Dakota, 1932; Professor of Military Science.

OLSON, ROBERT EDWARD (1946); B.S., Cornell University, 1938; M.S., 1946; Ph.D., 1954; Professor of Entomology, Agricultural Experiment Station.

O'MEARA, DAVID CHARLES (1954); A.B., Bates, 1952; M.S., Maine, 1954; Assistant Professor of Animal Biology, Agricultural Experiment Station.

OSBERG, PHILIP HENRY (1957); A.B., Dartmouth, 1947; M.S., Harvard, 1949; Ph.D., 1952; Associate Professor of Geology, Department of Civil Engineering.

PACKARD, ROBERT WARREN (1961); A.B., Bowdoin, 1958; M.S., Lehigh University, 1961; Instructor in Mathematics.

PARK, ERNEST COOK; B.S., Maine, 1961; Part-time Instructor in Engineering Graphics.

PARSONS, KENNETH LANGMAID (1942-44) (1945); B.S., Maine, 1934; E.E., 1959; P.E. (Maine); Professor of Electrical Engineering.

PARSONS, RICHARD G. (1959); B.S., University of Massachusetts, 1958; Assistant County Agent, Oxford County.

PAYNE, DONALD DAVIS (1956); B.A., Bowdoin, 1948; D.V.M., Ontario Veterinary College, 1955; Associate Professor of Animal Pathology.

PECK, HENRY AUSTIN (1948); A.B., Tufts, 1942; M.A., Fletcher School of Law and Diplomacy, 1947; Ph.D., 1952; Professor of Business and Economics; Vice President for Academic Affairs.

PEDLOW, JOHN THOMAS (1936); B.S., Pennsylvania State, 1925; M.S., Rutgers, 1926; Ph.D., Pennsylvania State, 1934; Professor of Biochemistry.

PELLEGRINO, ALFRED GERALD (1946); B.A., Wesleyan University, 1934; M.A., 1935; B.Ed., Teachers College of Connecticut, 1937; M.A. in Ed., Yale, 1942; Ph.D., Université de Montréal, 1952; Professor of Romance Languages.

PERRY, ALVAH LIONEL (1943-45) (1946-47) (1949); B.S., Maine, 1942; M.S., 1947; Ph.D., Pennsylvania State University, 1957; Professor of Agricultural Economics.

PERRY, JOANNE SPRINGER; B.A., Maine, 1946; M.A., 1948; Instructor in Mathematics.

PETTIT, GEORGE ROBERT (1957); B.S., Washington State College, 1952; M.S., Wayne State University, 1954; Ph.D., 1956; Associate Professor of Chemistry.

PLISSEY, EDWIN S. (1960); B.S., University of Maine, 1956; M.S., University of Maine, 1958; County Agent, Northern Aroostook.

PLISSEY, MARILYN B. (1960); B.S., Maine, 1959; Home Demonstration Agent (Northern Aroostook County), Cooperative Extension Service.

PLOCH, LOUIS ALBERT (1954); B.S., Pennsylvania State University, 1950; M.S., 1951; Ph.D., Cornell University, 1954; Associate Professor of Rural Sociology.

PLUMMER, BERNIE ELLIOTT, JR. (1925); B.S., Maine, 1924; M.S., 1925; Professor of Chemistry, Agricultural Experiment Station.

PLUMMER, HENRY ALMON (1946); B.S., Maine, 1930; M.F., Yale, 1950; Associate Professor of Forestry; Supervisor, State Forest Nursery.

PORAY, RUDOLPH A. (1956); B.S., Cornell University, 1951; Fruit Specialist, Cooperative Extension Service.

PORTER, JOSEPH E., M.D.; Lecturer in Medical Technology, Maine Medical Center, Portland, Maine.

PORTER-SHIRLEY, CARL HEARTZ (1959); B.S. in Ed., Bridgewater State Teachers College, 1927; M.Ed., Rhode Island College of Education, 1928; Ed.D., Catholic Teachers College of Providence, Rhode Island, 1959; Assistant Professor of Education, and Director of Teacher Training.

POTTER, KENNETH E. (1961); B.S., Maine, 1961; Club Agent at Large, Cooperative Extension Service.

POULTON, BRUCE ROBERT (1956); B.S., Rutgers University, 1950; M.S., 1952; Ph.D., 1956; Professor and Head, Department of Animal Science.

PRAGEMAN, IRVING HENRY (1927); Ph.B., Yale, 1918; M.E., 1923; P.E. (Maine); Professor of Mechanical Engineering.

PRATT, HORACE ASA (1930); B.S., Maine, 1930; M.S., 1936; P.E. (Maine); Testing Engineer, Highway Laboratory, Technology Experiment Station.

PRESCOTT, GEORGE ARTHUR (1961); B.S. in Ed., Boston University, 1941; Ed.M., 1948; Ed.D., 1950; Assistant Professor of Education.

PULLEN, WINSTON EUGENE (1946); B.S., Maine, 1941; M.S., Cornell University, 1942; Ph.D., 1950; Professor of Agricultural Economics.

QUICK, HORACE FLOYD (1950); B.S., Pennsylvania State, 1937; M.F., University

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QUINSEY, DONALD LEROY (1942); B.S., University of Illinois, 1924; M.S., 1932; Ph.D., 1935; Professor of Psychology.

RADKE, FREDERICK HERBERT (1952); B.S., Hamline University, 1947; Ph.D., Iowa State, 1952; Professor and Head, Department of Biochemistry.

RAMSDELL, GORDON ESTEY (1947); B.S., Maine, 1942; M.S., 1951; Associate Professor of Biochemistry.

RANDALL, ARTHUR GORDON (1946); B.S., Yale, 1933; M.F., 1934; Associate Professor of Forestry.

RANKIN, ROME (1947); M.A., University of Michigan, 1934; Ph.D., University of Kentucky, 1948; Professor of Physical Education; Director of Physical Education and Athletics.

RAPHAELSON, ARNOLD HERBERT (1958); A.B., Brown, 1950; M.S., Columbia University, 1951; M.A., Clark, 1956; Ph.D., 1960; Associate Professor of Business and Economics.

REARDON, ARTHUR W. (1959); B.A., Boston University, 1937; M.S., Keene Teachers College, 1959; Assistant Professor of Education and Director of Audio-Visual Service.

REED, FRANK DUDLEY (1938); B.S., New Hampshire, 1929; Poultry Marketing Specialist; Cooperative Extension Service.

REED, MARY FLORENCE (1930); B.A., Maine, 1929; B.S., Simmons School of Library Science, 1930; Cataloger in the Library.

REGAN, JAMES MICHAEL (1957); Major, Infantry, U. S. Army; B.S., Niagara University, 1942; Assistant Professor of Military Science.

REID, EDWARD R. (1959); B.A., Yale, 1946; M.A., Middlebury, 1950; Instructor in German.

REYNOLDS, CECIL JOHN (1935); B.Sc., Mount Allison, 1926; B.A., 1927; B.A., Oxford, 1929; B.Litt., 1930; A.M., Harvard, 1932; Professor of English.

RHOADS, ROBERT BARLOW (1952); B.S., Maine, 1950; M.S., 1951; Professor of Agricultural Engineering.

RICH, NATHAN H. III (1961); B.S., Maine, 1959; M.S., 1961; Instructor in Physics.

RICHARDS, CHARLES DAVIS (1952); B.A., Wheaton College, Illinois, 1943; M.A., University of Michigan, 1947; Ph.D., 1952; Associate Professor of Botany.

RICHARDSON, CAROL ANN (1958); B.S., Farmington State Teachers College, 1958; Home Demonstration Agent, Piscataquis County.

RIOUX, ROBERT NORMAND (1959); B.A., University of Connecticut, 1949; M.A., Oklahoma State University, 1950; Doctorat d'université de Paris en Lettres, 1956; Associate Professor of Romance Languages.

RITTER, MANIA (1959); Brevet elementaire dans l'enseignement superieur—France; Graduate work Yale University, University of Oklahoma, and University of Connecticut; Instructor in French and Russian.

ROBERTS, LEWIS POLLARD (1935); B.S., Maine, 1931; County Agent, Piscataquis County.

ROBERTS, ROLAND EDWIN (1960); B.S., University of Connecticut, 1958; District Agent in Vegetables, Cooperative Extension Service.

ROBINSON, JAMES ARTHUR (1956); B.S., Maine, 1950; County Agent, Central Aroostook County.

ROBINSON, WILLIAM E. (1960); B.S., Vermont, 1952; M.S., Purdue University, 1955; Potato Marketing Specialist, Cooperative Extension Service.

ROGERS, CARL ADEN (1944); B.S., Vermont, 1935; County Agent, Hancock County.

ROGERS, MARION ELIZABETH (1927); Diploma, Sargent School for Physical Education, 1927; B.A., Maine, 1930; M.A., 1936; Ph.D., New York University, 1960; Associate Professor of Physical Education and Head of the Women's Division, Department of Physical Education and Athletics.

ROGGENBAUER, JOSEF (1961); Diplomkaufmann, University of Vienna, Austria, 1950; Doctorate, University of Innsbruck, Austria, 1953; Instructor in German.

ROMANYSHYN, JOHN MIKE (1946-1950) (1953); B.A., University of Oklahoma, 1942; M.A., University of Chicago, 1952; Professor of Sociology.

ROSINSKI, MARTIN ALBIN (1955); B.S., University of Illinois, 1950; Ph.D., Cornell University, 1955; Associate Professor of Botany.

ROWE, RICHARD JAY (1959); B.S., Cornell University, 1952; B.S., Iowa State College, 1957; M.S., 1959; Assistant Professor of Agricultural Engineering.

ROZELLE, LLOYD G. (1955); B.S., Maine, 1951; County Agent, Washington County.

*RUCKSTUHL, WILLIAM J. (1959); B.S., Grove City College, 1951; M.A., University of Pennsylvania, 1955; Assistant Professor of Business and Economics.

SANFORD, ALPHEUS (1958); B.A., Maine, 1947; M.Ed., Boston University, 1954; Ed.D., 1959; Assistant Professor of Education.

SASS, BERNARD (1946); B.S., City College of New York, 1934; M.A., Teachers College, Columbia, 1936; Assistant Professor of Zoology.

SCHOENBERGER, WALTER SMITH (1956); A.B., University of Pittsburgh, 1950; M.A., 1953; M.A., Fletcher School of Law and Diplomacy, 1954; Assistant Professor of History and Government.

SCHOPPEE, LOIS ESTELLA (1961); B.A., Bates, 1958; Assistant Professor of Nursing.

SCONTRAS, CHARLES ANDREW (1961); B.S., New Hampshire, 1952; M.Ed., Maine, 1957; Instructor in Modern Society, Department of Business and Economics.

SEZAK, SAMUEL (1939); B.A. in Ed., Maine, 1931; M.Ed., 1953; Associate Professor of Physical Education.

SEZAK, WILLIAM (1946-1948) (1949); B.S. in Ed., Boston University, 1938; M.Ed., Maine, 1946; Ed.D., Columbia, 1956; Associate Professor of Sociology.

SHAFFER, JANICE LAVERE (1961); B.S., State Teachers College, Lock Haven, Pennsylvania, 1955; Instructor, Department of Physical Education and Athletics, Women's Division.

SHAW, FRANCIS GOODWIN (1947); B.S., Maine, 1947; B.A., 1948; M.A., 1949; B.Mus., Northern Conservatory of Music, 1951; Part-time Instructor, Department of Music (Band).

SHAW, LAWRANCE NEIL (1959); B.S., North Dakota Agricultural College, 1955; M.S., Purdue, 1959; Assistant in Marketing, Cooperative Extension Service.

SHEIVE, LUCY FARRINGTON (1956); B.S., Maine, 1923; Consumer Marketing Agent, Cooperative Extension Service.

SHELDON, FOREST R. (1958); B.S., Maine, 1953; Club Agent, Piscataquis County.

SHERK, ROBERT KENNETH (1950); B.A., University of Buffalo, 1947; Ph.D., Johns Hopkins, 1950; Professor of Classics and German.

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*On leave of absence, 1961-62.

SHIBLES, MARK RICHARD (1947); B.A., Colby, 1929; M.Ed., Boston University, 1935; L.H.D., Colby, 1954; Sc.D. in Ed., Boston University, 1955; Dean of the College of Education, Director of the Summer Session and the General Extension Division, and Professor of Education.

SIDES, SAMUEL EDWIN (1956); B.S., Maine, 1951; Associate Professor of Agricultural Engineering, Agricultural Experiment Station; Presque Isle, Maine Potato Handling Research Center.

SIDWELL, DOROTHY M. (1961); B.S., Ohio State University, 1951; M.S., University of California, 1953; Assistant Professor of Home Management.

SIEDLIK, TADEUSZ ANTONI (1957); B.A., Jan Dlugosz College, Lwow, Poland, 1936; LL.B., Glasgow University, 1944; LL.M., Harvard, 1957; Associate Professor of Business and Economics.

SIMPSON, GEDDES WILSON (1931); A.B., Bucknell, 1929; M.A., Cornell University, 1931; Ph.D., 1935; Professor and Head of Department of Entomology.

SISKIND, LAWRENCE ARNOLD; B.A., Brandeis University, 1956; LL.B., Harvard University, 1959; M.A., Maine, 1961; Part-time Instructor in Business and Economics.

SLEEPER, MARY DAMROSCH; A.B., Barnard College, Columbia University, 1942; Part-time Instructor in English.

SLEEPER, WILLIAM ALLEN, JR. (1949); A.B., Columbia, 1942; Mus.B., Yale, 1948; M.A., Harvard, 1950; Associate Professor of Music.

SLOCUM, LLOYD V. (1961); B.S., Pennsylvania State University, 1955; M.S., 1957; Assistant Professor of Electrical Engineering.

SMITH, JULIAN H. (1960); Captain, Infantry, U.S. Army; B.S., The Citadel, South Carolina, 1953; Assistant Professor of Military Science.

SMITH, STANLEY (1957); Sergeant First Class, U. S. Army; Instructor in Military Science.

SNYDER, MARY ELLA (1936); A.B., Gooding College, 1919; M.S., Iowa State College, 1936; Associate Professor of Foods and Nutrition.

SOULE, HAYDEN MAYO, JR. (1960); B.S., Maine, 1960; Instructor in Agricultural Engineering.

SPARROW, THERON ALONZO (1926); B.S., Maine, 1924; M.S., 1938; P.E. (Maine); Professor of Mechanical Engineering.

SPEARIN, JEAN MAE (1955); B.S., Maine, 1955; M.S., 1959; Clothing Specialist, Cooperative Extension Service.

SPEICHER, BENJAMIN ROBERT (1937); A.B., Denison, 1929; M.S., Pittsburgh, 1931; Ph.D., 1933; Professor and Head of Department of Zoology.

SPEICHER, KATHRYN GILMORE; B.S., Iowa Wesleyan, 1923; M.S., University of Iowa, 1925; Ph.D., University of Pittsburgh, 1934; Lecturer in Genetics.

SPRAGUE, RICHARD STANTON (1956); B.A., Maine, 1949; M.A., Yale, 1951; Instructor in English.

SPROUL, OTIS JENNINGS (1955); B.S., Maine, 1952; Associate Professor of Civil Engineering.

STEARNS, FERN CROSSLAND (1959-60) (1961); B.A., Maine, 1954; M.A., 1959; Instructor in Mathematics.

STEARNS, PATRICIA LEAVITT (1960); B.S., Farmington State Teachers College, 1960; Home Demonstration Agent, Knox-Lincoln County.

STEARNS, WILLIAM FRANKLIN (1960); B.S. in Ed., Maine, 1958; M.A., 1960; Instructor in Mathematics.

STEVENS, FRANCIS ROBERT (1957); B.S., Maine, 1951; Assistant County Agent, Androscoggin and Sagadahoc Counties.

STEVENS, MARGARET F. (1951); B.S., Simmons, 1934; Assistant State Club Leader, Cooperative Extension Service.

STEWART, ALICE ROSE (1947); B.A., Maine, 1937; A.M., Radcliffe, 1938; Ph.D., 1946; Professor of History.

STEWART, JOHN EMMONS (1928); B.A., Maine, 1927; M.A., 1928; Professor of Mathematics, Dean of Men.

ST. ONGE, ROBERT JOSEPH (1960); Major, Infantry, U. S. Army; B.S., United States Military Academy (West Point), 1945; Assistant Professor of Military Science.

STRUCHTEMEYER, ROLAND AUGUST (1946); B.S., University of Missouri, 1939; M.A, 1941; Ph.D., Ohio State University, 1951; Professor and Head of Department of Agronomy.

STYRNA, EDMUND (1956); B.S., New Hampshire, 1948; Assistant Professor of Physical Education, Head Coach of Track and Cross Country.

SULLIVAN, FRANCIS JOSEPH (1948); S.B., Harvard, 1936; M.S., Kansas State College, 1941; P.E. (Maine); Associate Professor of Mechanical Engineering.

SULLIVAN, RICHARD DOUGLAS (1961); B.A., University of Chicago, 1959; Instructor in History.

SUPPLE, ROBERT VINCENT (1948); Ed.B., State University of New York, 1943; A. M., New York University, 1945; Ph.D., 1951; Professor of Education.

SWINFORD, LEE H. (1959); B.A., University of California, 1923; Ph.D., 1931; Associate Professor of Mathematics.

SYVINSKI, ELIZABETH CHELLIS (1955); B.S., Massachusetts, 1955; Club Agent, York County.

TAVERNER, DONALD VARDY (1951); B.A., Maine, 1943; Director of Development.

TAYLOR, FRANK MELROY (1940); B.S., Lafayette College, 1928; C.E., 1937; M.S., Maine, 1951; P.E. (Maine); Associate Professor of Civil Engineering.

TERRELL, CARROLL FRANKLIN (1948); B.A., Bowdoin, 1940; M.A., Maine, 1950; Ph.D., New York University, 1956; Associate Professor of English.

THOMAS, EVAN GOWER (1961); B.S., Juniata College, 1956; M.S., Maine, 1958; Instructor in Chemistry.

THOMAS, HARRY S. (1956); B.S., Maine, 1943; M.S., Pennsylvania State, 1951; Assistant Professor of Physics.

THOMPSON, WALTER ALFRED (1956); B.S., Maine, 1951; Club Agent, Hancock County.

THOMSON, ROBERT BRUCE (1947-1950) (1953); A.B., Harvard, 1932; LL.B., 1936; Associate Professor of Government.

THORNBURY, MARGARET ELIZABETH (1961); B.S., Oneonta State Teachers College, 1954; M.S., Ohio State University, 1957; Assistant Professor of Foods and Nutrition.

TODD, ELIZABETH ANN (1961); A.B., Union College (Kentucky), 1959; M.A., Columbia University, 1961; Instructor in English.

TODD, FRANK HAROLD (1946); B.S., Bowdoin, 1935; M.A., Maine, 1936; Assistant Professor of Physics.

TOLMAN, DAVID BURBANK (1954); Attended University of Maine and Yale; Information Specialist, Department of Public Information and Central Services.

TOOLE, BEVERLY; A.B., Rockford College (Illinois), 1949; M.A., University of Illinois, 1951; Part-time Instructor in Mathematics.

TOOLE, JOHN WILLIAM (1959); A.B., Harvard, 1946; M.A., Maine, 1948; M.A., University of Illinois, 1951; Assistant Professor of Mathematics.

TRAFFORD, DAVID WHITE (1947); B.A., Maine, 1939; M.A., Indiana University, 1940; Ph.D., 1947; Professor of History.

TREFETHEN, HELEN BRIGHAM (1948); B.A., Colby, 1930; M.A., Wisconsin, 1934; Part-time Instructor in Geology, Department of Civil Engineering.

TREFETHEN, JOSEPH MUZZY (1938); A.B., Colby, 1931; M.S., University of Illinois, 1932; Ph.D., Wisconsin, 1935; Professor of Geology, Department of Civil Engineering.

TREVETT, MOODY FRANCIS (1946); B.S., Massachusetts State, 1929; M.S., 1940; Associate Professor of Agronomy.

TREWORGY, DONALD LLOYD (1961); B.A., Maine, 1960; Instructor in Mathematics and Astronomy.

TRIPP, MARLAND EUGENE (1951-1956) (1957); B.S., Maine, 1950; Assistant County Agent, Kennebec County.

TRONERUD, NORMAN KONRAD (1956); B.A., Bowdoin, 1947; M.A., Middlebury College, 1950; Assistant Professor of Romance Languages.

TURNER, WALTER WEEKS (1947); B.S., Massachusetts Institute of Technology, 1947; M.S., 1947; P.E. (Maine); Associate Professor of Electrical Engineering.

TUTHILL, DEAN FANNING (1956); B.S., Cornell University, 1949; M.S., University of Illinois, 1954; Ph.D., 1958; Associate Professor of Agricultural Economics.

TWITCHELL, PATRICIA (1958); B.S., Maine, 1958; County Club Agent, Central Aroostook County.

VEST, EUGENE W. (1958); B.S., West Virginia Institute of Technology, 1951; Instructor in Mechanical Engineering.

VIRTUE, CHARLES FRANKLIN (1946); B.A., University of Cincinnati, 1925; Ph.D., Yale, 1933; Professor of Philosophy.

VOSE, PRESCOTT HALE (1950); B.S., Bowdoin, 1929; M.B.A., Harvard, 1931; Controller.

WADLIN, GEORGE KNOWLTON, JR. (1948); B.S., Pennsylvania State, 1948; M.S., Maine, 1953; Ph.D., Carnegie Institute of Technology, 1959; P.E. (Maine); Professor and Head of Department of Civil Engineering.

WADLIN, NORA; B.S., Pennsylvania State, 1945; M.S., 1948; Lecturer in Child Development.

WADSWORTH, RICHARD C. (1954); A.B., Cornell University, 1926; M.D., University of Rochester School of Medicine and Dentistry, 1931; Lecturer in Medical Technology; Eastern Maine General Hospital, Bangor.

WALDRON, RALPH AUGUSTUS; B.S., Massachusetts, 1910; M.S., Pennsylvania State University, 1912; Ph.D., University of Pennsylvania, 1918; Lecturer in Education, General Extension Division.

WARNER, MARDIS R. (1950-55) (1956); B.S., Ohio State, 1949; B.A.E., Ohio State, 1949; Agricultural Engineer, Cooperative Extension Service.

WATKINS, HOWARD STAFFORD, JR. (1961); B.S., Maine, 1961; Instructor in Agricultural Economics, Agricultural Experiment Station.

WEILER, THEODORE CHRISTLIEB (1946); B.A., Ohio Wesleyan, 1925; Ph.D., Yale, 1936; Professor of Sociology.

WELLS, WILLIAM CARL (1931-1945) (1947); B.A., Maine, 1931; Director of Residence and Dining Halls.

WENCE, MILFORD EDWARD (1937): B.A., State University of Iowa, 1933; M.A., 1934; Ph.D., 1937; Professor of English.

WEST, GENE M. (1957); B.S., Nasson College, 1949; M.S., University of Massachusetts, 1954; Nutrition Specialist, Cooperative Extension Service.

WESTERMAN, HAROLD SCOTT (1949); B.A., University of Michigan, 1946; Associate Professor of Physical Education.

WESTFALL, CLAUDE ZEBEDEE (1954); B.S.F., West Virginia University, 1952; M.S., Maine, 1954; Assistant Professor of Engineering Graphics.

WHEALEY, ROBERT HOWARD (1961); A.B., University of Delaware, 1952; M.A., University of Michigan, 1954; Instructor in History.

WHELDEN, HARRY CROSSMAN, JR. (1955); B.S., University of Connecticut, 1948; Poultry Specialist, Cooperative Extension Service.

WHITEHILL, ALVIN RICHARD (1961); A.B., Dartmouth, 1937; Ph.D., Cornell University, 1942; Professor and Head of Department of Bacteriology.

WHITNEY, HARRY F. (1955); B.S., Maine, 1954; M.S., Cornell University, 1955; County Agent, Waldo County.

WHITNEY, WALTER REGINALD (1928); B.S., Bowdoin, 1923; A.M., Harvard, 1935; Professor of English.

WHITTON, LESLIE (1956); B.S., Utah State Agricultural College, 1949; M.S., University of California, 1953; Assistant Professor of Horticulture.

WIGGIN, RUTH C. (1932-37) (1961); B.S., Maine, 1932; Club Agent, Knox-Lincoln Counties.

WILDES, GLENN K. (1958); B.S., University of Rhode Island, 1954; M.S., 1957; County Agent, York County.

WILLIAMS, PHYLLIS SAWYER (1961); A.B., Bates, 1954; Instructor in Nursing.

WILSON, EDITH GRACE (1931); B.A., Southern California, 1923; M.A., 1928; Dean of Women.

WILSON, SARA CURTIS (1946); B.S., Farmington State Normal, 1938; Home Demonstration Agent, Washington County.

WITTER, JOHN FRANKLIN (1932); B.S., Maryland, 1928; D.V.M., Michigan, 1932; Professor and Head of Department of Animal Pathology.

WOJCIK, TADEUSZ ZDZISLAW (1958); Magister Juris, Cracow University, Poland, 1927; LL.D., 1928; LL.M., McGill University, 1957; Assistant Professor of Business and Economics.

WOLFHAGEN, JAMES LANGDON (1952); A.B., Linfield College, 1946; Ph.D., University of California, 1951; Associate Professor of Chemistry.

WOODBURY, HAROLD MACE (1937); B.S., Maine, 1937; M.A., 1948; Associate Professor of Physical Education; Head of Men's Division, Department of Physical Education and Athletics.

*WOODWELL, GEORGE MASTERS (1957); B.A., Dartmouth, 1950; M.A., Duke, 1956; Ph.D., 1957; Associate Professor of Botany.

WOOLLEY, T. RUSSELL (1946-54) (1960); B.A., Maine, 1941; M.A., Northwestern University, 1950; Ph.D., 1957; Executive Director, General Alumni Association.

WOOTTON, ALBERT GEORGE (1956); B.S., Rutgers, 1931; M.A., Columbia, 1951; Associate Professor of Mathematics.

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*On leave of absence, 1961-62.

WORRICK, ROBERT CLIFTON (1946-February 1, 1951) (1953); B.S., Maine, 1943; Director of Student Aid.

WORTHING, HARRIET (1955); Home Demonstration Agent, Waldo County.

WYLIE, DOUGLAS WILSON (1951); B.Sc., University of New Brunswick, 1947; M.Sc., Dalhousie, 1949; Assistant Professor of Physics.

YORK, ROBERT MAURICE (1946); A.B., Bates, 1937; A.M., Clark, 1938; Ph.D., 1941; Professor of History.

YOUNG, DAVID BRUCE (1960); B.S., Duke University, 1955; M.S., 1959; Assistant Professor of Electrical Engineering.

YOUNG, HAROLD EDLE (1948); B.S., Maine, 1937; M.F., Duke, 1946; Ph.D., 1948; Professor of Forestry.

YOUNG, RAYMOND HINCHCLIFFE, JR. (1955); B.S., Pennsylvania Military College, 1953; Instructor in Chemistry.

YU, SHIH-CHENG (1959); B.A., Fu Jen University, Peiping, China, 1945; M.A., University of Iowa, 1949; Ph.D., 1952; Associate Professor of Business and Economics.

ZIEMINSKI, STEFAN ANTONI (1954); Dipl. Ing., Technical University (Lwow, Poland), 1927; Doctor of Technical Science, 1929; P.E. (Maine); Professor of Chemical Engineering.

ZINK, MARY STILLMAN (1960); B.A., Cornell University, 1938; M.A., Yale University, 1955; Ph.D., Cornell University, 1960; Director of the University Testing Service and Associate Dean of Women.

ZUSI, RICHARD LAURENCE (1958); B.A., Northwestern, 1951; M.S., University of Michigan, 1953; Ph.D., 1959; Assistant Professor of Zoology.

UNIVERSITY OF MAINE IN PORTLAND

ANINGER, THOMAS (1961); B.A., University of California, 1958; M.A., 1961; Instructor in English.

ARMENTROUT, CHARLES (1960); B.S., Maine, 1955; M.S., Wesleyan University, 1958; Instructor in Physics.

BROWN, WILLIAM ALLEN (1960); B.A., Bowdoin, 1954; M.A., Maine, 1959; Instructor in Mathematics.

BURKE, LAWRENCE MORRILL, JR. (1959); A.B., Bowdoin, 1949; M.A., University of Washington, 1951; Assistant Professor of English.

CANTY, JOSEPH PATRICK (1959); B.S., United States Naval Academy, 1929; Instructor in Mathematics.

CLARK, ELMER BANKS FRED (1946); B.A.E., University of Florida, 1935; M.A., 1937; Assistant Professor of French and Spanish.

CLARKE, ALFRED EVANS (1946); A.B., Dartmouth, 1929; Director of Admissions.

COLE, PHILLIP ALBERT (1957); B.S., Boston University, 1954; M.A., 1955; Assistant Professor of History and Government.

HOPKINSON, DAVID BRADFORD (1959); B.S., Maine, 1942; M.S., Vermont, 1949; M.E., Maine, 1961; P.E. (Maine); Assistant Professor of Engineering Graphics; part-time Assistant to Director, Department of Industrial Cooperation.

JACKSON, GEORGE STUYVESANT (1958); A.B., Bowdoin, 1927; M.A., Harvard, 1931; Assistant Professor of English.

JAQUES, JOHN FREDERICK (1946); A.B., Bowdoin, 1943; A.M., Columbia, 1946; Assistant Dean and Assistant Professor of English.

KEENAN, JOHN HERBERT (1946); A.B., Dartmouth, 1923; M.C.S., 1925; M.A., Columbia, 1938; Assistant Professor of Economics.

KERN, ABRAHAM K. (1959); A.B., Bowdoin, 1936; M.Ed., Maine, 1956; Assistant Professor of Botany and Zoology.

LAWRENCE, HAROLD MERRILL (1946); B.S., Boston University, 1940; Bursar, Registrar and Manager, School Store.

LEIGHTON, MURIEL B. (1948); Librarian.

LEWIS, JAMES (1959); Bowdoin College, 1916; Lecturer in Mathematics.

ROLLINS, CECIL AUGUSTUS (1956); A.B., Colby, 1917; M.A., Harvard, 1923; Lecturer in English.

SANBORN, JANE OBERHOLTZER (1961); A.B., Wilson College, 1942; Ed.D., University of California, 1961; Dean of Women and Instructor in Psychology.

SOTTERY, THEODORE WALTER (1956); B.N.S., Dartmouth, 1946; M.S., Maine, 1956; Assistant Professor of Chemistry.

SULLIVAN, JAMES VINCENT (1959); B.S. in Ed., Maine, 1951; M.Ed., University of Delaware, 1954; Director of Physical Education and Athletics and Assistant Professor of Physical Education.

VAN DE VELDE, JEHAN PETER (1961); B.A., University of North Carolina, 1949; M.A., 1951; Instructor in French and German.

WHITING, WILLIAM LAWRENCE (1947); B.A., Maine, 1937; M.Ed., Bates, 1948; M.A., Northwestern University, 1954; Assistant Professor of Speech; Acting Dean.

A winter scene at a women's dormitory.

Upper: A professor gives a lecture by television.
Lower: One of the buildings at the Portland campus.

SUMMARY OF STUDENT ENROLLMENT

1960-1961

	Portland Campus			Orono Campus			Grand
	Men	Women	Total	Men	Women	Total	Total
Graduates	—	—	—	147	32	179	179
Post Master	—	—	—	—	1	1	1
Fifth Year	—	—	—	26	—	26	26
Seniors	—	—	—	645	198	843	843
Juniors	—	—	—	666	224	890	890
Sophomores	73	5	78	688	269	957	1035
Freshmen	141	55	196	711	357	1068	1264
Specials	13	22	35	94	39	133	168
Three-year Nurses	—	—	—	—	53	53	53
Two-year Agri.—							
1st Year	—	—	—	38	—	38	38
2nd Year	—	—	—	20	—	20	20
Auditor	—	—	—	1	3	4	4
Unclassified degree candidates	—	—	—	—	5	5	5
	227	82	309	3036	1181	4217	4526
Summer Session	—	—	—	930	1041	1971	1971
Grand Total (omitting duplicates in Summer Session)	227	82	309	3833	2162	5995	6304

Classification by Colleges

Graduates	—	—	—	147	32	179	179
College of Agriculture	14	3	17	500	127	627	644
College of Arts and Sciences	116	50	166	853	699	1552	1718
College of Education	61	27	88	499	316	815	903
College of Technology	36	2	38	1037	7	1044	1082
	227	82	309	3036	1181	4217	4526

Candidates for Degrees

Graduates	—	—	—	147	32	179	179
College of Agriculture	14	3	17	434	121	555	572
College of Arts and Sciences	106	31	137	818	626	1444	1581
College of Education	59	24	83	466	299	765	848
College of Technology	35	2	37	1018	7	1025	1062
	214	60	274	2883	1085	3968	4242

SUMMARY OF STUDENT ENROLLMENT

Classification by Residence

		Regular Session	Summer Session	Total
Androscoggin	17	237	63	317
Aroostook	—	254	94	348
Cumberland	244	531	136	911
Franklin	1	69	27	97
Hancock	—	153	79	232
Kennebec	1	297	85	383
Knox	—	121	42	163
Lincoln	3	83	16	102
Oxford	—	158	39	197
Penobscot	—	821	352	1173
Piscataquis	1	87	63	151
Sagadahoc	7	75	17	99
Somerset	—	125	56	181
Waldo	—	67	65	132
Washington	—	106	36	142
York	33	252	43	328
	307	3436	1213	4956

	Portland Campus	Orono Campus		
		Regular Session	Summer Session	Total
Maine	307	3436	1213	4956
Massachusetts	2	295	58	355
New York	—	141	126	267
New Jersey	—	90	48	138
Connecticut	—	63	35	98
Pennsylvania	—	32	30	62
Vermont	—	27	19	46
New Hampshire	—	22	20	42
Ohio	—	8	26	34
Maryland	—	7	21	28
Rhode Island	—	21	3	24
Illinois	—	4	17	21
Michigan	—	2	14	16
North Carolina	—	2	12	14
Florida	—	1	12	13
Indiana	—	—	12	12
Virginia	—	5	7	12
District of Columbia	—	3	7	10
California	—	3	6	9
Colorado	—	2	5	7
West Virginia	—	1	6	7
Wisconsin	—	1	6	7
Kansas	—	—	5	5
Utah	—	—	5	5
New Mexico	—	—	4	4
South Carolina	—	—	4	4
Texas	—	—	4	4
Missouri	—	—	3	3
Oklahoma	—	1	2	3
Washington	—	1	2	3
Alaska	—	1	2	3
Alabama	—	—	2	2
Arizona	—	—	2	2
Delaware	—	2	—	2
Georgia	—	—	2	2
Iowa	—	—	2	2
Kentucky	—	1	1	2

SUMMARY OF STUDENT ENROLLMENT

	Portland Campus	Orono Campus		
		Regular Session	Summer Session	Total
Minnesota	—	—	2	2
Arkansas	—	1	—	1
Hawaii	—	—	1	1
Louisiana	—	1	—	1
Mississippi	—	—	1	1
Montana	—	—	1	1
Oregon	—	—	1	1
South Dakota	—	1	—	1
Tennessee	—	1	—	1
Wyoming	—	—	1	1
Canada	—	15	24	39
India	—	4	1	5
Korea	—	3	1	4
Brazil	—	2	—	2
Greece	—	2	—	2
Indonesia	—	2	—	2
Japan	—	2	—	2
Puerto Rico	—	1	1	2
Bolivia	—	1	—	1
Cambodia	—	1	—	1
Central America	—	1	—	1
China	—	—	1	1
Germany	—	1	—	1
Iran	—	1	—	1
Israel	—	1	—	1
Mauritius	—	1	—	1
Sudan	—	1	—	1
Venezuela	—	1	—	1
Iraq	—	1	—	1
	309	4217	1778	6304

GENERAL EXTENSION
July 1, 1959 to June 30, 1960

	Men	Women	Total
Extension	160	768	928
Saturday Extension	562	1182	1744
Correspondence	514	715	1229
	1236	2665	3901
Total (omitting duplicates)	1160	2401	3561

Upper: Students pick up books at book store.
Lower: ROTC cadets.

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