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UNIVERSITY OF MAINE Catalog for 1968

UNIVERSITY OF MAINE
BULLETIN
ORONO, MAINE 04473

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August 15, 1967

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Between acts at Maine Masque production

UNIVERSITY OF MAINE IN AUGUSTA

LLOYD J. JEWETT, DIRECTOR



*Studying for exam at University
of Maine in Augusta*

ABBREVIATIONS AND SYMBOLS

Ab	Agricultural Business and Economics	Gm	German
AE	Agricultural Engineering	Gy	Geology
An	Animal Sciences	He	Home Economics Education
AnP	Animal Pathology	Hm	Home Management and Housing
As	Astronomy	Hr	Honors
At	Art	Hy	History
Ay	Anthropology	Jr	Journalism
Ba	Business Administration	LSA	General Agriculture
Bt	Botany	Lt	Latin
By	Bacteriology	Mc	Music
Cd	Clothing and Design	Me	Mechanical Engineering
Ce	Civil Engineering	Ms	Mathematics
Cf	Child Development and Family Relationships	Mt	Military
Ch	Chemistry	My	Modern Society
ChE	Chemical Engineering	Nu	Nursing
Cp	Comparative Literature	P	Plants
Ec	Economics	Pa	Pulp and Paper
Ed	Education	Pe	Physical Education
Ee	Electrical Engineering	Pl	Philosophy
Eg	Engineering Graphics	Ps	Physics
Eh	English	Pol	Political Science
En	Entomology	Py	Psychology
Fn	Food and Nutrition	Ru	Russian
Fr	French	S	Soils
Fy	Forestry	Sh	Speech
Ge	General Engineering	Sp	Spanish
Geo	Geography	Sw	Social Work
Gk	Greek	Sy	Sociology
		Zo	Zoology

† Courses offered during 1967-68 and alternate years.

‡ Courses offered during 1968-69 and alternate years.

INFORMATION IN THIS CATALOG COVERS 1967-68 ACADEMIC YEAR

The information contained in this catalog covers rules, regulations, curricula, and programs for the 1967-68 academic year. The University reserves the right to make changes at any time.

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CALENDAR FOR 1967-68

Fall 1967

		1967
Registration of all students who have not previously completed it by mail	Sat., 8:00 A.M.-12:00 M 1:00-4:30 P.M.	Sept. 16
Classes begin	Mon., 8:00 A.M.	Sept. 18
Midsemester reports due (covering the first half semester to November 10)	Mon., 12:00 M	Nov. 13
Thanksgiving recess begins	Tues., 5:00 P.M.	Nov. 21
Classes resume	Mon., 8:00 A.M.	Nov. 27
Christmas recess begins	Fri., 5:00 P.M.	Dec. 22
Classes resume	Wed., 8:00 A.M.	1968 Jan. 3
Graduate theses due	Fri., 5:00 P.M.	Jan. 5
Classes end	Fri., 5:00 P.M.	Jan. 12
Reading period	Monday	Jan. 15
Final examinations begin	Tues., 8:00 A.M.	Jan. 16
Registration for spring semester	Mon.-Sat.	Jan. 15-20
Commencement exercises	Sat., 7:45 P.M.	Jan. 20
Final Examinations end	Wednesday	Jan. 24
Midyear recess begins	Thursday	Jan. 25
Registration of all students who have not previously completed it	Sat., 8:00-11:00 A.M.	Feb. 3

Spring 1968

Classes begin	Mon., 8:00 A.M.	Feb. 5
Midsemester reports due (covering the first half semester to March 27)	Thurs., 12:00 M	Mar. 28
Spring recess begins	Fri., 5:00 P.M.	Mar. 29
Classes resume	Mon., 8:00 A.M.	Apr. 8
Maine Day	Wednesday	May 1
Graduate theses due	Fri., 5:00 P.M.	May 17
Classes end	Fri., 5:00 P.M.	May 24
Reading period	Monday	May 27
Final examinations begin	Tues., 8:00 A.M.	May 28
Final Examinations end	Wednesday	June 5
Class Day	Thursday	June 6
Commencement exercises (Portland)	Thursday	June 6
Commencement exercises	Friday	June 7
Alumni Day	Saturday	June 8

1968

Summer Camp

Forestry Junior Camp Start—Mon., June 10 End—Sat., Aug. 10

Summer Sessions

Three-week sessions	Start—Mon., June 17 Mon., July 8 Mon., July 29 Mon., Aug. 19	End—Fri., July 5 Fri., July 26 Fri., Aug. 16 Fri., Sept. 6
Six-week sessions	Start—Mon., June 17 Mon., July 8 Mon., July 29	End—Fri., July 26 Fri., Aug. 16 Fri., Sept. 6
Graduate thesis due	Fri., 5:00 P.M.	Aug. 9
Commencement exercises	Fri., 7:45 P.M.	Aug. 16

CALENDAR FOR 1968-69 (TENTATIVE)

Fall 1968

Registration of all students who have not previously completed it by mail	Mon., 1:00-4:30 P.M.	Sept. 9
	Tues., 8:00 A.M.-12:00 M	Sept. 10
Classes begin	Wed., 8:00 A.M.	Sept. 11
Midsemester reports due (covering the first half semester to October 30)	Mon., 12:00 M	Nov 4
Thanksgiving recess begins	Tues., 5:00 P.M.	Nov. 26
Classes resume	Mon., 8:00 A.M.	Dec 2
Christmas recess begins	Fri., 5:00 P.M.	Dec. 20

1969

Graduate thesis due	Fri., 5:00 P.M.	Jan. 3
Classes resume	Mon., 8:00 A.M.	Jan. 6
Classes end	Fri., 5:00 P.M.	Jan. 10
Reading Period	Monday	Jan. 13
Final examinations begin	Tues., 8:00 A.M.	Jan. 14
Registration for spring semester	Mon.-Sat.	Jan. 13-18
Commencement exercises (Orono)	Sat., 7:45 P.M.	Jan. 18
Final examinations end	Wednesday	Jan. 22
Midyear recess begins	Thursday	Jan. 23
Registration of all students who have not previously completed it	Sat., 8:00-11:00 A.M.	Feb. 1

Spring 1969

Classes begin	Mon., 8:00 A.M.	Feb. 3
Midsemester reports due (covering the first half semester to March 26)	Thurs., 12:00 M	Mar. 27
Spring recess begins	Fri., 5:00 P.M.	Mar. 28
Classes resume	Mon., 8:00 A.M.	Apr. 7
Maine Day	Wednesday	May 7
Graduate thesis due	Fri., 5:00 P.M.	May 16
Classes end	Fri., 5:00 P.M.	May 23
Reading Period	Monday	May 26
Final examinations begin	Tues., 8:00 A.M.	May 27
Final examinations end	Wednesday	June 4
Class Day	Wednesday	June 4
Commencement exercises (Portland)	Wednesday	June 4
Commencement exercises	Thursday	June 5
Alumni Day	Saturday	June 7

1969

Summer Camp

Forestry Junior Camp Start—Mon., June 9 End—Sat., Aug. 8

Summer Sessions

Three-week sessions	Start—Mon., June 16	End—Fri., July 4
	Mon., July 7	Fri., July 25
	Mon., July 28	Fri., Aug. 15
	Mon., Aug. 18	Fri., Sept. 5
Six-week sessions	Start—Mon., June 16	End—Fri., July 25
	Mon., July 7	Fri., Aug. 15
	Mon., July 28	Fri., Sept. 5
Graduate thesis due	Fri., 5:00 P.M.	Aug. 8
Commencement exercises	Fri., 7:45 P.M.	Aug. 15

1968

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BOARD OF TRUSTEES

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Term expires September 2, 1971	
W. GORDON ROBERTSON, Vice President	84 Harlow Street, Bangor
Term expires September 29, 1969	
ARTHUR HENRI BENOIT, B.S.	Monument Square, Portland
Term expires September 2, 1971	
FRANK C. BROWN	30 Rockefeller Plaza, New York 20, New York
Term expires April 19, 1970	
LUCIA M. CORMIER, A.B., M.A.	312 Fore Street, Portland
Term expires December 2, 1972	
RALPH HENRY CUTTING	Keyes Fibre Company, Waterville
Term expires September 18, 1970	
ROBERT NELSON HASKELL, B.S.	33 State Street, Bangor
Term expires December 8, 1967	
HUBERT HOWARD HAUCK, A.B.	400 Congress Street, Portland
Term expires September 7, 1969	
WILLIAM T. LOGAN, JR., A.B., M.Ed., <i>ex officio</i>	State House, Augusta
HELEN WORMWOOD PIERCE (MRS. LEONARD A., JR.), B.A.	
Term expires January 18, 1970	Rumford Road, Bethel
OWEN HALBERT SMITH, B.S.	Presque Isle
Term expires December 20, 1968	
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CLERK OF THE BOARD: Edith G. Wilson, B.A., M.A.	

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OFFICERS OF ADMINISTRATION*

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VICE PRESIDENT FOR ACADEMIC AFFAIRS. Henry Austin Peck, Alumni Hall.

ASSISTANT TO THE PRESIDENT FOR INSTITUTIONAL RESEARCH. Edith Grace Wilson, Alumni Hall.

CONTROLLER AND BUDGET DIRECTOR. Prescott Hale Vose, Alumni Hall.

TREASURER. Harry Wight Gordon, Alumni Hall.

DEAN OF MEN. John Emmons Stewart, 205 Fogler Library.

DEAN OF WOMEN. Mary Stillman Zink, 219 Fogler Library.

UNIVERSITY LIBRARIAN. James Curtis MacCampbell, Fogler Library.

REGISTRAR. George Howard Crosby, Wingate Hall.

DIRECTOR OF ADMISSIONS. James Arnold Harmon, Wingate Hall.

DIRECTOR OF DEVELOPMENT. Claude Lourie Hough, Winslow Hall.

DIRECTOR OF STUDENT SERVICES. Robert Branson Cobb, Lord Hall.

DIRECTOR OF ENGINEERING SERVICES. Parker Grindell Cushman, Service Building.

DIRECTOR OF MEMORIAL UNION AND ARTHUR A. HAUCK AUDITORIUM.

Robert Dana Stanley, Memorial Union

DIRECTOR OF PLACEMENT. Philip Judd Brockway, 102 College of Education Building.

DIRECTOR OF PHYSICAL PLANT. Francis Stephen McGuire, Service Building.

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Howard Arthur Keyo, 25 Winslow Hall.

DIRECTOR OF PURCHASES. Murray R. Billington, Service Building.

COORDINATOR FOR RESEARCH SUPPORT AND FEDERAL REGULATIONS.

Stanley L. Freeman, Jr.

DIRECTOR OF RESIDENCE AND DINING HALLS. William Carl Wells, Commons.

DIRECTOR OF STUDENT AID. Robert Clifton Worrick, 101 East Annex.

DIRECTOR OF STUDENT HEALTH CENTER. Dr. Robert H. Graves.

DIRECTOR OF UNIVERSITY COMPUTING CENTER AND DATA PROCESSING CENTER.

Russell Albert Altenberger, Wingate Hall.

DIRECTOR OF UNIVERSITY TESTING AND COUNSELING SERVICE. Robert Alexander Apostol, 114 College of Education Building.

EXECUTIVE DIRECTOR, GENERAL ALUMNI ASSOCIATION. T. Russell Woolley, 44 Fogler Library.

OFFICERS OF DIVISIONS OF THE UNIVERSITY

COLLEGE OF ARTS AND SCIENCES. John J. Nolde, Dean, 100 Stevens Hall.

SCHOOL OF NURSING. Jean MacLean, Director, Wingate Hall.

COLLEGE OF BUSINESS ADMINISTRATION. William Stanley Devino, Dean, Stevens Hall, South.

COLLEGE OF EDUCATION. Mark Richard Shibles, Dean, 151 College of Education Building.

COLLEGE OF LIFE SCIENCES AND AGRICULTURE. Winthrop Charles Libby, Dean, 16 Winslow Hall.

SCHOOL OF FORESTRY. Albert Deane Nutting, Director, 104 Deering Hall.

SCHOOL OF HOME ECONOMICS. Margaret Elizabeth Thornbury, Director, 24 Merrill Hall.

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

UNIVERSITY OF MAINE

COLLEGE OF TECHNOLOGY. Richard Conrad Hill, Acting Dean, 110 Boardman Hall.

TECHNICAL INSTITUTE DIVISION. (Director to be appointed), 110 Boardman Hall.

GRADUATE SCHOOL. Franklin Paul Eggert, 76 Fogler Library.

SCHOOL OF LAW. Edward S. Godfrey, Dean, 68 High Street, Portland.

SUMMER SESSION. Mark Richard Shibles, Director, 151 College of Education Building.

UNIVERSITY OF MAINE EXTENSION SERVICE. Winthrop Charles Libby, Director, 16 Winslow Hall.

CONTINUING EDUCATION DIVISION. John Mortimer Blake, Associate Director, Merrill Hall.

COOPERATIVE EXTENSION SERVICE. Edwin Hill Bates, Associate Director, 14 Winslow Hall.

MAINE AGRICULTURAL EXPERIMENT STATION. George Farrington Dow, Director, Holmes Hall.

MAINE TECHNOLOGY EXPERIMENT STATION. (Director to be appointed), 110 Boardman Hall.

DEPARTMENT OF INDUSTRIAL COOPERATION. (Director to be appointed), 110 Boardman Hall.

UNIVERSITY OF MAINE IN PORTLAND.

UNDERGRADUATE STUDIES. David R. Fink, Jr., Dean, 96 Falmouth Street.

UNIVERSITY OF MAINE IN AUGUSTA.

Lloyd J. Jewett, Director, Cony Street.

OFFICERS OF THE DEPARTMENTS

AGRICULTURAL BUSINESS AND ECONOMICS. Professor Homer Bastian Metzger, 36 Winslow Hall.

AGRICULTURAL ENGINEERING. Professor Norman Smith, 2 Agricultural Engineering Building.

ANIMAL SCIENCES. Professor Bruce R. Poulton, 26 Rogers Hall.

ANIMAL PATHOLOGY. Professor John Franklin Witter, Hitchner Hall.

ART. Professor Vincent Andrew Hartgen, Carnegie Hall.

BACTERIOLOGY. Professor Darrell Bradford Pratt, Hitchner Hall.

BIOCHEMISTRY. Professor Frederick Herbert Radke, 231 Hitchner Hall.

BOTANY AND PLANT PATHOLOGY. Professor Richard John Campana, 215 Deering Hall.

CHEMICAL ENGINEERING. Professor Edward George Bobalek, 275 Aubert Hall.

CHEMISTRY. Professor James Langdon Wolfhagen, 261 Aubert Hall.

CIVIL ENGINEERING. Professor George Knowlton Wadlin, Jr., 101 Boardman Hall.

ELECTRICAL ENGINEERING. Professor Richard Cushing Gibson, 101 Barrows Hall.

ENGLISH. Professor Cecil John Reynolds, 225 Stevens Hall.

ENTOMOLOGY. Professor Geddes Wilson Simpson, 306 Deering Hall.

FOOD SCIENCE. Professor Matthew Edward Highlands, 17 Holmes Hall.

FOREIGN LANGUAGES AND CLASSICS. Professor George Tufford Moody, 201A Little Hall.

FORESTRY. Director Albert Deane Nutting, 104 Deering Hall.

GEOLOGICAL SCIENCES. Professor Philip Henry Osberg, 138 Boardman Hall.

GENERAL ENGINEERING. Professor Matthew McNeary, 122 East Annex.

OFFICERS OF ADMINISTRATION

HISTORY. Professor Robert Seager, II, 170 Stevens Hall.

HOME ECONOMICS. Director Margaret Elizabeth Thornbury, 24 Merrill Hall.

INDUSTRIAL COOPERATION. Professor Richard Conrad Hill, 112 Boardman Hall.

JOURNALISM. Associate Professor Brooks Witham Hamilton, 101 A Lord Hall.

MATHEMATICS AND ASTRONOMY. Professor Spofford Harris Kimball, 304 College of Education Building.

MECHANICAL ENGINEERING. Professor Francis Joseph Sullivan, 209 Boardman Hall.

MILITARY SCIENCE. Colonel John Stephen Gerety, Armory.

MUSIC. Professor Robert Chandler Godwin, Lord Hall.

NURSING. Professor Jean MacLean, Wingate Hall.

PHILOSOPHY. Professor Robert Fertig Tredwell, 11 Stevens, North.

PHYSICAL EDUCATION AND ATHLETICS. Professor Harold Scott Westerman, Memorial Gymnasium.

PHYSICS. Professor Paul Rice Camp, Clarence E. Bennett Hall.

PLANT AND SOIL SCIENCES. Professor Roland August Struchtemeyer, 114 Deering Hall.

POLITICAL SCIENCE. Professor Eugene Alberto Mawhinney, 11 Stevens Hall, North.

PSYCHOLOGY. Professor Arthur Mark Kaplan, 301A Little Hall.

SOCIOLOGY AND ANTHROPOLOGY. Professor Glenn Morley Vernon, 44 Stevens Hall, South.

SPEECH. Professor Wofford Gordon Gardner, 310 Stevens Hall.

ZOOLOGY. Professor Kenneth William Allen, Coburn Hall.

OFFICERS OF ADMINISTRATION

Portland Campus

DEAN. David R. Fink, Jr.

ASSOCIATE DEAN. William L. Whiting.

ADMISSIONS DIRECTOR. Alfred E. Clarke

BURSAR. Harold M. Lawrence.

CONTINUING EDUCATION. Assistant Director Walter P. Fridinger.

LIBRARIAN. Marjorie E. Duval.

PHYSICAL PLANT. Edward I. Salmon.

PUBLIC INFORMATION AND CENTRAL SERVICES. Director, Bryant P. Jones.

REGISTRAR. Rebecca C. Larsen.

STUDENT AFFAIRS. Director, Dorothy G. Dissell.

DIRECTOR OF STUDENT UNION. George Van Amburg.

DIRECTOR OF TESTING AND COUNSELING. Jane O. Sanborn.

DIRECTOR OF STUDENT AID AND PLACEMENT. Frederick E. Freise.

OFFICERS OF THE DIVISIONS

Portland Campus

DIVISION OF SOCIAL SCIENCES. Associate Professor Philip A. Cole, Bonney Hall.

DIVISION OF HUMANITIES. Associate Professor William L. Whiting, Bonney Hall.

DIVISION OF SCIENCE AND MATHEMATICS. Associate Professor Haig H. Najarian, Payson Smith Hall.

DIVISION OF BUSINESS AND ECONOMICS. (To be appointed).

UNIVERSITY OF MAINE

OFFICERS OF THE ADMINISTRATION

Augusta Campus

DIRECTOR. Lloyd J. Jewett.

ASSISTANT DIRECTOR OF CONTINUING EDUCATION. John R. Benoit.

CORRESPONDENCE

Inquiries should be directed as indicated below:

General administrative matters	President, Edwin Young
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
Financial affairs of students	Treasurer, Harry W. Gordon
College of Arts and Sciences	Dean of the College, John J. Nolde
College of Business Administration	Dean of the College, William S. Devino
College of Education	Dean of the College, Mark R. Shibles
College of Life Sciences and Agriculture	Dean of the College, Winthrop C. Libby
College of Technology	Acting Dean of the College, Richard C. Hill
University of Maine in Portland:	
Undergraduate Studies, David R. Fink, Jr., Dean, 96 Falmouth Street	
University of Maine in Augusta:	
Director, Lloyd Jewett, Cony Street.	
Graduate School and scholarships available for graduate students	Dean of Graduate School, Franklin P. Eggert
Summer Session for teachers and college students	Director, Mark R. Shibles
School of Law, Edward S. Godfrey, Dean, 68 High Street	
Continuing Education Courses	Assistant Directors
	Edward W. Hackett, Jr.
	University of Maine
	101 Education Building, Orono
	Walter P. Fridinger
	University of Maine in Portland
	96 Falmouth St., Portland
	John R. Benoit
	University of Maine in Augusta
	Cony St., Augusta
	Arnold G. Westerberg
	University of Maine in Lewiston-Auburn
	Room 404, 145 Lisbon St., Lewiston
	William U. Small
	Presque Isle
Senior and alumni placement	Placement Director, Philip J. Brockway
Financial assistance	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 house, and apartments	Manager, Men's and Family Housing, Vernon C. Elsemore
Foreign students	Cecil J. Cutts, Adviser
Conferences and conventions	Dwight L. Rideout, Conference Coordinator



General Information

The University of Maine is part of the public educational system of the state. Its main campus is located in Orono, an attractive town of about 8,000 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 1,100 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 Morrill 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 12 students and two faculty members. Dr. Merritt Caldwell Fernald was appointed acting president. By 1871 curricula had been arranged in agriculture, civil engineering, mechanical engine-

UNIVERSITY OF MAINE

ering, and elective. From these curricula the Colleges of Agriculture, Technology, and Arts and Sciences gradually developed. Women have been admitted since 1872. The School of Education was established in 1930 and became the College of Education in 1958. The University operated a College of Law from 1898 to 1920. After this unit was discontinued in 1920, the University did not offer law courses until 1961 when a School of Law, located in Portland, was added through a merger with Portland University.

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

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

By an act of the 102nd Maine Legislature, the University of Maine in Augusta was established in 1965.

Schools of Business Administration, Forestry, Home Economics, and Nursing were established in 1958. The School of Business Administration became the College of Business Administration in 1965.

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 the charge of a dean.

Beginning in 1895, a Summer Session has usually been held each year. The former six-week program was extended to nine weeks in 1961 and to 12 weeks in 1962. 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 presidents: The Rev. Charles Frederick Allen, Dr. Merritt Caldwell Fernald, Dr. Abram Winegardner Harris, Dr. George Emory Fellows, Dr. Robert Judson Aley, D. Clarence Cook Little, Dr. Harold Sherburne Boardman, Dr. Arthur Andrew Hauck, and Dr. Lloyd H. Elliott.

Organizations 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 executive 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 an ex officio 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 Arts and Sciences, Life Sciences and Agriculture, Business Administration, Education, and Technology; University of Maine in Portland; University of Maine in Augusta; School of Law in Portland; Graduate Study, Summer Session, Cooperative Extension Service, Maine Agricultural Experiment Station, Maine Technology Experiment Station, Continuing Education Division, and Department

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of Industrial Cooperation. Each division regulates those affairs which concern itself alone.

THE COLLEGE OF ARTS AND SCIENCES offers curricula in an approved field of concentration or in any of the following subjects: Art, Chemistry, Comparative Literature, Economics, English, French, Geology, German, Political Science, (option in Public Management.) History, International Affairs, Journalism, Mathematics, Medical Technology, Music, Modern Languages, Nursing, Philosophy, Physics, Psychology, Romance Languages, Sociology, Spanish, Speech, Theatre, and Zoology.

THE COLLEGE OF BUSINESS ADMINISTRATION offers curricula in both Business Administration and Economics. The degree of bachelor of science is awarded to those who successfully complete the requirements in either of these two fields of study.

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 supervisors and teachers of art and music. The degree of bachelor of science in education is given to those who have successfully completed the requirements for the degree.

THE COLLEGE OF LIFE SCIENCES AND AGRICULTURE offers programs leading to the bachelor of science degree in the following fields: Agricultural Business and Economics, Agricultural Engineering (jointly with the College of Technology), Agricultural Mechanization, Animal Sciences, Bacteriology, Biochemistry, Biology, Botany, Entomology, Forestry, Home Economics, Plant and Soil Sciences, and Wildlife Management. It also offers two-year preprofessional programs in Agricultural Education, Veterinary, Dairy Manufacturing, and Food Processing. Two-year technical training programs leading to a degree of Associate in Applied Sciences are offered in Business Management (with options in Food Industry Management and Agricultural Business Management), Animal Technology, Laboratory Technology, Merchandising, and Food Service Management.

Several short courses are offered along with the annually sponsored Farm and Home Week.

THE COLLEGE OF TECHNOLOGY offers degree programs in Agricultural Engineering (jointly with the College of Life Sciences and Agriculture), Chemical Engineering, Pulp and Paper Technology, Chemistry, Civil Engineering, Electrical Engineering, Engineering Physics and Mechanical Engineering. Post baccalaureate programs leading to a certificate are available in Pulp and Paper Management, Pulp and Paper Computer Technology and in Power Systems Engineering. Two-year programs are also offered through the Technical Institute Division of the college in Civil Engineering Technology, Electrical Engineering Technology, Mechanical Engineering Technology, and Chemical Engineering Technology.

THE UNIVERSITY OF MAINE IN AUGUSTA provides students the opportunity to complete university requirements for associate degrees in Liberal Studies and in Administration with a Business or Public major. An open door admissions policy is followed. The student completing the Liberal Studies Program with a quality point average of 1.8 or better receives full transfer credit to appropriate University of Maine baccalaureate programs. A student must have a 2.8 point average to transfer to appropriate baccalaureate degree programs after completing the Associate in Administration Program. An evaluation of the academic record will be

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made at the time of transfer to determine the number of credit hours that may be transferable.

A wide variety of courses at the undergraduate and graduate level is offered in the evening under the direction of the Continuing Education Division. Also, this division offers many seminars and short-term courses.

The Summer Session also offers a varied selection of academic courses.

THE UNIVERSITY OF MAINE IN PORTLAND is a full-fledged campus of the University, offering four-year degree programs in a number of areas of concentration, graduate programs in Business Administration and secondary education, and a more limited variety of graduate courses in other areas of concentration.

Students currently starting their college work at the Portland campus may continue at Portland to complete University requirements for the degrees of associate in business administration, bachelor of science in business administration, bachelor of arts with concentration in English, French, mathematics, history and political science, psychology or sociology, bachelor of science in education with concentration in any of the appropriate academic areas previously listed for the teaching of secondary subjects. Freshmen intending to concentrate in other areas or continue programs in other colleges of the University may complete at least one year of academic credits at Portland before transition to the Orono campus for more specialized work.

THE GRADUATE SCHOOL offers programs of study leading to the degrees of master of arts, master of science, master of science in engineering, master of arts in teaching (foreign languages), master of education, master of arts in teaching, master of agricultural business and economics, master of business administration, master of library service, master of mechanical engineering, doctor of philosophy and doctor of education. Programs leading to the Ph.D. degree are available in animal nutrition, chemical engineering, chemistry, American history, general and experimental psychology, clinical psychology, physics, plant science and zoology. Doctor of education programs are available in guidance and counseling and in the language arts.

THE SCHOOL OF LAW, located in Portland, offers a three-year, full-time program of law study leading to the first degree in law. The program is open only to students who already hold a bachelor's degree from an accredited college or university.

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. Educational and informational assistance in a broad range of subjects in or related to agriculture and home economics is provided to individuals, families and organized groups in rural and urban areas of the state.

County Extension Associations are the sponsoring organizations of the Extension program in each county. They function under the leadership of an executive committee with the assistance of local committees organized in nearly 500 Maine communities.

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Extension Service personnel include state and area specialists, administrative staff, and Extension agents. The latter, who make up the major part of the staff, are located in each county, usually at the county seat, and carry out work with the assistance of specialists in agriculture, home economics, 4-H and other youth education, resource development, and public affairs education. Extension agents also provide general information about other programs and services of the University of Maine and the U. S. Department of Agriculture in serving the people of Maine.

THE CONTINUING EDUCATION DIVISION (*C.E.D.*) is a part of the University of Maine Extension Service. It coordinates the part-time study of adults in various locations in Maine and provides programs within commuting distance of their homes. Major C.E.D. centers are maintained at Auburn, Augusta, Brunswick, Orono, Portland, and Presque Isle.

THE MAINE AGRICULTURE EXPERIMENT STATION maintains its offices and principal laboratories at Orono. Experiment 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, makes investigations for various state and municipal departments, and on request furnishes scientific information to industries. The station maintains offices and laboratories in Boardman Hall and is under the control of the College of Technology.

THE DEPARTMENT OF INDUSTRIAL COOPERATION is the liaison office between: (1) University departments and (2) outside agencies sponsoring University research work. The department is located in Boardman Hall and is administered by the dean of the College of Technology.

Buildings—Orono Campus—The following are dormitories and dining facilities:

ANDROSCOGGIN HALL (1963), capacity 248. Named for the county having the sixth largest number of regular full-time students enrolled at the University at the time of its construction.

AROOSTOOK HALL (1963), capacity 179. Named for the county having the fifth largest number of regular full-time students enrolled at the University at the time of its construction.

BALENTINE HALL (1914-1916), capacity 107. Named in honor of the late Elizabeth Abbott Balentine, secretary and registrar of the University, 1894-1913.

CHADBOURNE HALL (1948), capacity 156. Named for Dr. Ava Harriet Chadbourne, professor emerita of education.

COLVIN HALL (1930), capacity 48. 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 for women in 1961.

CORBETT HALL (1947), capacity 228. Named in honor of the late Lamert Seymour Corbett, formerly professor of animal industry and dean of men.

CUMBERLAND HALL (1961), capacity 260. Named for the county having the second largest number of regular full-time students enrolled at the University at the time of its construction.

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DUNN HALL (1947), capacity 228. 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.

ESTABROOKE HALL (1940), capacity 172. Named in honor of the late Kate Clark Estabrooke, a former superintendent of the first women's dormitory, the Mount Vernon House. Its dining hall serves 350 students.

KNOX HALL (1967), capacity 285. Named for the county having the tenth largest number of full-time students enrolled at the University at the time of its construction.

OXFORD HALL (1967), capacity 285. Named for the county having the eighth largest number of full-time students enrolled at the University at the time of its construction.

SOMERSET HALL (1967), capacity 285. Named for the county having the ninth largest number of full-time students enrolled at the University at the time of its construction.

NEW COMMONS (1967-68) is a dining hall having the capacity to serve 900 persons cafeteria style. It also contains a small library and reading rooms. The dining hall serves Knox, Oxford and Somerset Halls.

GANNETT HALL (1959), capacity 260. Named in honor of James Adrian Gannett, registrar emeritus.

HANCOCK HALL (1965), capacity 265. Named for the county having the seventh largest number of regular full-time students enrolled at the University at the time of its construction.

HANNIBAL HAMLIN HALL (1911), capacity 89. Named for the late Hon. Hannibal Hamlin of Hampden and Bangor, the first president of the Board of Trustees.

HART HALL (1955), capacity 233. Named in honor of the late James Norris Hart of Orono, dean of the University and professor of mathematics and astronomy.

KENNEBEC HALL (1961), capacity 180. Named for the county having the third largest number of regular full-time students enrolled at the University at the time of its construction.

OAK HALL (1937), capacity 96. Named for the late Hon. Lyndon Oak of Garland, a long-time member and president of the Board of Trustees.

PENOBSCOT HALL (1960), capacity 180. Named for the county having the largest number of regular full-time students enrolled at the University at the time of its construction.

EAST COMMONS (1963) is a dining hall having a capacity for serving 800 persons cafeteria style. This dining hall serves Androscoggin, Cumberland and Gannett Halls.

WEST COMMONS (1958) is a dining hall having a capacity for serving 1500 persons cafeteria style. This dining hall serves Corbett, Dunn, Hannibal Hamlin, Hancock, Hart and Oak Halls.

THE UNIVERSITY CABINS (1945), capacity 42 men students. These are co-operative units.

STODDER HALL (1956), capacity 170. Named in honor of the late Mrs. Anne E. Stodder of Bangor, a benefactress of the University. Its dining hall serves 700 students.

YORK HALL (1962), capacity 260. Named for the county having the fourth

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largest number of regular full-time students enrolled at the University at the time of its construction. Its dining hall serves 700 students.

UNIVERSITY PARK (1961) is a family housing development that 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 studio for Educational Television, and a small auditorium. 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.

CLARENCE C. LITTLE HALL (1965) houses the Departments of Foreign Languages and Psychology. Contains four general purpose lecture rooms and offices for faculty of College of Arts and Sciences.

AUBERT HALL (1914) houses the Department 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. The Gottesman Computer and Analysis Laboratory is located in this building.

BARROWS HALL (1963) contains offices, classrooms and laboratories for the Department of Electrical Engineering. It was named for the late William Edward Barrows, formerly professor and head of the Department of Electrical Engineering.

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, the former library building erected in 1906 through the generosity of Andrew Carnegie, is now devoted to the Department of Art. It was named in honor of the original donor.

COBURN HALL (1888) houses the Department of Zoology until late 1967 or early 1968. It was named for the late Hon. Abner Coburn, a former president of the Board of Trustees and benefactor of the University. Its future role is uncertain.

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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, 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 the late Dr. Arthur L. Deering, dean of agriculture, who served the University from 1912-1957.

EAST ANNEX (1947) houses the Department of General Engineering, Wildlife Conservation, Student Placement Bureau, 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 of the personnel deans. The building also contains a University snack bar.

FOGLER LIBRARY (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. The library was named in 1962 in honor of Dr. Raymond H. Fogler, a former president of the Board of Trustees.

HAUCK AUDITORIUM (1963) was erected and furnished with the aid of a fund-raising campaign by alumni, faculty, students and friends of the University. It contains an auditorium providing seating for 600 persons, stage facilities and the University Store. It was named in honor of Dr. Arthur A. Hauck, president emeritus, who served the University as president from 1934 to 1958.

HITCHNER HALL (1959) contains offices, laboratories, and classrooms for the Departments of Animal Pathology, Bacteriology, Biochemistry, and Animal Sciences 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.

LENGYEL HALL (1963) contains offices, classrooms and a gymnasium for the Department of Physical Education, women. It was named for Helen Anna Lengyel, professor emerita of women's physical education.

LORD HALL (1904) contains offices and laboratories for the Department of Music on the first and second floors of the east wing, for the Maine Cooperative Fisheries in the basement, and for the Department of Journalism, the Maine Campus newspaper, the Prism (yearbook), and the security offices of the Department of Physical Plant in the west wing. It was named for the late 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

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student activities and recreational programs on the campus. It has a Memorial Room, meeting rooms, lounges, offices, snack bar, game room, bowling alleys, offices for the director of religious affairs and for student organizations, faculty-alumni lounge and dining room which serve the University community. Additional meeting rooms were added in 1961.

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

CLARENCE E. BENNETT HALL (1959) contains offices, classrooms, and laboratories of the Department of Physics.

ROGERS HALL (1928) houses administrative offices of the Department of Animal Sciences and contains research laboratories in animal nutrition and related work. 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, contains accommodations for the Colleges of Arts and Sciences and Business Administration. 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 a classroom, the office of the Director of Admissions, the office of the Registrar, the office of the Director of the School of Nursing, Data Processing Center, the University Computing Center, and the University Planetarium. It was named for the late William P. Wingate, a former president of the Board of Trustees.

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

ZOOLOGY BUILDING (1967) is used by the College of Arts and Sciences for its Department of Zoology. It contains offices, seminar rooms, undergraduate and graduate student laboratories.

Other buildings include the President's House, Horticultural Greenhouses, Dairy Barns and Milk House, Federal Office Building, Fisheries Building, Poultry Buildings, Stock Judging Pavilion, Maples, Mechanical Engineering Shops, Agricultural Engineering Shop Building, Observatory, Infirmary, University Public Information and Press Building, the Central Heating Plant, Service Building, Entomology, several residences occupied by faculty members, and various farm buildings.

University of Maine in Augusta—Please see section on the University of Maine in Augusta for the list of buildings at that campus.

University of Maine in Portland—Please see section on University of Maine in Portland for the list of buildings at that campus.

FRATERNITY HOUSES.—The following fraternities have houses on or near the Orono campus: Beta Theta Pi*, Delta Tau Delta, Kappa Sigma, Lambda Chi Alpha, Phi Kappa Sigma, 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, Sigma Alpha Epsilon, and Sigma Phi Epsilon.

RESIDENCE AND DINING HALLS—The rooms in most of the halls normally accommodate one or two students each. South Hannibal Hamlin Hall and *Closed until 1968

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Colvin Hall and the University Cabins will accommodate four students each. Assignment to Colvin Hall (the cooperative dormitory for women) and the University Cabins is based on financial need, cooperation, and satisfactory scholarship. A Graduate Women's Residence provides housing for 13 students.

The six dining halls serve the residents of the dormitories on a 21-meal per week basis. Meals are available to non-dormitory students at a transient meal rate or through purchase of a semester's meal ticket. Colvin Hall has its own dining room operated by residents of the dormitory. Residents in the University Cabins prepare their own meals on facilities provided in each building.

Undergraduate women not living at home are required to live in one of the women's dormitories. In exceptional circumstances, other arrangements may be approved upon application to the Dean of Women.

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.

Other male students assigned to dormitories are expected to reside within the dormitory systems for the complete semester unless they leave the University.

Dormitory residents are furnished bed linen each week without extra charge. Students will furnish towels, pillows and blankets.

Temporary housing is furnished students during the Thanksgiving, mid-year and spring recess periods at extra charge.

ATHLETIC FACILITIES—The University's facilities for athletics and physical education on the Orono campus include the Memorial Gymnasium, the Memorial Indoor Field House, the Helen A. Lengyel Gymnasium, outdoor hockey rink, and numerous athletic fields.

The athletic fields for men include 10 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.

The Helen A. Lengyel Gymnasium has two large floors which are used by the department for intramural activities in team and individual sports, recreational games, and club activities, as well as for classes. The building includes an indoor archery range, a first aid room, and a remedial gymnasium, which is also used for folk, modern, and square dancing classes.

The women's athletic field is located at the south end of the campus near the women's residences. It has a hockey field, practice area and an archery range. In season, the field is also used for soccer, speedball, and softball.

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 sizable poultry laying flock, a flock of sheep and a few 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.

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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 1,750 acres and located in the Stillwater-Old Town area, is administered by the School of Forestry for student instruction, project demonstration, and research. An additional two acres are operated as a forest nursery. Indian Township, a tract of 17,000 acres, is managed by the School of Forestry for summer instructional purposes. Headquarters for the summer training program is the Robert J. Ashman Forestry Camp on Long Lake, near Princeton.

Woodland Preserve—The Woodland Preserve, consisting of two tracts of woodland and marsh totalling approximately 33 acres in the southeast corner of the Orono campus, was established by action of the Board of Trustees in 1967 to provide the University community with a nearby area for the scientific study and observation of the ecology and natural evolution of forest and marsh.

The University Computing Center in Wingate Hall provides digital computing facilities and services for the instructional, research, and consulting needs of University students and faculty. Courses in digital computer programming are offered by the Departments of Mathematics and Astronomy, Chemical Engineering, General Engineering, and Business and Economics. The Center's computer is an IBM 360, model 30, with two 2311 disk drives, card input/output, printer, and console typewriter.

The Ira C. Darling Center for Research, Teaching and Service—An estate located on Wentworth Point on the Damariscotta River in Walpole, Maine, is under development as a marine station. Approximately 3,000 square feet of laboratory space and 1,800 square feet of dormitory space are available for faculty and graduate marine research. Expansion of facilities is in progress. A 43-foot schooner and skiffs with outboard motors are used for field work.

The Libraries—The University Libraries serve the intellectual needs of the students and faculty and stimulate the use of books for research and recreational reading. The libraries contain about 450,000 books and pamphlets and receive some 3,000 periodicals in three divisions. They are the regional depository for northern New England for U.S. Government publications and have a file of maps for the Army Map Service. They also are a selective depository for Canadian government publications. They extend these resources to other libraries through interlibrary loan service, to visiting scholars, and to citizens of the state whenever they can do so without interfering with local needs. Periodical articles and similar materials not available for lending may often be photocopied, subject to copyright regulations.

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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 10,000 photographs, color reproductions, and slides of art masterpieces are available, on occasion, to students and faculty for study and loan. Through generous gifts in recent years the collection has been augmented by some 1,000 original sculptures, paintings, and graphic arts by outstanding American and European artists: Inness, Homer, Hassam, Marin, Hartley, Spinchorn, Kienbusch, Wyeth, Pleissner, Kingman, Peirce Picasso, Matisse, Rouault, Hamabe and others. Many of these works 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 eight different art exhibitions: four in Carnegie Hall and one each in the Oakes Room of the Fogler Library, the library photo salon, the lobby of the Memorial Union Building, and the lobby of Alumni Hall. Special exhibits are arranged from time to time in the East and West Commons lounges, Hauck Auditorium lobby, library reference room, and the Maine Christian Association Building. All exhibits, open without charge, display only original art, with special preference given to professional artists and craftsmen living or working in Maine. As a service to the state each year, the Department of Art arranges and circulates 60 different exhibitions of original art throughout the schools and academies of Maine. There is no charge for these exhibitions, but reservations must be made before Sept. 30 for each academic year. All inquiries should be addressed to Professor Vincent A. Hartgen, Head of the Department of Art.

Scientific Collections—The following collections are located on the Orono 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 Collin'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, Ralph C. Bean, George B. Rossbach, K.P. Jansson and Glen D. Chamberlain. Numerous centuries of *Plantae Exsiccatae Grayanae* are significant additions. Sixty-five 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 three plantings were made in conjunction with Maine

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Day of 1935. At present, more than 300 species of trees and shrubs have been introduced. This area was recently named the Fay Hyland Botanical Plantation. 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 five colonies that are used for pollination studies.

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 citizens of Maine.

GEOLOGY—The geological collections of minerals, rocks, and fossils are housed in Boardman Hall.

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 Collection 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 in 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 Director of Student Services.

The University of Maine Anthropology Museum—The Department of Sociology and Anthropology has established an Anthropology Museum on the third floor of South Stevens Hall. The museum serves not only as a teaching aid for students in the department but also as an additional cultural facility for the campus and the community. Through the generosity of many interested persons the collection includes material relating to the American Indians, Africa, the Arctic and Oceania. There are also special teaching exhibits on weapon and tool development, fossil man and race. Loan collections from other institutions sometimes are exhibited. The museum is open to the public whenever the University is open. Regular hours are Tuesday through Thursday, 9 a.m. to 4 p.m. and Friday 9 a.m. to 2 p.m. The museum can be opened for groups at other times by appointment. Summer hours are Monday through Friday 9 a.m. to noon.

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

UNIVERSITY OF MAINE BULLETIN is issued about 20 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 may be obtained from the Bulletin

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Room, Winslow Hall. Orders and exchanges should be sent to the Bulletin Room.

AGRICULTURE EXPERIMENT STATION PUBLICATIONS include technical and popular 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, youth education, resource development and public affairs. Maine residents may secure a list of available bulletins and circulars upon request.

THE MAINE ALUMNUS, an illustrated magazine of campus and alumni news published seven times during the college year, is sent to former students of the University who subscribe, and to those making donations to the Annual Alumni Fund.

THE UNIVERSITY OF MAINE LAW REVIEW is a continuation of the former *Maine Law Review* last published in 1920. It was revived as a student activity in 1962.

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

The Coe Research Fund—The University Trustees have set aside \$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.

THE UNIVERSITY TESTING AND COUNSELING SERVICE provides counseling, testing, and self-improvement programs for students. The counseling covers such areas as educational major and career choice, decision-making, study skills, or other areas of concern to the student. Tests are available to provide information for counseling, for application to graduate school, and for employment purposes. The self-improvement programs are in the areas of interpersonal relationships and reading.

The Testing and Counseling Service, 102 Education Building, is a campus-wide agency serving all students regardless of major field of study or college. There is no charge for any of the services, and students are welcome to make an appointment at any time.

Placement Bureau—The University Placement Bureau offers its services in career counseling and placement to undergraduate and graduate students and alumni in both teaching and non-teaching fields. Established in 1935 in cooperation with the General Alumni Association, the Bureau offers the following services to students and employers:

- 1) Counsels and assists students and alumni in their career planning.
- 2) Notifies registrants of suitable employment opportunities.
- 3) Assists candidates in preparing effective applications.

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- 4) Cooperates with employers in their search for qualified personnel.
- 5) Develops career information for University men and women in both new and traditional fields of opportunity.

The Bureau also schedules each year an extensive on-campus interviewing program for general and teacher placement registrants.

The Bureau offers assistance to students in locating summer vacation employment. No charge to students, alumni, or employers is made. Service is also offered to presently employed alumni teachers in maintaining continuous records of achievement to facilitate professional advancement.

Office of Student Aid—The Office of Student Aid receives applications for student aid including part-time employment, Work-Study Program, scholarships, University loans, loans under the National Defense Education Act, and Educational Opportunity grants. Detailed information on student aid will be found on pages 32, 39 and 49. Information on loan funds and scholarships is contained in a special Financial Aid Bulletin, available on request.

Foreign Student Adviser—The University maintains an office for the information and assistance of all students who are not citizens of the United States. All foreign nationals are required to register with this office in the East Annex, Orono, at the beginning of each academic year.

The Office of the Foreign Student Adviser acts as a liaison between the University and various public and private agencies concerned with the international members of the student body in matters relating to non-academic activities. It assists in approving the sponsorship of exchange students, distinguished foreign scholars, and teachers on temporary appointments to the University faculty.

The University annually approves a limited number of international students sponsored by the Institute of International Education, The African Scholarship Program with American Universities and the Latin American Scholarship Program with American Universities. The adviser aids in the budget control of maintenance funds for these programs and is available for annual costs analysis.

Health Service—The Student Health Center 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 immunization, allergy injections, etc.
6. Limited diagnostic laboratory tests, x-rays, and physical therapy.
7. Follow-up examinations for various athletic activities, pre-employment

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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 Center staff.
9. Supervision of the University environment to minimize exposure of students to health hazards.
10. A Mental Health Section, under the direction of a clinical psychologist, provides evaluation and therapy for students with personal and emotional problems. Treatment is offered for problems of long standing as well as those acute problems brought on by the pressure of University life. The length of therapy is dependent upon the student's needs.

To meet these goals, the Health Center maintains a 25-bed Infirmary, a medical staff of four physicians, three of whom are full-time employees of the University, a clinical psychologist, a psychiatric consultant and adequate nursing and technical help. A new 44-bed facility is scheduled for completion in 1968. Capabilities in several areas will then be improved, particularly in physical therapy and in the variety of laboratory tests offered.

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 director of religious affairs, whose office is on the second floor of the Memorial Union, serves as adviser to the Student Religious Association, counselor to students, and works toward coordination among the faith groups and between these groups and the University.

Committee on Religious Affairs—Subject to the approval of the president and the Board of Trustees, 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 faith groups are related to the administration 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 supervision of such courses. It is expected that students will cooperate by following instructions and exercising caution. In case an accident does occur, resulting in personal injury, the University can assume no responsibility except for medical care that is provided by the Student Health Service. Student Health and Accident Insurance is recommended.

Registration—Undergraduates will register in accordance with the following:

FRESHMEN—All members of the incoming freshman class are required to attend, during the summer preceding the beginning of classes, any one of the

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several freshman orientation sessions at the Orono campus. The dates when these are held each year are furnished incoming freshmen and their parents. It is strongly urged that parents plan to attend the orientation program with their sons and daughters.

During the orientation period, registration is accomplished for the fall semester. Also, information is distributed concerning arrangements in connection with the beginning of classes, arrival at dormitories, etc., in September.

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 before the opening of the fall term, the student may present his case in person to the dean upon his arrival at the University.

Academic advisers are assigned all students for help in planning their educational programs, to ensure their meeting graduation requirements, for counsel and guidance in academic work, and for advice about study or classwork problems. The final responsibility for fulfilling degree requirements, however, rests with each student.

Degrees—The University awards the following degrees:

Associate in Applied Science (A.A.S.), with specification of the major field, to those who complete the two-year curriculum in the College of Life Sciences and Agriculture.

Associate in Business Administration (A.B.A.) to those who complete the two-year curriculum. Offered only on the Portland campus.

Associate in Engineering (A. Eng.) to those who complete the two-year curriculum in the College of Technology.

Associate in Administration (A.A.B. and A.A.P.) to those who complete the two-year curriculum. Offered only at the University of Maine in Augusta.

Bachelor of Arts (B.A.) with specification of the major subject, to those who complete a four-year curriculum in the College of Arts and Sciences, except students in the School of Nursing.

Bachelor of Science (B.S.) to those who complete the prescribed work of four years in the Colleges of Life Sciences and Agriculture, Technology, and Business Administration, or in the School of Nursing in the College of Arts and Sciences.

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

Bachelor of Laws (L.L.B.) to those who complete the three-year curriculum in the School of Law.

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

Master of Arts (M.A.) and Master of Science (M.S.) with designation of the major subject or field; Master of Arts in Teaching (M.A.T.), or Master of Education (M.Ed.) are granted for one year's graduate work completed with distinction.

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Master of Business Administration (M. Bus. Ad). is offered in the College of Business Administration.

Master of Engineering (M.E.) with departmental designation is offered in the College of Technology.

Master of Library Service (M.L.S.) is offered by the Department of Library Service.

Master of Mechanical Engineering (M.M.E.) is offered in the College of Technology.

The professional degree of Forest Engineer (F.E.) may be conferred upon graduates of the University of Maine in the curriculum of Forestry upon completion of certain requirements.

Doctor of Education (Ed.D.) is offered in the College of Education.

Doctor of Philosophy (Ph.D.) is offered in animal nutrition, chemical engineering, chemistry, American history, physics, plant science, psychology, and zoology.

BACCALAUREATE 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 at the time of graduation 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.

DEGREE WITH HONORS, WITH HIGH HONORS, OR WITH HIGHEST HONORS are awarded to seniors 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, P, 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; P, passed non-credit course; 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 or doctoral thesis. For purposes of comparison these letters carry the following arbitrary values for undergraduate students: A=4, B=3, C=2, D=1, E=0; for graduate students both D and E grades=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 except in the College of Education, which requires an accumulative average of not less than 2.00.

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.

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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 all students at the end of each semester. Progress reports are sent to the parents of freshmen at the middle 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.)

Considerable care is taken to ensure that course registrations and grades entered on a student's permanent record are accurate. Any student who, upon receipt of a semester final grade report, suspects an error has been made should take the matter up immediately with the Registrar's Office. Records are assumed to be correct if a student does not so report to the Registrar's Office within six months of the completion of a course. At that time portions of the record are committed to microfilm, which cannot be emended.

Student Registrations—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.*

The University requires certain standards of academic performance and of general good character for admission; if these are not maintained, the University suspends or dismisses the student. Every effort is made to provide adequate academic and personal counseling for all students, with the aim of enabling them to successfully complete their courses of study.

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 Mr. Edward McLaughlin, Security Officer, Lord Hall, 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 AND SUSPENSION—Students may be dismissed or suspended from the University for unsatisfactory work (academic dismissal or suspension), for misbehavior (disciplinary dismissal or suspension), or for mental or physical health problems (administrative disenrollment). Dismissed students are ineligible to apply for readmission for one year from date of dismissal; suspended students may apply for readmission effective upon termination suspension. Dismissed stu-

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dents are ineligible to register for credit or non-credit in any division of the University for one year following dismissal; suspended students for the duration of the suspension.

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 emergency 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 campus.

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

Detailed information about the regulations affecting students is contained in a pamphlet entitled *The Maine Handbook* obtainable at the Office of the Director of Student Services.

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 desired coverage by means of a family policy.*

THE UNIVERSITY HONORS PROGRAM

General—The University Honors Program is open to all qualified undergraduate students in the University. Its purpose is twofold: (1) to introduce students of high scholastic potential to the major areas of knowledge—mathematics and science, social studies, literature, philosophy, and the fine arts—through individual reading and small group discussion; and (2) to develop their skills to as high a degree as possible in the field in which they choose to concentrate.

The program in the freshman and sophomore years is the same for all colleges and is administered by the Honors Council. Its task is the orientation of the student to the broad perspectives of the academic world.

The programs for the junior and senior years vary somewhat from college to college and are administered by the Honors Committee of each college. Their task is to sharpen and focus the student's abilities in his own field of specialization.

Content—Students who are designated as Distinguished Maine Students, as well as a limited number of other highly qualified students (see page 32),

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may begin honors work in the fall semester of the freshman year in a seminar in which a limited number of books, chosen to cover the major intellectual disciplines, are discussed under the leadership of a faculty member. In the spring semester other qualified freshmen join the program. Honors work in that semester consists of a colloquium in which readings concerned with the seminal ideas of Western civilization are discussed by students with a faculty leader. The sections of the freshman seminar and colloquium are limited to 12 to 14 students each.

During the sophomore year, honors work is based on small group tutorials, each group consisting of no more than three students. Each group meets weekly with a tutor for the discussion of books and ideas from the honors reading list. Every group does substantial reading in three or four major areas of thought each semester.

In the junior year the student begins his concentration in his major field. His work in honors may be a course of study under tutorial supervision designed to acquaint him with his major field, or, at the option of his college Honors Committee, he may take an interdisciplinary seminar in one semester of the year.

For the senior year, a thesis or research project, within or closely related to his field of primary interest, is the major part of his Honors Program. A final comprehensive examination before a faculty board tests the student's accomplishments in both objectives of the program; breadth of knowledge and depth of specialization within his major field.

Degree—The Degree of honors awarded—Honors, High Honors, Highest Honors—depends upon three factors: the student's accumulative average over seven semesters; the quality of his senior thesis or project; his performance on the comprehensive examination. In order to receive a degree with Honors, a student must have a minimum of four semesters of work in the Honors Program, including both semesters of the senior year, and at least one semester of sophomore group tutorials.

Entry—Normally, entry into the Honors Program, except for Distinguished Maine Students and a few others, occurs at the start of the second semester in the freshman year. However, a substantial number of students are admitted at the beginning of the sophomore year, some at mid-years in the sophomore year, and a small number at the beginning of the junior year.

Admission—Students are recommended for the Honors Program by the Honors Committee of the college in which they are registered and admitted to the freshman and sophomore programs by the Honors Council. To be eligible for consideration for the Honors Program, a student should normally have a point average of 3.0 or better, have high C.E.E.B. test scores, and show curiosity, initiative, and intellectual flexibility in the work he has done. Students wishing to join the Honors Program should consult the secretary of their college Honors Committee: Agriculture, Associate Professor W. M. Bain, 256 Hitchner Hall; Arts and Sciences, Associate Professor R. B. Thomson, 205 East Annex; Business, Professor J. D. Coupe, 22 South Stevens; Education, Professor G. H. Davis,

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132 Education Building; Technology, Professor R. C. Hill, 201 Boardman Hall; University of Maine in Portland, Assistant Professor J. Jaques, Payson Smith Hall.

Council—The University Honors Council, consisting of Vice President Peck, chairman, Professors Hill and Davis, Associate Professors Bain and Thomson, and Assistant Professor Jaques, administers the common program of the first two years and coordinates the work of the College Honors Committees. All questions in regard to the University Honors Program should be addressed to Associate Professor Thomson, 205 East Annex, Secretary of the Honors Council.

Descriptions of honors courses will be found in the Arts and Sciences section of the catalog.

DISTINGUISHED MAINE STUDENTS PROGRAM

In 1963 the Board of Trustees approved a program aimed at recognizing outstanding graduates of Maine secondary schools who are admitted to the University of Maine as regular, full-time students. Such students are designated as "Distinguished Maine Students." Recipients of this honor are selected primarily on the basis of three criteria: (1) outstanding preparatory school records; (2) strong potential as indicated by test scores, and (3) excellent personal recommendations from secondary school officials.

Students who are selected receive certificates of recognition from the University which are sent prior to the date of secondary school commencement. Each Distinguished Maine Student also receives a financial award equivalent to one semester's tuition. Larger awards may be made in some cases and are determined by the financial need of the student, as calculated by the Office of Student Aid. The secondary school from which each Distinguished Maine Student graduates is also notified of the student's selection for this honor.

Distinguished Maine Students, along with a few other highly qualified students, may enroll in a special first-semester seminar course during their freshman year. In this course students read a limited number of books, which are representative of the major fields of learning, and discuss them under the guidance of a faculty member. The seminar presents a unique opportunity for first-semester freshmen to participate in an unusual academic program.

A primary aim of the Distinguished Maine Students Program is to call attention to the academic accomplishments of talented Maine youth and to give these accomplishments suitable recognition. At the present time 50 students per year are selected for this honor. Recipients of the Distinguished Maine Student designation are selected by the Director of Admissions and the University Honors Council, acting jointly. Credentials of all applicants for regular admission are reviewed in the selection process; no special application is required or accepted.

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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, for campus elections, for events such as Maine Day and for consideration of any business properly brought before it.

THE ASSOCIATED WOMEN STUDENTS, composed of all regularly enrolled undergraduate women, is the organization that promotes women's affairs on the campus, including the administration of self-government in the dormitories and the sponsorship of cultural, social, and educational programs for women. The AWS is a member of the New England Women's Student Government Association and national Intercollegiate Association of Women Students.

Religious Affairs—Four major religious groups provide opportunities for worship, study, conversation, and witness: 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 Apostolate for Roman Catholic students. The chaplains are available for counseling or instruction.

THE INTERVARSITY CHRISTIAN FELLOWSHIP, an approved student organization, meets weekly in the Memorial Union.

THE STUDENT RELIGIOUS ASSOCIATION, called SRA, is the coordinating agent of the recognized faith groups and religious activities of the campus and is governed by a cabinet of representatives from the groups and the campus at large.

LOCAL CHURCHES AND SYNAGOGUES—The churches and synagogues of Orono, Old Town, and Bangor always welcome the attendance of University students. A small meditation room, the Drummond Chapel, next to the Office of Religious Affairs 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

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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 3.0 accumulative average.

ALPHA ZETA (1906)—Agriculture

ETA KAPPA NU (1961)—Electrical Engineering

XI SIGMA PI (1917)—Forestry

PI MU EPSILON (1965)—Mathematics

SIGMA PI SIGMA (1949)—Physics

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

STUDENT BRANCH OF THE INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS

BRANCH OF THE AMERICAN HOME ECONOMICS ASSOCIATION

BRANCH OF THE AMERICAN SOCIETY OF MECHANICAL ENGINEERS

PERSHING RIFLES—Military

SCABBARD AND BLADE—Military

STUDENT NATIONAL EDUCATION ASSOCIATION

STUDENT CHAPTER OF MUSIC EDUCATORS NATIONAL CONFERENCE

STUDENT CHAPTER OF WILDLIFE SOCIETY

b. Departmental Clubs:

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

PLANT AND SCIENCE CLUB

PRESS CLUB—Journalism

ROCK AND HAMMER—Geology

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

NATIONAL

PI KAPPA DELTA—Forensics

LOCAL

MAINE DEBATING COUNCIL—Forensics

MAINE MASQUERS—Theatre

MU ALPHA EPSILON—Music

SIGMA MU SIGMA—Psychology

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c. Additional Student Clubs and Associations:

ALL-MAINE WOMEN	MEN'S ATHLETIC ASSOCIATION
ALPHA PHI OMEGA	MEN'S CENTRAL DORMITORY COUNCIL
AMATEUR RADIO CLUB	MODERN DANCE CLUB
CIRCLE K. CLUB	MRS. MAINE CLUB
DEUTSCHER VEREIN	OFF-CAMPUS WOMEN
	PANHELLENIC COUNCIL
INTERFRATERNITY COUNCIL	PUBLIC MANAGEMENT CLUB
	SAILING CLUB
INTERNATIONAL CLUB	SENIOR SKULLS
INTERVARSITY CHRISTIAN FELLOWSHIP	SOPHOMORE EAGLES
INTRAMURAL ATHLETIC ASSOCIATION	SOPHOMORE OWLS
LE CERCLE FRANCAIS	SQUARE DANCE CLUB
MAINE BUSINESS CLUB	WOMEN'S ATHLETIC ASSOCIATION
MAINE OUTING CLUB	YOUNG DEMOCRATS CLUB
MATHEMATICS CLUB	YOUNG REPUBLICAN CLUB
"M" CLUB	
MEMORIAL UNION ACTIVITIES BOARD	

Musical Organizations—Students have many opportunities to continue their musical training and experience, either through the degree programs in music (details of these programs are listed under the College of Arts and Sciences and the College of Education), or through participating in any of the several organizations either for credit or non-credit. There are also smaller instrumental ensembles for the more advanced musicians.

For a description and course numbers of the following musical organizations, see the music courses listed in the College of Arts and Sciences section of this catalog.

UNIVERSITY BAND—This is a band of symphonic proportions that plays extensively throughout the school year. In the early fall it plays as a marching band at football games. The remainder of the year it is a concert band. In the spring the band makes a tour to high schools and communities of the state.

UNIVERSITY OF MAINE CHOROPHONIC SOCIETY—This is a chorus of 150 singers that presents concerts of the larger choral works.

UNIVERSITY ORCHESTRA—A full symphony orchestra that presents three or more concerts during the school year. The orchestra also assists in the presentations of the Chorophonic Society.

UNIVERSITY SINGERS—This group sings extensively on the campus throughout the year and because of its size and versatility is able to present concerts in the communities and high schools over the state.

WOMEN'S CHOIR—A choir of about 40 women's voices which presents campus concerts during the year and appears in concert in the area.

Maine Masque Theatre—As the University Theatre, it is an integral part of the academic and co-curricular program of the Department of Speech. The theatre provides an opportunity for all students to participate in every aspect of theatrical production, including stage and house managing, lighting, costuming,

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acting, directing, publicity, scenery, properties, and makeup. As a contribution to the cultural growth of the University community, the theatre offers productions which cover the full range of dramatic expression. Membership in the Maine Masquers, a local theatre honor society, may be gained through participation in the theatre's program.

Debate and Forensics—The University forensic program provides opportunities for experience in debate, discussion, extemporaneous speaking, oral interpretation, and original oratory. The program, under the administration and supervision of the Department of Speech, is open to all undergraduate students. Representatives participate in extensive intercollegiate competition with major colleges and universities from the entire United States, as well as engaging in intramural programs on campus. Membership in the Maine Debating Council and Pi Kappa Delta may be obtained through participation in forensic activities.

Radio and Television—Students from the entire University have an opportunity, through working on stations WMEB-FM and WMEB-TV, to participate in all phases of radio and television broadcasting. With studios in 275 Stevens Hall, WMEB-FM is operated with a faculty and student staff as an integral part of the academic and co-curricular program of the Department of Speech. WMEB-TV, operated by the Maine Educational network, has studios in Alumni Hall. The varied program of both stations enable the student to gain valuable experiences in engineering, programming, announcing and writing.

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

THE MAINE CAMPUS, a newspaper published weekly.

THE PRISM, an illustrated annual.

SHOWCASE, a literary magazine published semi-annually.

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

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

FRATERNITIES—National: Beta Theta Pi (1879) closed 1967-68, Kappa Sigma (1886), Alpha Tau Omega (1891) closed 1967-68, 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), Alpha Phi (1963).

Admission

All correspondence concerning undergraduate admission and financial aid should be addressed to the Director of Admissions, Wingate Hall, University of Maine, Orono, Maine 04473. Maine students who desire to attend the University of Maine in Portland (see section of catalog devoted to University of Maine in Portland) should write to the Director of Admissions, University of Maine in Portland, 96 Falmouth Street, Portland, Maine 04103. Maine students who plan to begin their programs at the Augusta campus should indicate this fact on their applications. All applications are filed at our Orono office.

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 and other matters bearing upon preparation for a college program. 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 may be asked to give confidential information regarding character, personality, school and community activities, and ability to pursue a college course successfully.

All candidates are required to submit the scores on the College Entrance Examination Board Scholastic Aptitude Test (S.A.T.), and the scores on three C.E.E.B. Achievement Tests. (See section concerning the C.E.E.B. Tests which follows.) Applicants for the Two-Year Technical Programs in the College of Life Sciences and Agriculture, the two-year (A.B.A.) program in Business Administration at the Portland Campus, and the two-year associate degree program at the Augusta campus, are not required to take the Achievement Tests.

Candidates for admission to the freshman class should file their applications in the fall of the year prior to the date they plan to begin their studies.

The required application forms (which are revised each year) may be obtained by writing to the Director of Admissions. A non-refundable application fee of \$10 is required of all applicants. Applicants must apply for admission prior to March 1 for equal consideration with other candidates. Applications received after this date will be considered only as classroom and dormitory capacities allow.

Candidates for the freshman class normally are accepted for the opening of the academic year in September. The priority of the housing assignment is based

UNIVERSITY OF MAINE

primarily on 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 final report is unsatisfactory.*

SCHOLASTIC APTITUDE AND ACHIEVEMENT TESTS

All candidates for admission are required to take the Scholastic Aptitude Test (S.A.T.) and three Achievement Tests administered by the College Entrance Examination Board. [Candidates for the two-year technical programs in the College of Life Sciences and Agriculture, the two-year (ABA) program in Business Administration at the Portland Campus, and the two-year, associate degree programs at Augusta, take the Scholastic Aptitude Test only.] Candidates are urged to take the December or January tests. The Achievement Tests may be delayed, if necessary, until March. The Achievement Tests should include English composition. [Level I (Standard) in Mathematics is also required of all engineering candidates] and two other tests of the candidate's 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 July 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 before the testing date.*

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

Saturday, December 2, 1967	Saturday, May 4, 1968
Saturday, January 13, 1968	Saturday, July 13, 1968
Saturday, March 2, 1968	

ADVANCE 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 Entrance Examination Board. Each case will be considered individually on its own merits.

VETERANS ADMINISTRATION INFORMATION

Miss Elizabeth S. Reid, assistant registrar, is prepared to help veterans and children of disabled and deceased veterans. Requests for information concerning Veterans Administration educational benefits should be forwarded to the Registrar's Office, Wingate Hall, University of Maine, Orono, Maine 04473.

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 cooperative dormitory, and the University Cabins for men, should be included with the application for admission. The necessary forms (financial aid) may be obtained from the Director of Admissions.

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 grants, loans under the National Defense Education Loan Plan, for participation in the Work-Study Program under the Economic Opportunity Act of 1964, and assistance under the Higher Education Act of 1965 may be obtained from the Director of Admissions. Parents or legal guardians of all applicants for financial aid are required to file a Parents' Confidential Statement with the College 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 before March 1, and preferably at the time the application to the University is filed.

The University participates in the College Scholarship Service (CSS) of the College Entrance Examination Board. Participants in CSS subscribe to the principle that the amount of financial aid granted a student should be based upon financial need. The CSS assists colleges and universities and other agencies in determining the student's need for financial assistance. Entering students seeking financial assistance are required to submit a copy of the Parents' Confidential Statement (PCS) form to the College Scholarship Service, designating the University of Maine as one of the recipients. The PCS form may be obtained from a secondary school or the College Scholarship Service, P.O. Box 176, Princeton, New Jersey 08540 or P.O. Box 1025, Berkeley, California 94704.

Upperclass students may apply annually during designated periods for all types of financial assistance. Applications and PCS forms are available at the Office of Student Aid.

Part-time work opportunities, both on-campus and off-campus, are available to 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 assigned to cafeteria jobs or to work-study opportunities, are not encouraged to undertake part-time jobs that require an excessive amount of time.

A specially prepared bulletin entitled Financial Aid is available on request. Detailed descriptions of all types of financial aid programs are included, together with a descriptive summary of each scholarship and loan fund held or administered by the University.

UNIVERSITY OF MAINE

REQUIREMENTS FOR ADMISSION 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
<hr/>	
Total	16 units

*Two units of Algebra are required in the curricula for Chemistry, Geology, Mathematics, Physics, Public Management, Pre-Medical, Medical Technology, and Zoology.

Note: Effective in September 1969 Algebra I, Algebra II and Plane Geometry ($\frac{1}{2}$ unit of Trigonometry also is recommended) will be required of all students entering the College of Arts and Sciences.

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

COLLEGE OF BUSINESS ADMINISTRATION

I. English	4 units
Algebra	2 units
Plane Geometry	1 unit
History or Social Science	1 unit
Electives	8 units
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Total	16 units

II. Two-Year (ABA) Program—Portland campus.

Candidates for admission to the two-year (ABA) program in Business Administration at the Portland campus must have graduated from high school and must complete the C.E.E.B. Scholastic Aptitude Test. Candidates' verbal aptitude will receive special attention in the selection of freshmen for this program.

III. Two-year Associate Administration (Business or Public)—Augusta campus.

Candidates for admission to the two-year AA (Business or Public) at the Augusta campus must have graduated from high school and must complete the C.E.E.B. Scholastic Aptitude Test.

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	5 units
Natural Sciences	
Social Studies	
Electives	7 units

Total 16 units

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

COLLEGE OF LIFE SCIENCES AND AGRICULTURE

I. Animal Sciences, Plant and Soil Sciences, Agricultural Business and Economics, Agricultural Engineering, Biological Sciences, School of Forestry:

English	4 units
Algebra	2 units
Plane Geometry	1 unit
Trigonometry (Agric. Engineering only)	$\frac{1}{2}$ unit or its equivalent
Science	2 units (one of which must be chemistry or physics)
History or Social Science	1 unit
Electives	$5\frac{1}{2}$ -6 units

Total 16 units

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 Sciences	1 unit
Electives	8 units

Total 16 units

III. Two-Year Technical Division:

Candidates for admission to the Two-Year Technical Programs must have graduated from high school and must complete the C.E.E.B. Scholastic Aptitude Test. A student should have two units of high school mathematics, one of which should be algebra. One year of algebra will be a requirement for admission in the 1968-69 academic year. Students who contemplate transfer to the regular four-year curriculum must satisfy entrance requirements for the College of Life Sciences and Agriculture.

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COLLEGE OF TECHNOLOGY

I. English	4 units
Foreign Languages	— — (Two or more units in one language recommended but not required)
Algebra	2 units
Trigonometry*	$\frac{1}{2}$ unit or its equivalent
Plane Geometry	1 unit
Chemistry or Physics	1 unit
History or Social Science	1 unit
Electives	$6\frac{1}{2}$ -7 units
<hr/>	
Total	16 units

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

*Trigonometry is not required of candidates for the two-year engineering technology programs.

II. Two-Year Engineering Technology Division:

Candidates for admission to one of the Two-Year Engineering Technology Programs must have completed the same courses as required of the four-year degree candidates with the exception of trigonometry. Also, candidates are required to complete the C.E.E.B. Scholastic Aptitude Test and three Achievement Tests (English Composition, Level I-Math., and Physics or Chemistry).

AUGUSTA CAMPUS

Two-year associate degree programs in Liberal Studies and Administration (options: A/Business and B/Public) are offered at the Augusta campus. Students interested in either program are urged to contact Mr. Lloyd Jewett, director of the Augusta campus. Accepted candidates will be selected from applicants who have graduated from high school with acceptable records and recommendations. Applications are filed at our Orono office.

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.

ADMISSION

ADMISSION TO THE CONTINUING EDUCATION COURSES ADMINISTERED BY THE UNIVERSITY OF MAINE EXTENSION SERVICE

The University of Maine has undertaken a broadened program of adult education at various locations throughout Maine. This program includes credit courses, non-credit courses, short courses, and conferences as appropriate.

The categories of admission under the programs in Continuing Education are:

1. Degree Program Admission—Regular admission requirements are in effect for both undergraduate and graduate degree applicants. Applications should be filed with the Director of Admissions (undergraduate degree status) or with the Dean of the Graduate Division.
2. Deferred Degree Program—An undergraduate-trial program with a specific 32-hour program planned to give a candidate an opportunity to prove his capabilities to continue as a degree candidate.
3. Special Student Admission—For students who are not candidates for degree credit, but who are qualified, according to University standards and regulations, to enroll in selected courses.

Information and application forms may be obtained by writing the Associate Director, Continuing Education, Merrill Hall, University of Maine, Orono, Maine 04473; or Assistant Director, C.E.D., Payson Smith Hall, University of Maine, 96 Falmouth Street, Portland, Maine 04103.

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 an early application with the Director of Admissions—at least six months prior to the semester he plans to enter. This request must include a statement of the names and addresses of all high schools, preparatory 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 junior colleges, colleges, and universities to the Director of Admission, Wingate Hall, University of Maine, Orono, Maine 04473.

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

UNIVERSITY OF MAINE

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.

Information may be obtained from the New England Board of Higher Education, 31 Church Street, Winchester, Mass., or from the admission offices of the various New England state universities.

Financial Information

STUDENT EXPENSES

The student expenses outlined in the following paragraphs are the anticipated charges for the academic year 1967-68. 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	\$1,000.00

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	\$500.00
Board and Room (University Dormitories)	425.00	425.00
	<hr/> 625.00	<hr/> 925.00

Textbooks, personal laboratory equipment, etc., are not furnished by the University and are estimated to cost from \$90 to \$160 per year.

The activities of each of the four undergraduate classes are supported from dues paid by individual members. These dues, which range from \$5 to \$9 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 \$25 for 12 months following fall registration. The insurance is routinely charged to every fully-enrolled student on the fall semester bill; if it is not desired the student must so notify the Treasurer's Office at the time of registration.

Matriculation Fee—This fee of \$25 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 rooms 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 sections on University of Maine in Portland and University of Maine in Augusta for charges at those campuses.

UNIVERSITY OF MAINE

Fall Semester

- ½ the total semester charge at registration
- ¼ the total semester charge on October 1
- ¼ the total semester charge on November 1
- ¼ the total semester charge on December 1

Spring Semester

- ½ the total semester charge at registration
- ¼ the total semester charge on March 1
- ¼ the total semester charge on April 1
- ¼ the total semester charge on May 1

For the 1967-68 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. This installment program is not available for charges totalling less than \$180 for the semester. The privilege of using this program will be withdrawn if payments are not made promptly as scheduled.

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	\$500.00
Room and Board (University Dormitories)*	425.00	425.00
Freshman Orientation Period**	18.00	18.00
Matriculation Fee	25.00	25.00
	<hr/>	<hr/>
	\$668.00	\$968.00

*See statement under Room and Board.

**Maximum (may vary according to room and board provided)

For freshmen who do not room and board in University dormitories, the charge is \$243.00 for residents of Maine and \$543.00 for non-residents.

For the graduate students and students classified as "special," and for those registered for less than a normal program, the rate will be \$20 (\$50 for non-residents) per semester hour up to and including 10 semester hours. *Full tuition is charged all students registered for 10 or more semester hours.*

All fully-enrolled students may avail themselves of the services provided by the University Health Service. Students registered for 10 or more semester hours are admitted without charge to athletic events and the Concert Series. Generally students registered for less than 10 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 semes-

FINANCIAL INFORMATION

ter, 1967, is \$425.00. The charge for room and board in Hannibal Hamlin Hall for the fall semester, 1967, is \$375.00.

In the cooperative dormitories 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 vacation periods.

Miscellaneous—A fee of \$10 is charged a student who registers after the prescribed day of registration.

The prescribed gymnasium uniform for women costs approximately \$25. Information regarding the uniform and where it may be purchased will be sent to incoming students during the summer.

Tuition fees for work taken in the Continuing Education Division are at the rate of \$20 per credit hour, except as indicated otherwise in the Continuing Education bulletin.

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

Deposits—A deposit of \$25 is due when the applicant is notified of acceptance by the Director of Admissions. If a dormitory room is required, an additional \$25 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, which is a non-refundable charge.)

If a freshman, transfer, or readmission applicant notifies the Director of Admissions of withdrawal prior to June 1, the deposits will be refunded. *The deposits are forfeited in case of withdrawal after June 1.*

All upperclassmen desiring to live in a dormitory must pay a room deposit of \$25 during the spring in order to assure that rooms will be reserved for them in the fall. This deposit will be deducted from the fall semester bill. If it is found that dormitory accommodations are not desired the deposit will be refunded if the Housing Office is notified by August 1. If notice is not given by that date the deposit will be forfeited.

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 will receive refunds correlated with the Installment Program. Tuition and room payment refunds will be paid as follows:

Fall Semester

Withdrawal before October	1 — ½ of semester charge
before November	1 — ⅓ of semester charge
before December	1 — ⅙ of semester charge

UNIVERSITY OF MAINE

Spring Semester

Withdrawal before March	1 — ½ of semester charge
before April	1 — ⅓ of semester charge
before May	1 — ¼ of semester charge

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 (near Princeton, Maine) described in the catalog section on Forestry are:

	Resident	Non-Resident
Tuition	\$160.00	\$400.00

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 any other relevant information. In general, in order to be considered eligible to register as a resident a student must have established a bona fide year-round residence in the State of Maine with the intention of continuing to maintain it indefinitely. The tuition status as determined at the time of initial enrollment normally prevails as long as the student remains in attendance. Members of the Armed Forces and their dependents are normally granted in-state tuition rates during the period when they are on active duty within the State of Maine.

Subject to the provisions of the preceding paragraph, the residence of an unmarried minor follows that of the parents or legally appointed guardian. The bona fide year-round residence of the father, if living, otherwise that of the mother, is the residence of such a minor; but if the father and the mother have separate places of residence, the minor takes the residence of the parent with whom he lives or to whom he has been assigned by court order. If neither of the parents is living the unmarried minor takes the residence of his legally appointed guardian.

Subject to the provisions of the first paragraph above, an adult student, defined for purposes of these rules as one who is either married or 21 years of age or older, will be classified as a resident of Maine if (1) his parents are residents of Maine and he has not acquired residence in another state; or (2) being at least 21 years old, he has resided in Maine for at least six consecutive months immediately preceding his initial admission to the program of his choice.

The residence of a wife follows that of her husband; however, a woman student who already has a resident status by reason of the residence of her parents, or by reason of her own residence where she is at least 21 years old, may continue as a resident student although she marries a nonresident.

In all cases the University reserves the right to make the final decision as to resident status for tuition purposes.

LOAN FUNDS

Communications

Communications with reference to financial affairs of students should be addressed to the Treasurer of the University of Maine. Matters concerning all types of financial assistance should be referred to the Director of Student Aid.

STUDENT AID

The Student Aid Program is designed to help students with financial problems who have shown themselves 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 for all campuses of the University 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); 5) the Work-Study Program of the Economic Opportunity Act; 6) and Educational Opportunity grants of the Higher Education Act of 1965.

A complete description of the many facets of the program of financial assistance to students at the University has been published in a separate bulletin, entitled Financial Aid. Entering students may obtain a copy by writing to the Director of Admissions, Wingate Hall. Students currently in attendance at any of the University campuses, or interested parents, may obtain a copy by writing to the Office of Student Aid. The publication also presents the latest available information on the federal student assistance programs participated in by the University. All programs of financial assistance are equally applicable to each campus of the University if the student is approved and registered in a degree-type program.

The University administers and/or holds the following loan, scholarship and prize funds. A complete description of each fund is given in the special Financial Aid bulletin. Scholarship funds for the Graduate School are listed in the Graduate School Catalog.

LOAN FUNDS

The A.A.U.W. Loan Fund
The Jacob Agger Loan Fund
The American Institute of Electrical Engineers Loan Fund
The Androscoggin County Alumni Loan Fund
The Bangor Business and Professional Women's Loan Fund
The William E. Barrows Loan Fund
The Henry N. Berry III Law Student Loan Fund

The O. Merrill Bixby Loan Fund
The Boston Alumnae Fund
The Carleton Orchard Fund
The Gordon L. Chapman Loan Fund
The Class of 1907 Loan Fund
The Class of 1913 Loan Fund
The Class of 1914 Loan Fund
The Class of 1926 Loan Fund
The Class of 1931 Loan Fund
The Class of 1933 Loan Fund
The Class of 1935 Loan Fund
The Class of 1936 Loan Fund
The Class of 1939 Loan Fund

UNIVERSITY OF MAINE

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The Class of 1933 Loan Fund
The Class of 1935 Loan Fund
The Class of 1936 Loan Fund
The Class of 1939 Loan Fund

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The Class of 1941 Memorial Fund
The Class of 1944 Loan Fund
The Frederick W. Conlogue Loan Fund
The Cumberland County Alumni Association Student Loan Fund
The Charles D. Darling Jr. Memorial Fund
The George P. Davenport Student Loan Fund
The Delta Chi Alpha Loan Fund
The Delta Delta Delta Loan Fund
The Robert W. DeWolfe Fund
The Drummond Fund
The Esther Eayres Chapter, Daughters of American Revolution Loan Fund
Harry A. Emery (Maine 1906) Fund
The Thomas G. Feltman-John E. Field, Jr. Loan Fund
The John Fils Memorial Fund
The Maine State Florists Association Loan Fund
The Ralph E. Fraser Loan Fund
The General Loan Fund
The Henry Fairfield Hamilton Loan Fund
The J. Dudley Harrington Loan Fund
The Maynard A. Hincks Memorial Fund
The Chester A. Jenkins Loan Fund
The Kappa Psi Loan Fund
The John Fitzgerald Kennedy Memorial Loan Fund
The Francis Gregory King Memorial Loan Fund
The Kittredge Fund
The H. Walter Leavitt Loan Fund
A.D.T. Libby Loan Fund
The Philip W. Lown Loan Fund
The Maine Alumni Association of Boston Loan Fund
The Maine Alumni Teachers Association Loan Fund
The Maine Association of Engineers Loan Fund
The Maine Campus Fund
The Mrs. Maine Club Loan Fund
The Leslie E. Norwood Loan Fund
The Charles H. Payson Loan Fund

The Phi Eta Kappa Loan Fund
The Pulp and Paper Foundation Loan Fund
The Schiro Family Loan Fund
The Senior Skull Loan Fund
The Sigma Chi Loan Fund
The Mary S. Snow Memorial Loan Fund
The Southern New Hampshire Alumni Loan Fund
The Bertha Joy Thompson Loan Fund
The George W. Treat Fund
The Ernest A. Turner Loan Fund
The Diong Diek Uong Loan Fund
The Wheelden-Bassett Fund
The Frances D. Young Loan Fund

SCHOLARSHIPS

Trustee Undergraduate Tuition Scholarships

The Merritt Caldwell Fernald Scholarship
The James Stacy Stevens Scholarship
The Harold Sherburne Boardman Scholarship
The Leon Stephen Merrill Scholarship
The Charles Davidson Scholarship
The College of Business Administration Scholarship
The University of Maine in Portland Scholarship
The University of Maine School of Law Scholarship
The John Homer Huddilston Scholarship
The Rising Lake Morrow Scholarship
The Maine State Colleges Scholarships
The University Indian Scholarships
The University Scholarships
The Foreign Student Scholarships
The Science Scholarships

Endowed Scholarships

Albert E. Anderson, class of 1905 (Law) Fund
The Appreciation Scholarship Fund

SCHOLARSHIPS

The Robert I. Ashman Fund
The Bancroft and Martin Scholarship Fund
The Bangor Daily News Scholarship Fund
The Harold H. Beverage Award Fund
William Bingham, 2nd, Scholarships
William Bingham, 2nd, Scholarships in Honor of Payson Smith
The William E. Bowler Scholarship Fund
The Geraldine Brewster Scholarship Endowment Fund
The Edgar W. Brigham Scholarship Fund
The Adelaide G. Bunker Educational Fund
The Class of 1905 Scholarship
The Class of 1940 Student Emergency Fund
The Class of 1943 Student Aid Fund
The Class of 1954 Scholarship
The Class of 1957 Scholarship
The Class of 1961 Scholarship
The Albert D. Conley Fund
The Donald P. Corbett Fund
The Walter Joseph Creamer Fund
The Oliver Crosby Scholarship Fund
The Harold R. Cummings Scholarship Fund
The Mabel and Mary Daveis Fund
The Frank Conant Day Fund
The Delta Delta Delta-Frances Kent Murray Scholarship
The C. Walton Deckelman Memorial Fund
The Arthur Lowell Deering Fund
The Charles Alexius Dickinson Scholarship Fund
The Charles and Helen Eastman Scholarship Fund
The Lloyd H. and Evelyn E. Elliott Scholarship Fund
The Joseph and Mollie Emple Scholarship Fund
The Rachel W. Engel Scholarship Fund
The Harry H. and Ida E. Epstein Scholarship Fund

The Fred S. N. Erskine Scholarship Fund
The Joseph Rider Farrington Scholarship
The Edward Files Scholarship Fund
The Deacon Ephraim Flint Scholarship Fund
The Fort Kent Future Farmers Scholarship Fund
The Ella Somerville Foster Scholarship
The Salomie and Eulalia Gardner Fund
The Mary French Geyer Scholarship Fund
The Fred H. and Alice V. Gould Scholarship Fund
The Henry L. Griffin Scholarship Fund
The Eugene Hale Scholarship Fund
The Helen C. Hardison Scholarship Fund
The Alonzo J. Harriman Scholarship Fund
The Philip R. Hathorne Scholarship
The Helen B. Hemingway Memorial Fund
The Lillie C. Hemphill Scholarship Fund
The Benjamin Higer Memorial Scholarship Fund
The Frederick W. and Marianne Hill Scholarships
The Linnie P. Hills Fund
The David Dunlap Holmes Scholarship Fund
The Hovey Memorial Scholarships
The Will R. Howard Scholarship Fund
The Carrol C. Jones Scholarship
The Max Kagan Family Foundation Scholarship Fund
The Kidder Scholarship
The Charles E. Knowlton Fund
The Mac and Lillian Lacritz Scholarship Fund
The Fred L. Lamoreau Scholarship Fund

UNIVERSITY OF MAINE

The Ralph W. Leavitt, Sr., Scholarship Fund
The Limestone Future Farmers Scholarship Fund
The Maine Extension Association Scholarship Fund
The Thomas G. Mangan Scholarship Fund
The Marguerite E. McQuaide Scholarship Fund
The Rebecca and Benjamin Mendelson Memorial Scholarship Fund
The Marion Farrington Merritt Memorial Fund
The Philip I. Milliken Fund
The Alma Taylor Milne Fund
The Calvin H. Nealley Scholarships
The Gilbert Crosby Paine Scholarship
The Edward E. Palmer Scholarship
The Perley Burnham Palmer Scholarship Fund
The William Emery Parker Scholarship
The Clifford Spruance Patch Scholarship Fund
The Jean Spruance Patch Fund
The William N. Patten Scholarship Fund
The Charles H. Payson Scholarships
The Ralph H. Pearson Fund
The Stanley Plummer Scholarship
The Portland Junior College Fund
The Frank P. Preti Scholarship Fund
The Frederick G. Quincy Scholarship Fund
The Henri Raffy Memorial Fund
The Samuel and Pauline Rudman Scholarship Fund
The Herbert Sargent Student Aid Fund
The Lila and Vernon Segal Fund
The Arthur E. Silver Scholarship Fund
The Leroy C. Smith Scholarship Fund
The Mary S. Snow Memorial Fund
The Frank Elwyn Southard Fund
The Anne E. Stodder Scholarship Fund

The James and Sarah Striar Scholarship Fund
The Bertha Joy Thompson Scholarship Fund
The James E. Totman Fund
The Nathan Pratt Towne Scholarship Fund
The University Store Company Scholarship Fund
The Mary Maxfield Valentine Memorial Scholarship
The Sergeant Walter McClymonds Wales Scholarship Fund
The Donald S. Walker Scholarship Fund
The Charles P. Weston Scholarship Fund
The Mott F. Wilson Scholarship Fund
The Gerald E. Wing Scholarship Fund
The Julia E. Winslow Scholarship Fund
The Charles F. Woodman Fund

Annual Scholarships

All-Maine Women Scholarship
The American Can Company Foundation Scholarship
The Army ROTC Scholarships
The Associated Contractors of Maine Scholarship
The Associated Women Students Scholarship
The Elizabeth Abbott Balentine Scholarships
The Lucius D. Barrows Scholarship
The Bates and Rogers Foundation Scholarships
Bath Iron Works Corporation Scholarships
Carl Beyer Law Student Grant
The Boston Paper Trade Association Scholarships
The Louis Calder Foundation Scholarships
The Class of 1960 Scholarship
The Charles M. Cox Trust Fund Scholarship

SCHOLARSHIPS

- The George P. Davenport Scholarship Fund
- The Depositors Trust Foundation Scholarships
- The Geigy Dyestuffs Scholarship
- The General Foods Fund Scholarships
- The General Motors Scholarship
- The Graduate "M" Club Scholarships
- The Stanley D. Gray Scholarship Fund
- The Great Atlantic and Pacific Tea Company Scholarship
- The Martin Hagopian Scholarship
- The Homelite Forestry Scholarship
- The Charles H. Hood Dairy Foundation Scholarships
- Mabel G. Kennedy Nursing Grant
- Insurance Women of Southern Maine Scholarship
- Rolland Irish Business Administration Grant
- The Knox County Fish and Game Association Scholarship
- The Maine Consumer Finance Association Tuition Scholarship
- The Maine Farmer and Homemaker Scholarship
- The Maine Hoo-Hoo Club Scholarship
- The Maine Managers' Scholarship
- The Maine Poultry Industry Association Scholarship
- The Maine Sub-Aqua Club, Inc. Scholarship
- The Maine Vegetable Growers' Association Scholarship
- The National Plant Food Institute Scholarship
- The David M. Nelson Scholarship
- New York Mercantile Exchange Scholarship
- The Northeastern Division Paper Industry Management Association Scholarship
- The Ober Award
- The Velma K. Oliver Phi Kappa Phi Scholarship
- The Paper Trade Journal Scholarship
- The Penick and Ford Scholarship in Pulp and Paper Technology
- The Pennsylvania, New Jersey, and Delaware Division of the Paper Industry Management Association Annual Scholarship Award
- The Barbara Bosworth Scholarship of Phi Mu
- The Pi Beta Phi Scholarship
- The PIMA Award
- The Pulp and Paper Foundation Scholarships
- The Ralston Purina Scholarship
- The Retail Lumber Dealers Association of Maine Scholarship
- The Rice and Miller Company Scholarship Fund
- The Harrison L. Richardson Scholarship
- The David R. Rittenhouse Class of 1968 Scholarships
- The Sears-Roebuck Agricultural Foundation Scholarships
- The Senior Alumni Association Scholarships
- The Senior Skull Scholarship
- The Simmons Foundation Student Grant Program
- The Carl R. and Laura Smith Scholarship
- The Sophomore Owl Scholarship
- The Lucy Stone League Inc. Scholarship
- The Charles Irwin Travelli Scholarship Fund
- The Joel J. and Annie H. Walker Scholarships
- The Stanley M. Wallace Scholarship
- A Western Electric Company Scholarship
- The George D. Woodward Accounting Grant
- The Beatrice Batchelder Wright Scholarship
- The York County Poultry Improvement Association Scholarship
- The Zonta Club of Bangor Scholarship
- The Zonta Club of Portland Scholarship

UNIVERSITY OF MAINE

Alumni Association Scholarships

The Androscoggin Valley Alumnae Scholarship
The Black Bear Club of Rhode Island Scholarship
The Eastern Pennsylvania Alumni Association Scholarship
The Northern Connecticut Alumni Association Scholarship
The North Shore (Massachusetts) University of Maine Alumni Association Scholarship
The Portland Alumnae Association Scholarship
The Southern Kennebec Maine Alumni Association Scholarship
The Southern Penobscot Alumnae Association Scholarship
The Western Pennsylvania Alumni Association Scholarship
The Worcester County, Massachusetts, Alumni Association Scholarship

UNIVERSITY OF MAINE FOUNDATION FUNDS

The Archie A. Adams Scholarship Fund
The Maria S. Appleton Fund
The Hazen H. Ayer Scholarship Fund
The Dr. Tibor Jalsoviczky Bebek Memorial Fund
The Hosea B. Buck Memorial Fund
Buxton-Hollis Community Hospital Fund, Inc.
The Ava H. Chadbourne Fund
The James W. Clarkson Fund
The Class of 1906 Fund
The Class of 1909 Fund
The Class of 1910 Trust Fund
The Class of 1911 Fund
The Class of 1912 Fund
The Class of 1915 Student Aid Fund
The Class of 1916 Scholarship Fund
The Class of 1917 Scholarship
The Class of 1919 Fund
The Class of 1920 Fund
The Class of 1921 Fund
The Class of 1923 Fund
The Class of 1924 Fund
The Class of 1925 Fund
The Class of 1927 Fund
The Class of 1928 Fund
The Class of 1929 Fund
The Class of 1930 Fund
The Class of 1937 Fund
The Class of 1953 Grant-in-Aid Fund
The Class of 1958 Scholarship
The Charles E. Crossland Fund
The C. Parker Crowell Fund
The Eugene Danforth Scholarship Fund
The Emma Jane Eaton Fund
Clarissa P. Farrar Scholarship Fund (Class of 1920)
The James Adrian Gannett Scholarship
The Charles E. Gilbert Scholarship
The George P. Gould and Antoinette Gould Torrey Fund
The Pearl R. Graffam Scholarship Fund
The Lucy F. Griffin Fund
The George W. Hamblen Fund
The Robert C. Hamlet Fund
The George O. Hamlin Scholarship Fund
The James Norris Hart Scholarships
The Arthur A. Hauck Fund
The President Hauck Scholarship Fund
The Thelma Louise Kellogg Fund
The Benjamin C. Kent Fund
The Harriet S. Kilby Scholarship
The Harland A. Ladd Scholarship Fund
The Nathan Levitan Scholarship Fund
The Alfred B. Lingley Scholarship Fund
The George E. Lord Scholarship Fund
The Harold P. Marsh Scholarship Fund
The Frank P. Morison Scholarship Fund
The William A. Murray Fund
The Greater New York Alumni Association Scholarship

SCHOLARSHIPS

The Penobscot Valley Alumni Association Scholarship Fund
The Harold M. Pierce Fund
The Wesley C. Plumer Scholarship Fund
The John Reed '89 Scholarship Fund
The Rhode Island Alumni Association Scholarship
The Senior Alumni Scholarship Fund
The Ben Sklar Scholarship Fund
The Anna Strickland Fund
The William Jordan Sweetser Fund
The Chestina Blaisdell Urann Fund
The Viles Family Scholarship Fund
The Alburney E. Webber, Jr., Scholarship Fund
The Ralph Whittier Fund
The Dorothy H. and Arthur O. Willey Fund

University of Maine Pulp and Paper Foundation Funds

The Knud Dahl Scholarship Fund
The Samuel Dauman Scholarship Fund
The Frederick H. Frost Fund
The Paul Hodgdon Scholarship Fund
The Everett P. Ingalls Fund
The Manuel C. McDonald Scholarship Fund
The J. Larcom Ober Scholarship Fund
The Benjamin L. Sheldon Fund
The Ralph A. Wilkins Scholarship Fund

PRIZES

Endowed Prizes and Awards

The Prize of the Class of 1873
The Milton Ellis Prize
The Claude Dewing Graton Prize

The Henry L. Griffin Prize in English Composition
The Maine Hardwood Association Award
The John M. Oak Scholarship Prizes
The John Ferdinand Steinmetz Memorial Award

Annual Prizes and Awards

The Chi Omega Prize
The Dorothy Stone Clark Memorial Prize
The Frank H. Dalton Award in Bacteriology
The Delta Zeta Prize in English
The Freshman Algebra Prizes
The Helen A. Lengyel Award
The Maine Association of Engineers Honor Award
The Carl Whitcomb Meinecke Award
The James Gordon Selwood Scholarships

The Panhellenic Scholarship Award
The Sigma Chi Foundation Scholarship Cup
The Interfraternity Singing Contest Trophy
The Charles Rice Cup
The Intramural Plaques

The Washington Alumni Association Watch
The Portland Alumnae Memorial Watch



Enjoying the winter sun in Little Hall lobby

COLLEGE OF ARTS AND SCIENCES

JOHN J. NOLDE, DEAN



*Spring class outside Stevens Hall, home of
the College of Arts and Sciences*

College of Arts and Sciences

The College of Arts and Sciences provides opportunities for students to acquire knowledge and skill in a variety of fields wherein a cultural emphasis is prominent.

The college is divided into 15 departments 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. Some students 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 pre-professional and vocational fields (see the section on Specimen Curricula). Considerable flexibility is permitted the student within all these programs.

The college's major objective is 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 sympathetic 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 37). 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 accredited institution for which transfer credit is asked rests with the Director of Admissions and the Dean.

COLLEGE OF ARTS AND SCIENCES

Graduation Requirements—The work of the College of Arts and Sciences leads to the degree of bachelor of arts (B.A.) and bachelor of science in nursing (B.S.). All students are required to complete 128 degree 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 Life Sciences and Agriculture may similarly transfer and be graduated as majors in the Department of Zoology.

The First Two Years—The emphasis in the first two years of the student's college course is on basic courses in varied fields. The objective is twofold: first, to enable the student to acquire wide knowledge; and second, to prepare him for advanced study in a major subject or field.

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. 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, Freshman Composition and Sh 1, Public Speaking.

II. **FOREIGN LANGUAGE.** All students except those in the School of Nursing are required to complete Intermediate French, German, Russian, Spanish, Greek, or Latin, or to pass a qualifying test in one of these languages. The intermediate course will be taken in the freshman year by those students who continue a language taken for at least two 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 minimum of two year-courses in social science is required of all students. 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). During the first two years, students who have completed such a course in high school should select two of the following year-courses: Hy 3. 4, United States History, Hy 5. 6, History of Western Europe, My 1/2, Modern Society, Ec 1/2, Principles of Economics, Pol 1/2, Introduction to Government, Ay 1/2, Introduction to Anthropology, or Sy 3/4, Introduction to Sociology. Py 1/2, General Psychology, may be taken in the sophomore year to satisfy a year

UNIVERSITY OF MAINE

of the social science requirement. Hy 3. 4 and Hy 5. 6 may not be used in combination to satisfy this requirement, and also Ay 1/2 and Sy 3/4 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
 - Bt 1, General Botany, and Bt 2, The Plant Kingdom
 - Ch 1/2, General Chemistry
 - Gy 1/2, Physical and Historical 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 3, Bt 1, Animal Biology and Botany
- b. Semester courses in descriptive science:
 - As 9, Descriptive Astronomy
 - Gy 1a, Descriptive Geology, Physical
 - Gy 2a, Descriptive Geology, Historical
 - Ms 19, Principles of Statistical Inference
 - Ps 3, Descriptive Physics

V. HUMANITIES. Sophomores 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, Honors Group Tutorial for those students registered in the Honors Program.

VI. PHYSICAL EDUCATION. All students, except veterans, are required to take and pass one year of physical education.

For those students electing Basic Military Science, the maximum registration is 17 credit hours *exclusive* of this subject; for others, the maximum registration is 17 hours. The minimum is 14 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 who give each student individual guidance in selecting courses and give advice on personal problems.

The Last Two Years—On the completion of 56 degree hours, the student, in

COLLEGE OF ARTS AND SCIENCES

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 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 acceptable for a major is set by the department. The maximum number of hours a student may count for degree credit from any one department is 48, including the credit derived from the introductory course in that department. In general, it is assumed that upperclass students will take advanced courses.

Selected students may take advanced courses in Military Science and Tactics during their junior and senior years, for which a maximum of 12 credit hours may be received.

Comprehensive Examinations—Some departments of the college require comprehensive examinations of their senior major students. Certain departments also give basic preparatory comprehensives in the spring semester of the junior year. The comprehensive examination provides 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 designed to develop perspective and to encourage organization of materials, 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.

Foreign Study—The college encourages students in good academic standing to spend a year (preferably the junior year) in study at selected foreign universities. Depending on the foreign institution attended and the type of courses taken, academic credit for such study will be determined by the dean and the head of the student's major department upon completion of the program. While evidence of satisfactory performance in the form of grades, certificates, etc., is required to obtain degree credit, such grades will not be used in computing the student's accumulative average at the University of Maine.

Honors Program—These tutorial courses encourage exceptional ability by affording special opportunities for its exercise and to reward high achievement with appropriate recognition. The program stimulates 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 (Ed B2, Ed B3, Ed B4, one methods course and student teaching) meets the professional subject requirements for the General Secondary Provisional Certificate, which must be renewed after five years. Student teaching is required for full certification.

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In addition to the 18 hours in professional courses, completion of a teaching major of 30 hours in one academic subject commonly taught in secondary schools is required. Candidates for a certificate are also expected to complete at least 18 hours in a second teaching field.

An alternate route to certification is possible by having 50 hours in a teaching area where at least three related academic subjects are represented.

Among the combinations of subject fields expected of prospective teachers are mathematics and science, English and history, English and French, English and Latin, history and Latin, history and French, French and Latin, 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 12 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 63) 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 Curriculum—This program is designed to train men and women for governmental service in town 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 deans 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 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.

Premedical and Predental Options—Medical and dental colleges in general desire students who are not only well prepared in the sciences and mathematics but who are also broadly educated. To the first point they require certain courses in biology, chemistry, mathematics and physics; to the second they recommend a liberal background in the humanities and the social sciences.

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Although most premedical and predental students major in a science, they may major in any of the non-science departments according to their interests. The student would be advised, however, to take a program during the first two years that will allow the greatest possible freedom of choice in later selecting an undergraduate major. The freshman year specimen curricula given for majors in chemistry, physics or zoology will leave many options open. Those who major in a non-science department and meet only the minimum science and mathematics requirements should achieve superior grades in order to demonstrate their proficiency in these critical subjects.

In order to achieve a uniformly strong program, all premedical and pre dental students are advised to take the following courses, regardless of their major:

		Subject	Credit hours
*Ch	1,2	General Chemistry	8
Ch	140	Quantitative Analysis	4
*Ch	151,152	Organic Chemistry Lecture	6
*Ch	161,162	Organic Chemistry Laboratory	4
Bc	161	Physiology Chemistry	4
*Ms	1,3	Trigonometry, Algebra	4
*Ms	12	Analytic Geometry and Calculus	4
*Ps	1a,2a		
	(or Ps 1,2)	General Physics	8
*Zo	3,4	Animal Biology	8
Zo	133	Comparative Anatomy	4
Zo	136	Vertebrate Embryology	4
Zo	162	Principles of Genetics	3

* Required essentially by all medical schools.

Students should take speech, two years of a foreign language, preferably German, and psychology. They must also meet the special requirements of the college and the department in which they major.

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 FOR MEDICAL TECHNOLOGY

Freshman Year

FALL SEMESTER				SPRING SEMESTER			
			Hours				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
				Sh	1	Public Speaking	2
†Zo	3	Animal Biology	4	†Zo	4	Animal Biology	4
		Modern Language	3-4			Modern Language	3-4
			14-15				16-17

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Sophomore Year

Hours				Hours			
†Bc	1	Organic Chemistry	4	†Bc	2	Biochemistry	4
†Ps	3	Descr. Physics	3	Py	2	General Psychology	3
Py	1	General Psychology	3	†Zo	158	Animal Parasitology	4
†Zo	151	Histology	4			Modern Language or	
		Modern Language or				Social Science	3
		Social Science	3			Elective	3
<hr/>				<hr/>			
17				17			

Junior Year

Hours				Hours			
†By	27	General Bacteriology	5	†By	52	Pathogenic Bacteriology	4
Eh	15	Masterpieces of Literature	3	†Ch	140	Quantitative Analysis	4
Ms	1	Trigonometry	2	Eh	16	Masterpieces of Literature	3
		Social Science or		Ms	3	College Algebra	2
		Electives	3-6			Social Science or	
						Electives	3
<hr/>				<hr/>			
16				16			

*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.

	Weeks	No. of credits
†Microbiology (Bacteriology, Parasitology, Mycology)	12	7
†Clinical Biochemistry	12	7
†Clinical Microscopy (urine, feces, spinal fluid)	4	3
†Hematology	11	6
†Blood Bank Procedures	4	3
†Serology	4	3
†Histologic Technique	4	3
†Electrocardiography	1	0
Total	51	32

* 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.

† These courses, or their equivalents, are required for the major in medical technology.

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SPECIMEN CURRICULUM IN PUBLIC MANAGEMENT

Leading to
Degree of B.A. in Public Management

Freshman Year

FALL SEMESTER			SPRING SEMESTER		
		Hours			Hours
Eg	1	Engineering Drawing	Eg	12	Forestry Drawing
Eh	1	Freshman Composition	Ms	6	Elements of College Math
Ms	5	Elements of College Math	Pe	2	Physical Education
Pe	1	Physical Education	Pol	2	Introduction to Government
Pol	1	Introduction to Government			Modern Language
Sh	1	Public Speaking			Elective
		Modern Language			
		3-4			
		16-17			13-15

Sophomore Year

		Hours			Hours
Ce	5	Surveying	Ce	10	Curves and Earthwork
Ch	1	General Chemistry	Ch	2	General Chemistry
Pol	133	The American City	Pol	134	Municipal Administration
Sy	3	Introduction to Sociology	Sy	4	Introduction to Sociology
		Modern Language			Modern Language
		3			3
		16			15

Junior Year

		Hours			Hours
Ba	9	Principles of Accounting	Ba	10	Principles of Accounting
Ec	1	Principles of Economics	Ec	2	Principles of Economics
Pol	7	Maine Government	Ms	19	Statistics
Pol	144	Public Relations	Pol	8	Maine Government
Sy	126	Sociology of Urban Life	Pol	200	City and Regional Planning
		Humanities			Humanities
		3			3
		15			15

Senior Year

		Hours			Hours
Ce	29	Highway Engineering	Ce	30	Transportation Engineering
Ce	31	Sanitary Engineering	Pol	152	Administrative Law
Pol	151	Public Administration	Pol	184	Constitutional Law
Pol	183	Constitutional Law	Sw	151	Social Welfare
Sw	150	Social Welfare	Pol	298	Seminar
		3			2-3
		15			13-14

NOTE: A summer intern program is required for the degree (see Pol 195).

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SPECIMEN CURRICULUM FOR ZOOLOGY, PREMEDICAL, AND PREDENTAL MAJORS

Freshman Year

FALL SEMESTER			Hours	SPRING SEMESTER			Hours
Eh	1	Freshman Composition	3	Eh	2	Freshman Composition	3
*Gm	1	Elementary German	4	Gm	2	Elementary German	4
Ms	1	Trigonometry	2	Ms	12	Anal. Geometry and Calculus	4
Ms	3	College Algebra	2	My	2	Modern Society	3
My	1	Modern Society	3	Pe	2	Physical Education	0
Pe	1	Physical Education	0	Zo	4	Animal Biology	4
Zo	3	Animal Biology	4				
			18				18

Sophomore Year

			Hours				Hours
Ch	1	General Chemistry	4	Ch	2	General Chemistry	4
Gm	3	Intermediate German	3	Gm	14	Scientific German	3
Py	1	General Psychology	3	Py	2	General Psychology	3
Sh	1	Public Speaking	2	Zo	136	Developmental Biology	4
Zo	133	Comparative Anatomy	4	Ms	19	Statistics	3
			16				17

Junior Year

			Hours				Hours
Ch	151	Organic Chemistry	3	Ch	152	Organic Chemistry	3
Ch	161	Organic Chemistry Lab	2	Ch	162	Organic Chemistry Lab	2
Ps	1a	General Physics	4	Ps	2a	General Physics	4
Zo	162	Princ. of Genetics	3			Humanities	3
		Humanities	3			Elective	4-6
		Elective	2-3				
			17-18				16-18

Senior Year

			Hours				Hours
Zo	151	Histology	4	Ch	140	Quantitative Analysis	4
Zo	177	Animal Physiology	4	Zo	178	General Physiology	4
Zo	195	Zoology Seminar	1	Zo	196	Zoology Seminar	1
		Elective	6-8			Elective	6-8
			15-17				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 in the freshman year.

COURSES OF INSTRUCTION

Courses numbered 1-99 are for undergraduates. Courses numbered 100-199 are for undergraduates but may be taken for graduate credit with approval of the student's adviser. Courses numbered 200-299 are for graduate credit but may be taken by undergraduates with approval of the student's adviser. Courses numbered 300-399 are for graduates.

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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 slant 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 1967-68 and alternate years are indicated by the sign (†) placed before the number of the course; courses offered in 1968-69 and alternate years are indicated by the sign (§) placed before the number of the course.

ART (At)

PROFESSOR HARTGEN; MR. DAVID DECKER, MR. RONALD GHIZ, MR. MICHAEL LEWIS

As a division of the College of Arts and Sciences, the curriculum in Art is basically liberal arts, with required courses in the sciences, social studies, languages and humanities dispersed within the student's courses in art appreciation, history, aesthetics and studio. The art program offers a balance between creative studio experience in drawing, painting, graphics and crafts on the one hand, and lecture and seminar classes in history, criticism and appreciation on the other. Both directions of study may subsequently lead the student toward specialized work in the fine arts, industrial design, advertising, illustration, etc.; or to an advanced degree in research, history, or criticism. No advanced degrees in art are offered at this time. The department designates a minimum of 36 hours and a maximum of 48 hours within its program for the bachelor of arts degree.

The Department of Art, in Carnegie Hall, is adequately equipped with a large collection of slides, reproductions, artifacts and original works of art, all of which are available to the art student. Also, some six or seven exhibitions of original art, in all media, styles and periods, are brought to the campus each month and displayed in the University's several art galleries. These shows offer the art major a first-hand opportunity to study and evaluate important masterpieces.

Majors in art education follow a curriculum developed in cooperation with the College of Education, leading to the bachelor of science degree in education. Preparation for elementary and secondary level teaching of art is offered here. Registration is in the College of Education.

SPECIMEN CURRICULUM FOR ART

Freshman Year			
FALL SEMESTER		SPRING SEMESTER	
	Hours		Hours
Eh 1 Freshman Composition	3	Hy 6 Hist. of Western Europe	3
or		At 4 Princ. of Art or	
Sh 1 Public Speaking	2	At 2 Freehand Drwg.	2
Hy 5 Hist. of Western Europe	3	Pe 2 Physical Education	0
At 3 Princ. of Art or		Sh 1 Public Speaking	2
At 1 Freehand Drwg.	2	or	
Pe 1 Physical Education	0	Eh 1 English Comp.	3
		Des. or Lab. Science	3-4
Des. or Lab. Science	3-4	Foreign Language	3-4
Foreign Language	3-4		
	14-17		14-17

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Sophomore Year

Hours				Hours			
Eh	15	Masterpieces of Lit. or Hy 1, Class. & Med. Civil.	3	Eh	16	Masterpieces of Lit. or Hy 2, Class. & Med. Civil.	3
At	1	Freehand Drwg. or At 3, Princ. of Art	2	At	2	Freehand Drwg. or At 4, Princ. of Art	2
At	5	Art Apprec. & History Des. or Lab. Science	3-4	At	6	Art Apprec. & History Des. or Lab. Science	3-4
		Foreign Language or Social Science	3-4			Foreign Language or Social Science	3-4
		Elective	2-3			Elective	2-3
<hr/>				<hr/>			
16				16			

Junior Year

Hours				Hours			
At	11	Advanced Drwg.	2	At	12	Advanced Drwg.	2
At	7	Crafts and Design	2	At	8	Crafts and Design	2
At	19	Art in Community or At 21, American Art	2	At	20	Art in Community or At 22, American Art	2
At	25	Renaiss. Art in Italy or At 27, The Northern Renaiss.	2	At	26	Renaiss. Art in Italy or At 28, The Northern Renaiss.	2
		Electives	9			Electives	9
<hr/>				<hr/>			
17				17			

Senior Year

Hours				Hours			
At	15	Painting & Rendering	2	At	16	Painting & Rendering	2
At	9	Advanced Crafts & Design or At 97, Art Project	2	At	10	Advanced Crafts & Design or At 98, Art Project	2
At	21	American Art or At 19, Art in the Community	2	At	22	American Art or At 20, Art in the Community	2
At	23	Contemp. Art Forms or At 31, Masterpieces of Graph.	2	At	24	Contemp. Art Forms or At 32, Masterpieces of Graph.	2
		Electives	8	At	30	Art Materials & Techniques	3
						Electives	5
<hr/>				<hr/>			
16				16			

1/2. Free-Hand Drawing and Sketching—Fundamentals of drawing. Principles of perspective, shades and shadows, and composition. Pencil, charcoal, graphite, and crayon. *Lab 4, Cr 2.*

STAFF

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 of art, although masterpieces are 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. 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. DECKER

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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. DECKER

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. LEWIS

13. 14. Fundamentals of Painting—Basic introductions to the painting art. Exercises in color, technique, and composition. Studio and outdoor subjects. All media. Prerequisite: At 1/2 or permission. (Not open to art majors) *Lab 4, Cr 2.* STAFF

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. GHIZ

19. 20. Art in the Community—The place of art in everyday life. First semester deals with the residence, school, church, civic architecture and city planning; second semester, industrial design, fashions, advertising, related subjects. *Rec 2, Cr 2.* MR. DECKER

21. 22. American Art—American painting, architecture and sculpture; styles, trends and schools. First semester, from beginning of 20th century; second semester, the 20th century. *Rec 2, Cr 2.* MR. DECKER

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. GHIZ

25. 26. Renaissance Art in Italy—The architecture, sculpture and painting of the Italian Renaissance from the 13th to 18th century. First semester: Rome and Florence; the second: Bologna, Venice, and Milan. At 5 and 6 recommended or permission. *Rec 2, Cr 2.* STAFF

27. 28. The Northern Renaissance—Architecture, sculpture and painting in Flanders, France, Germany, Spain, Holland, England from the 14th to 18th century. At 5 and 6 recommended or permission. *Rec 2, Cr 2.* MR. GHIZ

30. Art Materials and Techniques—Materials, methods, and techniques for the professional artist-craftsman. Examination, comparison, and testing of materials and processes of painting, graphics, sculpture, etc. Prerequisite: At 1/2 or permission. *Rec 2, Lab 1, Cr 3.* MR. DECKER

31. 32. Masterpieces of Graphic Arts—Drawings and prints, their techniques and classifications. Collecting, marketing and exhibiting. Masterpieces of all ages and countries. Study of original examples from the collection. *Rec 2, Cr 2.* STAFF

41/42. Commercial Art and Publications Design—The design of booklets, catalogs, magazines, newspapers, posters, etc. Exercises in lettering and layout. Prerequisite: At 1/2 or permission. *Lab 4, Cr 2.* (Given on sufficient demand.) Not offered in 1967-68. STAFF

65. 66. Methods and Curricula in Art Education—Contemporary objectives in the teaching of art in the elementary and secondary schools. Selection and

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planning of materials, techniques, and curricula. Fall: elementary; spring: secondary. *Rec* 2, *Lab* 1, *Cr* 3. Permission of instructor. **MR. LEWIS**

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. LEWIS**

97. 98. *Problems in Art*—Advanced projects for student research and presentation. Undergraduate thesis or exhibition. *Cr Ar*. Permission of head of the department. **STAFF**

151. *Art Education Workshop and Laboratory*—Plan of study, projects and credit arranged. **STAFF**

CHEMISTRY (Ch)

PROFESSORS WOLFHAGEN, BEAMESDERFER, BOGAN, DOUGLASS, DUNLAP, MARTIN; ASSOCIATE PROFESSORS GEORGITIS, GOODFRIEND; ASSISTANT PROFESSORS FURROW, GREEN, RUSS; MR. HILL, MR. HILTON, MRS. WOLFHAGEN.

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.

SPECIMEN CURRICULUM FOR CHEMISTRY

Freshman Year

FALL SEMESTER				SPRING SEMESTER			
			Hours				Hours
Ch	1	General Chemistry	4	Ch	2	General Chemistry	4
Eh	1	Freshman Composition	3	Gm	12	Scientific German (Elem.)	3
Gm	11	Scientific German (Elem.)	3	Ms	12	Anal. Geometry and Calculus	4
Ms	1	Trigonometry	2	Pe	2	Physical Education	0
Ms	3	College Algebra	2	Sh	1	Public Speaking	2
Pe	1	Physical Education	0			Elective	2-3
			14				15-16

Sophomore Year

Gm	13	Scientific German (Intermed.)	3	Ch	140	Quantitative Analysis	4
Ms	27	Anal. Geometry and Calculus	4	Gm	14	Scientific German (Intermed.)	3
Ps	1	General Physics	5	Ms	28	Anal. Geometry and Calculus	4
		Elective	3-4	Ps	2	General Physics	5
			15-16				16

Junior Year

			Hours				Hours
Ch	151	Organic Chemistry Lecture	3	Ch	152	Organic Chemistry Lecture	3
Ch	161	Organic Chemistry Laboratory	2	Ch	162	Organic Chemistry Laboratory	2
Ch	171	Physical Chemistry	5	Ch	172	Physical Chemistry	5
		Humanities	3			Humanities	3
		Social Science	3			Social Science	3
			16				16

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Senior Year

	Hours		Hours
*Ch 164 Intermed. Quant. Analysis	4	*Ch 154 Adv. Inorg. Chem.	3
*Ch 185 Chemical Literature	2	*Ch 190 Inter. Organic Chemistry Lab	3
Social Science	3	Social Science	3
Electives (Other than Chemistry)	7-9	Electives (Other than Chemistry)	7-9
	<hr/> 16-18		<hr/> 16-18

* For American Chemical Society Certification.

COMPARATIVE LITERATURE

PROFESSORS TERRELL AND O'NEILL; ASSOCIATE PROFESSOR BARUSHOK; ASSISTANT PROFESSORS CHONG AND TATEM.

The college provides an interdisciplinary major in comparative literature with offerings in the Departments of Art, English, Foreign Languages and Classics, History, Music and Philosophy. Students with special talents in languages and literatures are invited to elect this major. Students majoring in comparative literature may satisfy the humanities requirement by taking Eh 3-4. Detailed information may be obtained at the Comparative Literature Office, 255C Stevens Hall.

Majors must satisfy several requirements:

A. At least six hours in each of two of the following categories:

1. Hy 1.2 — Classical and Medieval Civilization
At 5 — Art History and Appreciation
Cl 1.2 — The Classics in Translation
Pl 155 — Ancient Philosophy
Pl 156 — Medieval Philosophy
2. Hy 105, 106 — The Renaissance and Reformation
Pl 157 — Early Modern Philosophy
At 25, 26 — Renaissance Art in Italy
3. Hy 109 — Europe in the 18th Century
Hy 110 — Europe in the 19th Century
Pl 158 — Late Modern Philosophy
At 6 — Art History and Appreciation

B. At least 12 hours beyond the 3/4 sequence in one modern foreign language and at least two years' work in a second modern foreign language.

C. At least 12 hours from the following:

- Eh 153 — Chaucer
- Eh 55 — The Romantic Movement
- Eh 56 — The Victorians
- Eh 57 — Shakespeare's Early Plays
- Eh 58 — Shakespeare's Later Plays
- Eh 165 — The Age of Dryden and Pope
- Eh 166 — The Age of Johnson

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Majors in Comparative Literature must pass comprehensive examinations during the senior year on the history, literature, philosophy, and/or art and music in a sequence of two of the following periods of European civilization:

- 1. Classical and Medieval
- 2. The Renaissance and Reformation
- 3. Neoclassicism
- 4. Romanticism
- 5: The Later Nineteenth Century

SPECIMEN PROGRAM FOR COMPARATIVE LITERATURE

Freshman Year

FALL SEMESTER †				SPRING SEMESTER			
			Hours				Hours
Eh	3	English Lit. ‡	3	Eh	4	English Lit. ‡	3
Fr	3	Int. French	3	Fr	4	Int. French	3
		Latin or Greek	3			Latin or Greek	3
		Nat. Sci. or Math.	3 or 4			Nat. Sci. or Math.	3 or 4
Hy	5	Hist. West. Europe	3	Hy	6	Hist. West. Europe	3
		Physical Education	0			Physical Education	0
			15 or 16				15 or 16

Sophomore Year

			Hours				Hours
Fr	109	Int. French Lit.	3	Fr	110	Int. French Lit.	3
		Nat. Science	3 or 4			Nat. Science	3 or 4
		Social Science	3			Social Science	3
Hy	1	Class., Mod. Civil.		Hy	2 or Hy 106		
		or Hy 105 Renaiss. & Ref.			or At 6 (cont'd)		3
		or Art 5 Art Apprec.		Eh	Elective		3
		& Hist.	3				
Eh		Elective	3				
			15 or 16				15 or 16

Junior Year

			Hours				Hours
Fr	171	French Lit. of 17th Cent.		Fr	172, 174, or 176		3
		or 173 French Lit. of		Gm	2	Elem. German	4
		18th Cent.		Eh		Elective	3
		or 175 French Lit. of		Philos.	156	The Hist. of Philos.	
		19th Cent.	3			or 158 Early Mod. Philos.	
Gm	1	Elem. German	4			or At 26 or 28 Northern	
Eh		Elective	3			Renaiss.	3
Philos.	155	The Hist. of Philos.				Elective	3
		or 157 Early Hist. Philos.					
		or At 25 or 27 Northern					
		Renaiss.	3				
		Elective	3				
			16				16

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Senior Year

		Hours			Hours
Gm 3	Int. German	3	Gm 4	Int. German	3
	French Elective	3		French Elective	3
CP 189	The Novel in Europe	3	CP 190	The Novel in Europe	3
	Elective	6		Elective	6
		<hr/> 15			<hr/> 15

* Other programs may be worked out with the Comparative Literature Office.

† Sh 1 must be taken one semester in the first two years in which the natural science and mathematics requirement is only 3 credit hours.

‡ Students who do not qualify to take Eh 3 will be required to register for Eh 1.

ECONOMICS (Ec)

PROFESSORS ALMOND, COUPE, DEVINO, JOHNSON, PECK, SIEDLIK, YOUNG, AND YU*;
ASSOCIATE PROFESSORS BARTLETT, CLARK, AND GOODMAN; ASSISTANT
PROFESSORS BEEMAN, CRAYPO, DUCHESNEAU, FORSGREN, MCCLURE,
SANDS, TALLEY, VANGERMEERSCH, AND ZIEGENBEIN*; GRADUATE
ASSISTANTS CORNWALL, HOFFMANN, KALLOCH, LOWDEN,
TRIBBLE AND ZERILLO

The student majoring in economics in the College of Arts and Sciences must fulfill all the requirements of the college and also complete the following curriculum:

1. Core Requirements
 - Ec 1/2 — Principles of Economics
 - Ec 132 — Business Cycles
 - Ec 173 — Economic Analysis
 - Ba 9 — Principles of Accounting I
 - Ms 19 — Principles of Statistical Inference
2. Completion of at least 18 additional hours in economics (Ec) courses. However, no student will be granted degree credit for course work in business and economics in excess of 48 hours. Students planning to major in economics should complete Ec 1/2, Principles of Economics, no later than the sophomore year.

Course offerings in economics and in business administration are described under the College of Business Administration.

* On leave of absence 1967-68.

ENGLISH (Eh)

PROFESSORS REYNOLDS, HANKINS, WENCE, EDWARDS, FIFE, RANDEL, AND TERRELL;
ASSOCIATE PROFESSORS MANLOVE, HOLMES, SPRAGUE, BENNETT; ASSISTANT
PROFESSORS ANDERSEN, CARLSON, HATLEN; INSTRUCTORS LEMELIN,
HAKOLA, HOBBS, ADAMS, BISHOP, FITZGERALD, SCHUMACHER,
CHAPMAN, HOWARD, FORRESTER, BARDEN, FOLGER, KENDA,
TIMMERMAN; GRADUATE ASSISTANTS LINDQUIST,
SELIGMAN, SILEO, STEVENS, TALLMAN,
McCORMICK, CATES, CLARK

Most students intending to major in English should take Eh 3, 4, English Literature, in the sophomore year. Also required at some time in the college

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course are (1) one semester of Second-Year Composition (Eh 7 or 8) and (2) American Literature (Eh 43). If possible, Eh 7 or 8 should be taken in the sophomore year. Those prospective English majors who are excused from Freshman Composition (Eh 1) on the basis of high achievement in College Board tests may take either Eh 7 or Eh 8 or both in the freshman year. Eh 3.4 satisfies the current humanities requirement for sophomores.

English majors must complete satisfactorily from 36 to 48 hours of credit in the department, of which at least nine hours must be selected from the following: Eh 57, 58, 153, 159, 161, 162, 164, 165, 166, 172, 181, 251, 252. In January of the junior year all majors must take an examination in (1) the mechanics of composition and (2) the explication of selected passages of prose or verse. A passing grade is required for graduation.

English majors may also choose for credit in their major any two of the following courses as given in the Department of Sociology and Anthropology: Introduction to Folksong (Fo 1), Introduction to Folklore (Fo 2), Folksong in America (Fo 134), Folk Narratives (Fo 179).

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, thus allowing the student to secure the master of arts in English and the teaching certificate for high school English; the time normally required for this is one academic year and two summer sessions.

Courses in Composition and Rhetoric

1. Freshman Composition—Intensive practice in expository writing, with reading of illustrative material. Required normally of freshmen. *Cr 3.*

MRS. HAKOLA, Chairman

5. Technical Composition—The principles and techniques of professional correspondence and technical reports and papers. Prerequisite: junior standing in Technology or Agriculture. *Cr 2.*

MR. TERRELL, Chairman

7.8. Advanced Composition—A course for those who wish to develop greater skill in writing, either for their own pleasure or for professional use: in the first semester the writing of formal and informal expository essays, in the second semester descriptive and narrative writing. *Cr 3.* MR. WENCE, Chairman

19. Expository Writing—Primarily for junior and senior majors in Business Administration. Training in clear expository writing of formal reports, business communications, and related materials. *Cr 2.*

77.78. Creative Writing—An advanced course for students of demonstrated ability. Prerequisite: Eh 7 or 8 or permission of instructor. *Cr 3.*

MR. HOLMES

Courses in Literature

3.4. English Literature—Readings in the chief English authors in chronological order, with class discussion. In the first semester, from the beginnings to 1700; in the second semester, from 1700 to about 1918. *Cr 3.*

MISS FIFE, Chairman

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9. 10. Modern Literature—Readings in significant literature of the last half-century. Recommended for non-majors in all classes. *Cr 2.*

MR. SPRAGUE, Chairman

15. 16. Masterpieces of English and American Literature—An introduction to literary appreciation through the study of selected masterpieces. Recommended for non-majors who have not previously taken advanced courses in literature. *Cr 3.*

MR. MANLOVE, Chairman

35. 36. Recent Drama—Major plays and playwrights, mainly of the 20th century: British, American and European. *Cr 2.*

MRS. HAKOLA

42. Writers of Maine—The Maine scene and Maine people as presented by Sarah Orne Jewett, E.A. Robinson, Edna St. Vincent Millay, Mary Ellen Chase, R.P.T. Coffin, Kenneth Roberts, E.B. White, and others. *Cr 2.*

MISS FIFE

43. American Literature—American literature through the 18th and 19th centuries, with emphasis on the principal writers. *Cr 3.*

MR. EDWARDS, Chairman

45. 46. Twentieth Century Literature—Fiction and poetry from 1900 to the present. British writers in the first semester, American writers in the second. *Cr 3.*

MR. TERRELL, Chairman

55. 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. Victorian Poetry—Browning, Tennyson, Arnold, the Pre-Raphaelites and their contemporaries. *Cr 3.*

MR. EDWARDS

57. 58. Shakespeare—A survey of the comedies, history plays and tragedies. Attention is focused on the comedies and histories in the first semester, on the tragedies in the second semester. *Cr 3.*

MR. HANKINS

69. The American Novel—American novelists to 1900. *Cr 3.*

MR. RANDEL

93. The American Short Story—Selected short stories from the beginnings to the present. Also offered in the Continuing Education Division program and in Summer Session. *Cr 2.*

MR. EDWARDS

In order to take the following courses, the student should have previously taken at least two of these: Eh 3, 4, 9, 10, 15, 16, 43, or have secured the approval of a senior English adviser to majors.

153. Chaucer—Selections from the major poetry, with attention to the literary and historical background. *Cr 3.*

MR. BENNETT

159. Elizabethan Prose and Verse—Not including the drama. Poems, sonnet sequences, romances, pastorals, translations, with special attention to Spenser's *The Faerie Queene*. *Cr 3.*

MR. SPRAGUE

161. 162. British Drama—Fall semester: Shakespeare's contemporaries, with some attention to the drama before and after Shakespeare. Spring semester: a survey from the Restoration (1660) to 1900. *Cr 3.*

MR. SPRAGUE

164. Milton—The poetry and prose, with attention to the literary and historical background. *Cr 3.*

MISS FIFE

165. The Age of Dryden and Pope—Restoration literature (1660-1700) and the evolution of Neo-classicism in the early 18th century. *Cr 3.*

MR. MANLOVE

166. The Age of Johnson—The later 18th century, especially Dr. Johnson and his circle, and the beginnings of Romanticism. *Cr 3.*

MR. MANLOVE

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181. *The Earlier English Novel*—The principal novelists from the beginnings to Sir Walter Scott. *Cr 3.* MR. WENCE

182. *The Later English Novel*—The principal novelists from Dickens to Hardy. *Cr 3.* MR. WENCE

192. *The Rise of Realism in America*—A survey from 1865 to 1914, including such authors as Mark Twain, Bret Harte, Howells, James, Henry Adams, Hamlin Garland, and Edith Wharton. *Cr 3.* MR. RANDEL

194. *Twentieth Century British Fiction*—The best British novels since 1900. Not open to those who have had Eh 145. Offered in Continuing Education Division program only. *Cr 3* MR. TERRELL

195. *Twentieth Century British Poetry*—The major poets of Great Britain and Ireland from 1900 to the present. Not open to those who have had Eh 145. Offered in Continuing Education program only. *Cr 3.* MR. BISHOP, MR. TERRELL

196. *Twentieth Century American Poetry*—The major poets of the United States from 1900 to the present. Not open to those who have had Eh 146. Offered in Continuing Education program only. *Cr 3.* MR. TERRELL

197. *Twentieth Century American Fiction*—The best American novels since 1900. Not open to those who have had Eh 146. Offered in Continuing Education program only. *Cr 3.* MR. TERRELL

270. *The American Drama*—The development of drama in America from colonial times to 1914. *Cr 3.* MR. LEMELIN

271. *Early American Literature*—From the colonial beginnings to 1800. *Cr 3.* MR. LEMELIN

284. *Nineteenth Century Prose*—Not including fiction. The major essayists from Lamb to Stevenson. Studies of content and literary style. *Cr 3.* MR. HANKINS

325. *Bibliography and Methods of Research*—A study of bibliographical materials and methods of research to meet the practical needs of the graduate student of English and American literature. *Cr 1.* MR. SPRAGUE

343. *Seminar in American Romanticism*. *Cr 3.* MR. RANDEL

344. *Seminar in American Realism*. *Cr 3.* MR. RANDEL

390. *Literature of Medieval England*. *Cr 3.* MR. BENNETT

391. *Sixteenth Century Topics*. *Cr 3.* MR. HANKINS, MR. SPRAGUE

392. *Seventeenth Century Topics*. *Cr 3.* MISS FIFE, MR. HATLEN

393. *Eighteenth Century Topics*. *Cr 3.* MR. MANLOVE, MR. REYNOLDS

394. *Nineteenth Century Topics*. *Cr 3.* MR. HANKINS, MR. LEMELIN

395. *Twentieth Century Topics*. *Cr 3.* MR. HOLMES, MR. TERRELL

396. *Seminar in Linguistics and Semantics*. *Cr 3.* MR. BENNETT

399. *Graduate Thesis*. *Cr Arr.* THE STAFF

Only two of the seminars Eh 343 through Eh 396 are offered in any one semester.

Courses in Linguistics

121. *Modern Grammar*—Traditional, structural, and generative grammars, with particular implications for prospective teachers of English and others interested in the basic theories of grammar. Attention is given to problems of usage. *Cr 3.* MR. BENNETT

149. *Introductory Linguistics*—Linguistics as a basis for understanding the

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theory and functioning of language; modern methods of phonological, morphological, and syntactic analysis, with some attention to language change and dialectology. *Cr 2.* MR. BENNETT

251/252. Old English—Old English grammar and the reading of easy prose and some poetry. Readings from Beowulf in the second semester. *Cr 3.*

MR. REYNOLDS

167. History of the English Language—Main aspects of the development of Modern English from Old and Middle English; words and their backgrounds; changes in sound, form and meaning. *Cr 2.* MR. REYNOLDS, MR. BENNETT

Courses in the Teaching of English

184. The Teaching of English in the Secondary School—A discussion of principles and practices in the teaching of literature, language, and composition, with exercises in theme-correction. *Cr 3.* MRS. CHAPMAN, MR. HOLMES

Courses in Comparative Literature (Cp)

Cp 87. Oriental Masterpieces: The Near East—Selections from the literature of India, Iran and the Arab countries. *Cr 3.*

Cp 88. Oriental Masterpieces: The Far East—Selections principally from the literature of China and Japan. *Cr 3.*

Cp 139. 140. The English Bible—The English Bible studied as one of the masterpieces of English literature. Considerable attention is paid to the historical and cultural backgrounds of Biblical literature. *Cr 2.* MR. REYNOLDS

Cp 173. Earlier Criticism—From Plato to Coleridge. Includes reading of selected classics, and practice in criticizing works of literature. *Cr 3.*

MR. SPRAGUE

Cp 174. Modern Literary Criticism—From Coleridge to the present. Modern trends in criticism. *Cr 3.* MR. ANDERSON

Cp 175. 176. European Literature—Continental European literature in translation. From Homer to the Renaissance in the first semester. Continuing to the present in the second semester. Recommended for majors in history or foreign languages and for students preparing for library work. *Cr 3.* MISS FIFE

Cp 185. Earlier Biography—Great biographies of the world, from Plutarch to Boswell. *Cr 3.* MR. RANDEL

Cp 186. Modern Biography—Great biographies of the world, from Boswell to the present. *Cr 3.* MR. RANDEL

Cp 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

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FOREIGN LANGUAGES AND CLASSICS

PROFESSORS MOODY, MILES, GROSS, RUSSELL, AND O'NEILL; ASSOCIATE PROFESSORS REID, RIOUX*, ROGGENBAUER, AND CLARK; ASSISTANT PROFESSORS MURRAY, TATEM, BRIMMER, HALL, FITZPATRICK, AND PYLES; LECTURERS, MRS. GROSS, MR. CHAPELLIER, AND MRS. CHAPELLIER; INSTRUCTORS, MR. BEAN, MR. BOLDOC, MRS. DELPHENDAL, MR. GALBIS, MR. HERLAN, MR. MURPHY, MISS OLAN, MR. SMALL, AND MR. WALLACE; PART-TIME INSTRUCTORS: MRS. FITZPATRICK, AND MISS LEIRIS

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, Latin, comparative literature and international affairs in accordance with the requirements listed below.

French, German and Spanish—Students electing to major in French, German, or Spanish will be required to take a minimum of 24 hours in courses of the subject matter field beyond the intermediate level, of which at least 18 hours must be in literature courses in the 100 series.

Romance Languages—Students electing to major in Romance Languages will be required to take a minimum of 24 hours chosen from literature and related courses in French and Spanish beyond the intermediate level, of which at least 18 hours must be in literature courses in the 100 series.

Modern Languages—Students electing to major in Modern Languages will be required to take a minimum of 24 hours chosen from literature and related courses in one of the Romance Languages and German beyond the intermediate level, of which at least 18 hours must be in literature courses in the 100 series.

Latin—Students electing to major in Latin will be required to take a minimum of 20 hours of the subject matter field beyond the intermediate level.

Comparative Literature—The department participates in an interdepartmental major in Comparative Literature. Interested students should see page 71 of this catalog.

International Affairs—Students electing to major in International Affairs should see page 92 of this catalog.

Junior Year Abroad—It is possible for students majoring in a foreign language to spend a semester or an academic year in a foreign university as part of their major program. Students interested may consult the head of the department regarding this possibility.

Hy 5/6 is required for students whose main concentration is French or German; Hy 147. 148 is required for Spanish majors; and Hy 101.102 for Latin majors. French majors are also expected to take Hy 121. 122.

Fl 166 is normally required of majors who plan to teach in elementary or secondary schools.

Courses recommended for students who do not major in the department, but who plan to obtain certification for teaching French are: Fr 7/8, Fr 57.58, Fr 109.110, Fl 166, and a minimum of two semesters of advanced literature courses. For those who wish to obtain certification for teaching German, the following courses are recommended: Gm 7/8, Gm 57.58, Gm 109.110, Fl 166, and a mini-

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mum of two semesters of literature courses. For those who wish to obtain certification for teaching Latin, the following courses are recommended: Lt 9.10, Lt. 47.48, Fl 166, 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 7/8, Sp 57.58, Sp 109.110, Fl 166, and a minimum of two semesters of literature courses.

The department also offers work leading to the master of arts degree in French, Spanish, Romance Language, 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 100 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.

* On leave of absence 1967-68

FOREIGN LANGUAGES

Fl 166. *The Teaching of Foreign Languages*—Principles and practices of teaching foreign languages. Analysis of current trends and methods. Application 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. O'NEILL

Fl 201. *Introduction to General Linguistics*—Grammatical structure; prology; morphology, and syntax. The course will include discussion of language families; linguistic history; language and culture. *Cr 3.* MR. PYLES

FRENCH (Fr)

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 less than two years of high school French. *Cr 4.*

STAFF

3/4. *Intermediate French*—Continuation of 1-2. Laboratory practice. For students who have completed French 1-2 or who have completed two or three years of high school French. Completion of this course fulfills the language generalization requirement. *Cr 3.*

3a. 4a. *Supplementary Oral French*—For freshmen whose high school French was deficient in oral work. This course should be taken in conjunction with Fr 3/4. A special division, or divisions, of this course will be provided for students from French-speaking families. *Cr 1.* STAFF

7/8. *Practical French*—Systematic training in correct pronunciation and usage, and in vocabulary building, with written and oral practice, phonetics and work in the laboratory. Prerequisite: Fr 4, or the equivalent. Well qualified students who have not taken Fr 7 may with permission elect Fr 8. *Cr 3.* STAFF

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57. 58. French Civilization—Readings, discussions, lectures, oral and written reports on varied aspects of France, its people, institutions, and culture to provide the background essential to an understanding of French literature, thought, and artistic expression. Open to students, including freshmen and sophomores, who have completed Fr 4, or the equivalent. *Cr 3.* STAFF

109. 110. Introduction to French Literature—A survey of the important periods in French literature with reading of representative works. Prerequisite: Fr 4, or the equivalent. This course, which is required for students majoring in French, should be taken in the junior year or earlier if possible. *Cr 3.* STAFF

Fr 153. The French Novel from the First World War to the Present—Readings from Gide, Proust, Camus and others. *Cr 3.* MR. CLARK

Fr 154. French Theatre in the Twentieth Century—Readings from Giraudoux, Sartre, Camus, Ionesco and others. *Cr 3.* MR. CLARK

Fr 167. Advanced French Grammar—Designed to provide an adequate foundation in French grammar and syntax for prospective teachers. *Cr 2.* MR. CLARK

Fr 168. Advanced Composition and Stylistics—Designed to develop a high order of proficiency in written French in prospective teachers and others who will need to use French professionally. *Cr 2.* MR. CLARK

‡171. 172. French Literature of the Seventeenth Century—Literary trends in French classicism: Descartes, Pascal, Corneille, Racine, Molière, La Fontaine. *Cr 3.* MRS. RUSSELL

†173. 174. French Literature of the Eighteenth Century—Lectures and readings of the works of leading writers, including Voltaire, Montesquieu, Diderot, and Rousseau. *Cr 3.* MRS. RUSSELL

175. French Romantic Prose and Poetry—Lectures, readings, and discussions of representative writers of the Romantic movement, from its 18th century origins to the middle of the 19th century. *Cr 3.* MR. O'NEILL

176. French Drama of the Nineteenth Century—Lectures, readings, and discussions of representative dramatists of the last century. *Cr 3.* MR. O'NEILL

177. Realism and Naturalism in the Novel from Balzac to Zola—Representative works by Balzac, Stendhal, Flaubert, Maupassant, Zola, and others. *Cr 3.* MR. MOODY

178. From Realism to Symbolism: Main Currents in the Novel, Theater and Poetry—Baudelaire, Anatole France, Loti, Barrès, Maeterlinck, Claudel, Alain-Fournier, and other writers from mid 19th century to World War II. MR. MOODY

181. French Literature of the Medieval Period—Idealistic and popular developments. *La chanson de Roland*, theater, the chroniclers, Villon. *Cr 3.* MRS. RUSSELL

182. French Literature of the Sixteenth Century—Humanism in the Renaissance. Rabelais, Ronsard, Montaigne. *Cr 3.* MRS. RUSSELL

197. 198. Projects in French—Individual work in a project of the student's selection. Prerequisite: consent of the department head. *Cr Ar.* (maximum: 3 hrs.) STAFF

399. Graduate Thesis—*Cr 6.*

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GERMAN (Gm)

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 less than two years of high school German. *Cr 4.*

STAFF

3/4. Intermediate German—Continuation of 1-2, laboratory practice. For students who have completed German 1-2 or have completed two or three years of high school German. Completion of this course fulfills the language generalization requirement. *Cr 3.*

STAFF

7/8. Practical German—Systematic training in correct pronunciation and usage, and in vocabulary building, with written and oral practice, and work in the laboratory. Prerequisite: Gm 4, or the equivalent. Well qualified students who have not taken Gm 7 may with permission elect Gm 8. *Cr 3.*

STAFF

11-12. Elementary Scientific German—Beginning course in German for students in the Colleges of Life Sciences and Agriculture and Technology and for students in the College of Arts and Sciences who are majoring in chemistry or physics. *Cr 3.*

STAFF

13. Intermediate Scientific German—This course is a continuation of Gm 12, but is also intended for students who have not taken Gm 11-12 and now wish to become acquainted with the techniques of translating scientific German. *Cr 3.*

MR. ROGGENBAUER

14. Readings in Scientific German—Specialized reading for comprehension; individual projects and reports. Recommended as preparation for meeting graduate school language requirements. *Cr 3.*

MR. ROGGENBAUER

‡57. 58. German Civilization—Readings, discussions, lectures, and oral and written reports on Germany, its people, institutions, and culture for the purpose of providing the background essential to an understanding of German literature, thought, and artistic expression. Open to students, including freshmen and sophomores, who have completed Gm 4, or the equivalent. *Cr 3.*

STAFF

109. 110. Introduction to German Literature—Reading and discussion of representative works of important 19th and 20th century authors. Prerequisite: Gm 4, or the equivalent. This course, which is required of students majoring in German, should be taken in the junior year or earlier if possible. *Cr 3.*

MR. MILES

†151. Enlightenment and 'Storm and Stress'—A survey of representative works with lectures in German. *Cr 3.*

MR. ROGGENBAUER

†152. The Romantic School—A survey of representative authors, as well as selected works by Kleist. *Cr 3.*

MR. ROGGENBAUER

‡153. Major Literary Movements from 1832 to the Turn of the Century—A survey of important works with emphasis on the drama and the German Novelle. *Cr 3.*

MR. ROGGENBAUER

‡154. German Literature of the Twentieth Century—Lectures and readings of prose, poetry and drama by leading writers. *Cr 3.*

MR. ROGGENBAUER

†155. Goethe—Reading and discussion of works by Goethe, with primary emphasis on Faust. *Cr 3.*

MR. MILES

†156. Schiller—Reading and discussion of works by Schiller, including *Wilhelm Tell* and *Maria Stuart*. *Cr 3.*

MR. MILES

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197. 198. Projects in German—Individual work on a project of the student's selection. Prerequisite: consent of the department head. *Cr Ar.* (maximum: 3 hrs.).

STAFF

399. Graduate Thesis—*Cr 6.*

STAFF

GREEK (Gk)

†**1-2. Elementary Greek**—Fundamentals of the Greek language. In the second semester, selections from Euripides' *Alcestis*. For students who have had little or no preparation in Greek. *Cr 4.*

MR. TATEM

‡**3/4. Intermediate Greek**—In the first semester, Plato's *Apology*, *Crito* and selections from the *Phaedo*. In the second semester, selected books from Homer's *Iliad*. *Cr 3.*

MR. TATEM

LATIN (Lt)

1-2. Elementary Latin—Fundamentals of the Latin language. For students who have little or no previous instruction in Latin. *Cr 4.* MR. DELPHENDAHL

3/4. Intermediate Latin—Selected reading from masters of Latin prose and poetry. 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.*

MRS. DELPHENDAHL

9.10. Readings in Latin Literature—Selections from Latin prose and poetry with emphasis upon literary values. *Cr 3.*

MR. TATEM

†**47. 48. Latin Prose Composition**—Review of grammar and syntax. The writing of Latin prose. Prerequisite: Lt 10 or the equivalent. *Cr 1.* MR. TATEM

151. Roman Comedy: Plautus and Terence—One play of each dramatist will be read. The sources of Roman comedy, its literary features, and influence upon later literature. Given every three years; offered in 1969-70. *Cr 3.*

MR. TATEM

152. Roman Philosophical Thought—Selections from Lucretius, *De Rerum Natura*, and Cicero's philosophical essays. The three major philosophical schools: Academic, Stoic, Epicurean, and their influence on Roman thought. Given every three years; offered in 1969-70. *Cr 3.*

MR. TATEM

153. Poetry of the Republic and Early Empire—The lyric poetry of Catullus. The *Odes* of Horace. The origin and development of satire, with selections from the satires of Horaces and Juvenal. Given every three years; next offered in 1968-69. *Cr 3.*

MR. TATEM

154. Prose of the Republic and Early Empire—Selections from Cicero's letters, Pliny's letters, and Tacitus' *Annals*. Given every three years; next offered 1968-69. *Cr 3.*

MR. TATEM

181. Virgil: The Eclogues, Georgics, Aeneid—The poet's background, achievement, and influence upon later literature. Given every three years; next offered in 1967-68. *Cr 3.*

MR. TATEM

182. Survey of Latin Literature—A rapid survey from the Archaic Age to Medieval Latin. Lectures, discussions, reports, and assigned readings. Given every three years; next offered in 1967-68. *Cr 3.*

MR. TATEM

197. 198. Projects in Latin—Individual work on a project of the student's selection. Prerequisite: consent of the department head. *Cr Ar.* (maximum: 3 hrs.)

STAFF

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RUSSIAN (Ru)

1-2. Elementary Russian—Emphasis on development of listening comprehension, speaking, reading, and writing skills. Laboratory practice. For students who have had no Russian or less than two years of high school Russian. *Cr. 4.*

MR. PYLES

3/4. Intermediate Russian—Continuation of 1-2, laboratory practice. For students who have completed Russian 1-2, or have completed two or three years of high school Russian. Completion of this course fulfills the language generalization requirement. *Cr. 3.*

MR. PYLES

†7/8. Practical Russian—Systematic training in correct pronunciation and usage, and in vocabulary building, with written and oral practice, and work in the laboratory. Prerequisite: Ru 4, or the equivalent. Well qualified students who have not taken Ru 7 may with permission elect Ru 8. Offered in alternate years on sufficient demand. *Cr. 3.*

MR. PYLES

‡9. 10. Introduction to Russian Literature—Russian 9 is a systematic presentation of selected works of the most important writers from Pushkin through Chekhov. Russian 10 is a systematic presentation of selected works of the most important writers from the Modernist Movement through the present. Prerequisite: Ru 4, or the equivalent. Offered in alternate years on sufficient demand. *Cr. 3.*

MR. PYLES

SPANISH (Sp)

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 less than two years of high school Spanish. *Cr. 4.*

STAFF

3/4. Intermediate Spanish—Continuation of 1-2. Laboratory practice. For students who have completed Spanish 1-2 or who have completed two or three years of high school Spanish. Completion of this course fulfills the language generalization requirement. *Cr. 3.*

STAFF

7/8. Practical Spanish—Systematic training in correct pronunciation and usage, and in vocabulary building, with written and oral practice, phonetics and work in the laboratory. Prerequisite: Sp 4, or the equivalent. Well qualified students who have not taken Sp 7 may with permission elect Sp 8. *Cr. 3.*

MR. GALBIS

‡57. 58. Hispanic Civilization—Readings, discussions, lectures, oral and written reports on varied aspects of Hispanic civilization to provide the background needed for an intelligent understanding of Hispanic literature, thought, and artistic expression. Open to students, including freshmen and sophomores, who have completed Sp 4, or the equivalent. *Cr. 3.*

MR. MURRAY

109. 110. Introduction to Spanish Literature—A survey of the important periods and trends in Spanish literature with reading of representative works. Prerequisite: Sp 4, or the equivalent. This course, which is required of students majoring in Spanish, should be taken in the junior year or earlier if possible. *Cr. 3.*

MR. GALBIS

†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. MURRAY

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†152. *Contemporary Spanish Literature*—A study of the Generation of 1898, the Generation of 1927, Tremendismo, and other currently significant literary trends. Cr 3. MR. MURRAY

†153. 154. *Modern Latin-American Literature*—The literary scene since Independence: the Romantic upheaval, 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

†155. *Galdos and Benavente*—The lives, times, and works of two of Spain's greatest and most representative authors: Benito Perez Galdos, novelist, and Jacinto Benavente, playwright. Given upon sufficient demand. Cr 3. MR. GROSS

†159. *Cervantes*—A study of the life and literary works of Cervantes with special emphasis upon the reading interpretation of *Don Quijote*. Lectures on the political, social and literary background of the period. Cr 3. MR. GROSS

†160. *The Renaissance and Golden Age*—Readings 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

197. 198. *Projects in Spanish*—Individual work on a project of the student's selection. Prerequisite: consent of the department head. Cr Ar. (maximum: 3 hrs.) STAFF

399. *Graduate Thesis*—Cr 6.

CLASSICS (CI)

1. 2. *Greek and Latin Literature in English Translation*—The first semester is devoted to Greek literature; the second semester, to Latin literature. No knowledge of either language is necessary. This course satisfies the humanities requirement of the College of Arts and Sciences. Cr 3. MR. TATEM

GEOLOGICAL SCIENCES (Gy)

PROFESSOR OSBERG; ASSOCIATE PROFESSORS BORNS, HOWD; ASSISTANT PROFESSORS HALL, MYER

The geological sciences are concerned with the physical and chemical characteristics of minerals and rocks, with their occurrence, arrangement, and surface expression, and with the history of the earth and its organic inhabitants. The curriculum provides for a basic understanding of the geological sciences and is sufficiently flexible to allow students with interests in geochemistry, geophysics, and paleontology to pursue additional courses in appropriate ancillary sciences. Specialization within a particular branch of the geological sciences requires graduate work.

The requirements for the major include: Gy 11; Gy 13; Gy 14; Gy 16; Gy 18; Gy 155; Gy 157; Gy 158; Gy 160; Ch 1/2; Ps 1a/2a; Ms 12; Ms 19; Ms 27; Ms 28 and Gc 7.

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GEOLOGY SPECIMEN CURRICULUM

Freshman Year

FALL SEMESTER				SPRING SEMESTER			
			Hours				Hours
Eh	1	English Composition	3	Ms	1	Trigonometry	2
Ch	1	General Chemistry	4	Ms	3	Algebra	2
		Language	4	Ch	2	General Chemistry	4
		Social Science	3			Language	4
Sh	1	Speech	2			Social Science	3
			16				15

Sophomore Year

			Hours				Hours
Ms	19	Prin. of Statistical Inference	3	Ms	12	Analytical Geom. & Calculus	4
Gy	11	Field Geology I	3	*Gy	16	Social Science or Paleontology	3
		Language	3	Gy	14	Mineralogy	4
		Social Science	3	Gc	7	Computer Programming	2
		Humanities	3			Language	3
			15				16

Junior Year

			Hours				Hours
Ms	27	Analytical Geom. & Calculus	4	Ms	28	Analytical Geom. & Calculus	4
Ps	1a	General Physics	4	Ps	2a	General Physics	4
Gy	13	Field Geology II	3	Gy	18	Field Geology III	3
Gy	155	Optical Mineralogy	4	*Gy	16	Invertebrate Paleontology or Soc. Sci.	3
				*Gy	160	Seminar	2
			15				16

Senior Year

			Hours				Hours
Gy	157	Thermodynamic Basis of Mineral Associations	4	Gy	158	Petrology of Metamorphic & Igneous Rocks	5
		Humanities	3	*Gy	160	Seminar	2
		Electives	8			Electives	8
			15				15

*Offered in alternate years.

Courses of descriptive nature open to all students without prerequisite.

1 (1a). Physical Geology—A study of earth materials and processes, volcanism, mountain building, the work of seas, streams, ice and winds. Laboratory work includes an elementary consideration of minerals, rocks and maps. One-day field trip and two afternoon field trips.

Gy 1: Lec 3, Lab and field trips. Cr 4; Gy 1a: Lec 3, Cr 3.

2 (2a). Historical Geology—The geologic history of the earth and the development of life upon it. Laboratory includes study of selected fossils and vari-

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ous types of geologic maps. One one-day field trip. Prerequisite: Gy or Gy 1a. Gy 2: Lec 3, Lab 2, Field trip, Cr 4. Gy 2a: Lec 3, Field trip. Cr 3.

6. *Geology for Engineers*—A study of geology as related to civil engineering practice. Rec 2, Lab 3, Cr 3.

Courses Primarily for Undergraduate Majors

11. *Field Geology I*—An introduction in the field to basic observations, concepts and techniques of stratigraphy and simple structural geology. Three one-day field trips; three weekend field trips. No prerequisite. Rec. 1, Lab 4, Cr 3.

13. *Field Geology II*—Field methods of structural and stratigraphic analysis and synthesis of rocks having undergone multiple deformation. Use of the Brunton compass, plane table, Schmidt net in mapping and solving structural problems. Four weekend and one afternoon field projects; initiation of mapping project (to be completed in Gy 18). Prerequisite: Gy 11. Rec. 1, Lab 4, Cr 3.

14. *Mineralogy*—An introduction to crystallography and the crystal chemistry of minerals. Identification of the common minerals by their physical properties. Prerequisite: Ch 1/2 (may be taken concurrently). Rec 3, Lab 3, Cr 4.

16. *Invertebrate Paleontology*—Classification and evaluation of the major phyla of fossil invertebrates and their use in stratigraphic interpretation. No prerequisite. Lec 2, Lab 2, Cr 3.

18. *Field Geology III*—Introduction in the use of aerial photographs applied to geologic mapping. Theory and practice of magnetometer surveys. Completion of mapping project (initiated in Gy 13), and the preparation of a report. Prerequisite: Gy 13. Rec 1, Lab 4, Cr 3.

21. 22. *Geologic Problems*—The study of and report upon some original investigation. Time to be arranged. Prerequisite: consent of instructor. Cr 1 or 2. May be taken more than once.

Courses Primarily for Undergraduate Majors but Open to Graduate Students

155. *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 11. Rec 3, Lab 4, Cr 4.

157. *Thermodynamic Basis of Mineral Associations*—Thermodynamic study of heterogeneous systems with particular attention to open systems. Relationships between chemical composition, mineralogical content, and external parameters in rocks. Prerequisite: Ms 28. Lec 3, Rec 1, Cr 4.

158. *Petrology of Igneous and Metamorphic Rocks*—Mode of occurrence and characteristics of metamorphic and igneous rocks with an intensive investigation of the important phase relationships attributable to them. Laboratory problems involve work with the polarizing microscope and instrumental chemical analysis. Two one-day field trips. Prerequisites: Gy 155, Gy 157 and Ms 19. Lec 3, Lab 4, Cr 5.

160. *Seminar in Geology*—Preparation and presentation of reports covering geological topics of interest. Discussion by members of class. Rec 2, Cr 2.

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Courses Primarily for Graduate Students but Open to Undergraduate Majors

212. X-ray Analysis in Mineralogy—Introduction to the study of minerals by X-rays. The methods of the powder camera, diffractometer and precession camera are utilized on mineral powders and single crystals. Prerequisite: consent of instructor. *Lec 3, Lab 3, Cr 4.*

221. Sedimentology—Origin and characteristics of the major sedimentary rock types and their use in environmental, paleogeographic, and tectonic interpretation. Laboratory use of thin sections and hand specimens. Prerequisite: consent of instructor. *Lec 2, Lab 3, Cr 3.*

242. Glacial and Pleistocene Geology—A study of the physical and the biological characteristics of the pleistocene epoch with special emphasis on glaciology, paleotemperature determinations and the stratigraphic techniques of pollen analysis, weathering of soils, and radiocarbon dating. One weekend and two one-day field trips. Prerequisite: consent of instructor. *Lec 3, Lab 2, Cr 4.*

257. Metallic Mineral Deposits—A study of the chemical and physical factors controlling the formation of metallic mineral deposits. Experimental and theoretical information is considered and related to documented field observations. Prerequisite: consent of instructor. *Lec 3, Lab 3, Cr 4.*

Courses for Graduate Students Only

301. Directed Study in Geology

399. Graduate Thesis

HISTORY (Hy)

PROFESSORS SEAGER, ALBION, JEFFREY, STEWART, TRAFFORD; ASSOCIATE PROFESSORS DECKER, DOTY, HAKOLA, MINGER, PEASE; ASSISTANT PROFESSORS ARBAGI, BANKS, BATTICK, BEITZELL, CHONG, NADELHAFT, SMITH, VON WAHLDE; INSTRUCTORS JOHNSON, MORGAN; TEACHING FELLOWS GAFFNEY, JACOBS, KAVANAGH, LISTER, MATSON, MEEHAN, NEMON, PARADIS, RANDELL; GRADUATE ASSISTANTS MICHELSON, SAVAGE, STEVENS

The history major must complete Hy 3. 4, 5. 6, and at least 24 hours of advanced history courses approved by his adviser.

The department offers the M.A. degree in history, with specialties in most areas of history, and the Ph.D. degree, with specialty in American history. Students will be admitted to these graduate programs upon presentation of credentials required by the Graduate School, including transcripts indicating excellent undergraduate records and satisfactory scores in both the aptitude and advanced tests of the Graduate Record Examination. Further details may be found in the Graduate School Bulletin.

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. This course satisfies the humanities requirement of the College of Arts and Sciences. *Cr 3.*

MR. ARBAGI

3. 4. United States History—From 1789 to recent years. The development of democracy, growth of the West, slavery and sectionalism, the Civil War,

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Reconstruction, the making of modern America, industrialization, imperialism, and other topics. *Cr 3.*

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.* MR. TRAFFORD, 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. BANKS, MR. SMITH

101. 102. *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 3.* MR. ARBAGI

103. 104. *The Middle Ages*—Europe from late antiquity through the Renaissance. Emphasis on such topics as the Carolingian Empire, feudalism, medieval church and state, the Renaissance problems, and the impact of peripheral areas on Western Europe. Prerequisite: Hy 5. 6. *Cr 3.* MR. ARBAGI

105. 106. *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. Prerequisite: Hy 5. 6. *Cr 3.* MR. ARBAGI

109. *Europe in the 18th Century*—European history from the early 18th century through the Congress of Vienna, with special emphasis on the Enlightenment and the Enlightened Despots, the causes and the political, social, and economic aspects of the French Revolution, the career and European impact of Napoleon, and the spread of revolutionary principles in Europe. Prerequisite: Hy 5. 6. *Cr 3.* MR. BEITZELL, MR. DOTY

†110. *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. BEITZELL, MR. DOTY

‡111. 112. *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. BEITZELL, MR. DOTY

115. 116. *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: Hy 5. 6. or permission. *Cr 3.* MR. TRAFFORD, MR. BATTICK

117. *Tudor and Stuart England*—The development of ideas and institutions in the British Isles from 1485 to 1714. Special emphasis will be given to the growth of parliamentary power, political theory, social and economic changes, and foreign affairs. Prerequisite: Hy 115. 116 or permission. *Cr 3.* MR. BATTICK

†120. *Modern England*—England since 1815, with emphasis on the gradual

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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 115.116 or permission. Cr 3.

MR. TRAFFORD

121. 122. History of France—Political, social, economic, and cultural development of France. The first semester will cover the formation of the French monarchy through the French Revolution and Napoleon. The second semester will cover the Bourbon Restoration to the present. Prerequisite: Hy 5. 6. or permission. Cr 3.

MR. DOTY

123. 124. 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. Cr 3.

MR. VON WAHLDE

126. Russian Cultural History—Russian intellectual, cultural, and social history of the 18th and 19th centuries. Special attention is paid to the intellectual theories of the revolutionary movement. Prerequisite: Hy 5. 6. or 123. 124. Cr 3.

MR. VON WAHLDE

127. 128. History of Science—Development of the physical and biological sciences from pre-Greek civilization to the 20th 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.

129. 130. 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. Prerequisite: Hy 5. 6. or permission. Cr 3.

MR. HAKOLA

131. 132. Germany Since 1648—The rise of Prussia, the unification of Germany, the Weimar era, the National Socialist period, and the Bonn Republic. Stress is given to political, economic, cultural and intellectual developments. Prerequisite: Hy 6 or permission. Cr 3.

MR. VON WAHLDE

133. 134. European Diplomatic History—A survey of the diplomatic history of modern Europe emphasizing the national foreign policies of the major European powers and changing concepts of international relations. Prerequisite: Hy 6 or permission. Cr 3.

MR. BEITZELL

135. 136. History of China—The fall semester will include the history and culture of the Chinese people from earliest times to the 19th century. The spring semester will be concerned with "modernization" of China: the coming of the West, the impact of Western ideas, and the resulting revolutionary movement. Prerequisite: six hours of history. Cr 3.

MR. CHONG

137. 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: six hours of history. Cr 3.

MR. CHONG

138. Problems of Southeast Asia—A survey of countries recently emerged from colonialism, such as Indonesia and Malaya. Prerequisite: same as for Hy 137. Cr 3.

MR. CHONG

139. 140. The Middle East—The Middle East in modern times, with special

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emphasis on the impact of the West in terms of political, economic, and cultural change. Prerequisite: six hours of history. *Cr 2.*

141. 142. *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 115. 116. *Cr 3.* MISS STEWART

147. 148. *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

149. *Argentina, Brazil, and Chile*—A history of the major countries of South America, from their independence in 1823 to the present. Prerequisite: Hy 148 or permission. *Cr 3.* MR. JEFFREY

150. *Mexico*—A history of Mexico, from early times to present. Prerequisite: Hy 148 or permission. *Cr 3.* MR. JEFFREY

151. *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

152. *Problems of Latin America*—Recent problems facing Latin American nations in relations to the world and in their internal development. Prerequisite: six hours of history. *Cr 2.* MR. JEFFREY

157. 158. *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: sophomore standing and Hy 3. 4 or 5. 6. *Cr 3.* MISS STEWART

161. 162. *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 18th century; the remote and immediate causes of the revolution. Prerequisite: junior or senior standing. *Cr 2.* MR. NADELHAFT

†163. *Revolution and Confederation*—The causes of the American Revolution, the war with special attention to the "internal revolution," and the post war period to 1789. Prerequisite: Hy 3. 4 or Hy 161. 162. *Cr 3.* MR. NADELHAFT

165. 166. *Era of Jefferson and Jackson*—An analysis of American political, cultural, social, and economic development in the first half of the 19th century. Prerequisite: Hy 3. 4. *Cr 3.* MR. PEASE

167. *Civil War and Reconstruction*—The period of national disruption and reunification, with emphasis on the collapse and reconstruction of the national political and social fabric, the acceleration of economic change, the emergence of the industrial trend, and the development of the new sectionalism. Prerequisite: Hy 3. *Cr 3.* MR. DECKER, MR. PEASE

169. 170. *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. SMITH

171. 172. *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

173. 174. *American Diplomatic History*—American diplomatic history

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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. SEAGER

175. 176. *Social and Intellectual History*—American social and cultural developments as reflected in philosophy, literature, religion, science, politics and economics. Prerequisite: Hy 3. 4. Cr 3. MR. BANKS

177. 178. *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. PEASE

181. 182. *History of the West*—A study of the factors involved in the movement of population, the evolution of agricultural and pioneering techniques, and the formation and migration of capital on the several frontiers, of frontier life and culture, and of the influences of territorial and agricultural expansion in American history. Prerequisite: Hy 3. 4. Cr 2.

MR. DECKER

†**183. *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. Permission required. Cr 2.

MR. ALBION

185. 186. *New England History*—The development of the region as a distinct area in the country with particular attention to transitions such as the decline and shift in agriculture, the growth of industries, population movements, and their impact on political and social structures. Prerequisite: 6 hours of history or permission. Cr 3.

291. *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 3.

MR. DECKER, MR. PEASE, MR. DOTY

292. *History of Historical Writing*—A survey of the principal schools of historical writing and of their products, with detailed student analysis of the philosophical principles, specific purposes, and research and writing techniques of selected major historians. Cr 3.

MR. DECKER

299. *Seminar*—Projects for qualified students. Cr 2 or 3.

301. *Topics in Colonial History*—Cr Ar.

302. *Topics in U. S. History from the Revolution to 1877*—Cr Ar.

303. *Topics in U. S. History since 1877*—Cr Ar.

305. *Topics in American Social and Intellectual History*—Cr Ar.

306. *Topics in American Foreign Relations*—Cr Ar.

307. *Topics in Latin American History*—Cr Ar.

308. *Topics in Canadian History*—Cr Ar.

309. *Topics in New England-Atlantic Provinces History*—Cr Ar.

311. *Topics in 19th Century European History*—Cr Ar.

312. *Topics in 20th Century European History*—Cr Ar.

313. *Topics in English History*—Cr Ar.

350. *Independent Readings*—Cr Ar.

360. *Supervised College Teaching*—Cr Ar.

397. *Philosophy of History*—Cr Ar.

399. *Graduate Thesis in History*—Cr Ar.

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HONORS PROGRAM (Hr)

PROFESSORS TRAFFORD, MILES, BISCOE, FLYNN, GLANVILLE, HARTGEN, NOLDE, AND REYNOLDS; ASSOCIATE PROFESSORS J. BENNETT, HOLMES, REID, SPRAGUE, SWINFORD, AND THOMSON (SECRETARY); ASSISTANT PROFESSOR BANKS, MR. SCONTRAS

Freshmen of marked academic ability enrolled in all colleges are invited to apply to the secretary for admission to the sequence of honors courses described below. The work of the freshman and sophomore years, under the direction of staff drawn from all colleges of the University, 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 which is written during the senior year and treats 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. Of the courses listed below, Hr 41, 45, 47, and 48, are taken in common with students from other colleges within the University.

41. Distinguished Freshman Seminar—Limited to Distinguished Maine Students and to a limited number of other students, by invitation. Discussions and demonstrations displaying the range and nature of the Liberal Arts and Sciences. Cr 3. MR. SIMPSON

45. Honors Colloquium—Readings and discussion on the basic concepts of Western civilization. Normally taken in the freshman year. Cr 3.

MR. BANKS, Chairman

46. Honors Summer Readings: Basic—Optional for those who have taken course 45. An individually arranged program of readings is independently pursued in the summer. Cr 1.

MR. REYNOLDS

47. 48. Honors Group Tutorial—Oral and written reports under tutorial direction, upon a planned sequence of books representative of the various fields of liberal education. Hr 47.48 fulfills the sophomore humanities requirement for those students registered in the Honors Program. Cr 3. MR. THOMSON, Chairman

49. Honors Summer Readings: Intermediate—Guided summer readings and reports, individually adapted to the student's program. Primarily for students who have had only one semester from Hr 47.48. Cr 1. MR. SPRAGUE

50. Honors Seminar—Discussion groups in such fields as the arts, philosophy and history of science, aspects of the study of society. Content varies from year to year. Normally taken in the junior year. Cr 3.

51. 52. Honors: Specialized Studies—A tutorially conducted study of the student's major field, issuing in the choice of an approved thesis topic. Cr 3.

53. 54. Honors Thesis—The planning and completion of an honors thesis or research project. Cr. 3.

INTERNATIONAL AFFAIRS (Ia)

The study of international affairs may lead to a major in international affairs in any one of the following disciplines: economics, foreign languages or political science. A suggested curriculum for the first two years is outlined below. Detailed programs covering the last two years of study in each discipline may be secured

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from the Committee on International Affairs, 33 North Stevens, University of Maine, Orono, Maine 04473.

To enter the junior year of the program a student must have a minimum point average of 2.0 or permission of the Committee on International Affairs. Normally a student would take four years of a modern language or its equivalent. He would study in each of the three disciplines.

SPECIMEN CURRICULUM IN INTERNATIONAL AFFAIRS

Freshman Year

FALL SEMESTER			SPRING SEMESTER		
		Hours			Hours
Eh	1	Freshman Composition .....3	Eh	8	Description and Narration .....3
Hy	5	Hist. of Western Europe .....3	Pol	22	Current World Problems .....2
Ms	5	Elements of College Math. or a Laboratory Science .....3-4	Hy	6	Hist. of Western Europe .....3
Pe	1	Physical Education .....0	Ms	6	Elements of College Math. or a Laboratory Science .....3-4
Sh	1	Funds. of Public Speaking2	Pe	2	Physical Education0
		Foreign Language4			Foreign Language4
		Elective1-2			Elective1-2
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16-17			16-17		

Sophomore Year

		Hours			Hours
Ec	1	Principles of Economics3	Ec	2	Principles of Economics3
Pol	1	Introduction to Government .....3	Pol	2	Introduction to Government .....3
		Descriptive Science .....3			Descriptive Science .....3
		Foreign Language3			Foreign Language3
		Humanities3			Humanities3
		Elective2			Elective2
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17			17		

JOURNALISM (Jr)

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. Those interested in radio and television news may elect Sh 21.

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 journalism library. *The Maine Campus*, a student-operated weekly newspaper, is a practical laboratory. Students also have access to the University printing plant, the campus radio station and television studios, and are served daily with As-

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sociated 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 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: Pol 1/2; Ec 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 related activities. The student must complete courses in French, German, or Spanish at least up to the 157.158 (or fourth year) level. Other required courses: Hy 5/6; Pol 1/2; Pol 35/36; Ec 1/2; plus at least 18 hours in advanced courses approved by the adviser.

Economics Affairs Option—For the student with a special interest in economics, preparing for newspaper work, public relations, industrial editing or related activities. Required courses: Ms 1, 3 and 12 or 5/6; Ec 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 121, 149, 167 and 168; plus at least 12 additional hours in advanced literature and composition courses.

Social Welfare Option—For students preparing for journalism careers with an interest in social welfare, or in the increasing emphasis on sociological research in mass communications, or in a career in social work. Required courses: Pol 1/2, Ec 1/2, Py 1/2, Ay 1/2, Sy 3/4 (as many as possible taken during the sophomore year), plus either of the following plans of advanced courses: Sy 50/51 and 52/53 or Sy 120 and 160, plus six more hours of sociology courses numbered from 10 through 38.

Science Writing Option—Designed to combine liberal arts and a strong science background with journalism training for those interested in this new, specialized field. Prospective majors should elect Ms 12 for their freshman science requirement, and German for the language requirement. The student will be required to complete 32 to 40 hours in a science and the necessary requirements or prerequisites in related sciences.

22. Survey of Journalism—A beginner's course in the structure and operation of modern news media. Includes visit to a modern newspaper plant. 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 Press and Society—Not given every year.

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.

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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 Makeup*—Given when there is sufficient demand. *Cr 2.*

MATHEMATICS AND ASTRONOMY

PROFESSORS KIMBALL, EVES, AND WOOTTON; ASSOCIATE PROFESSORS SWINFORD, NORTHAM, HAMM, J. TOOLE, ALTENBERGER, CUNNINGHAM, AND HARPER; ASSISTANT PROFESSORS DODGE, HOOPER, PERRY, STEARNS, GEIGER, GREEN, MESTECKY, MURPHY, HANNULA, AND SOULE; MR. DUBE, MR. EDE, MR. WAGNER, MR. DRANCHAK, MISS KEM, MR. MERRIMAN, MR. MIXER, AND MR. SAWTELLE; MRS. TOOLE, MR. MERRILL, MRS. HANNULA, AND MRS. OLMSTEAD; MR. GODSOE, MR. PERRY, MR. SHELTON, MRS. BLOOM, MRS. COSTA, MR. BOURQUE, MRS. KIMBLE, MR. WHEELER, AND MR. ROY

ASTRONOMY (As)

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.*

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 As 9. Prerequisite: one year of college mathematics. *Cr 3.*

59/60. *Advanced Astronomy*—Spherical trigonometry; determination of time, latitude, longitude; celestial mechanics, artificial satellites, interplanetary flight; eclipses; stellar parallax, motions, structure; binary stars, sizes and masses. Prerequisite: Ms 28 or permission. Not given every year. *Cr 3.*

MATHEMATICS (Ms)

Students who plan to major in mathematics should take Ms 12, 27 and 28 during their first two years, and Ms 29 if they begin their college programs with Ms 12. They should begin with Ms 1 and Ms 3 if they have had less than three and one-half years of high school mathematics or have not had a course in trigonometry. When possible, prospective majors should also take Ms 21 and Ms 22 in the sophomore year.

The student's program of courses for the junior and senior years will depend on his vocational plans. In selecting upper level courses the mathematics major will be assisted by a Mathematics Department member assigned by the department to act as his adviser.

All mathematics majors must earn a minimum of 39 credit hours in mathematics exclusive of Ms 1, Ms 3, Ms 5, Ms 6, Ms 7, Ms 8, Ms 9, Ms 10, Ms 17 and

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Ms 19. An appropriate selection of the more highly technical courses will be recommended by the adviser for the major who plans on industrial employment or graduate work. Majors are advised to satisfy the college language requirement through French, German, or Russian.

The general requirements for the master of arts degree are given in the Graduate Bulletin. 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 Ms 7, Ms 9, Ms 10, and Ms 19, for which one year is required.

Students taking Ms 12 may not take Ms 5/6 for credit.

1. Trigonometry—The trigonometric functions, their properties and applications. *Cr 2.*

3. College Algebra—Basic topics in algebra necessary for further work in mathematics. *Cr 2.*

5/6. Elements of College Mathematics—Modern viewpoints on certain basic mathematical material. Intended primarily for non-mathematics majors. *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. *Cr 3.*

9. Informal Geometry—Sets, points, lines, planes, and other configurations of one, two, and three dimensional geometry. Congruences, measurement, and constructions. Primarily for the elementary school teacher. Prerequisite: consent of the instructor or teaching experience in an elementary or junior high school. *Cr 3.*

10. Basic Algebra—An introductory treatment of mathematical operations on set symbols including procedures for solving simple equations and inequalities. Primarily for the elementary school teacher. Not given every year. Prerequisite: consent of the instructor or teaching experience in an elementary or junior high school. *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.*

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 Set Theory—An introduction to general set theory. *Cr 2.*

22. Elements of Real Number Theory—The real number system developed from a foundation in intuitive set theory. *Cr 2.*

23. Theory of Equations—A brief introduction to modern algebra followed by material on the solution of polynomial equations. Prerequisite: Ms 28 or consent of the instructor. *Cr 2.*

24. Introduction to Matrices—Vector spaces, linear transformations, matrices, linear and quadratic forms. Prerequisite: Ms 21. *Cr 3.*

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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 derivatives; multiple integrals; applications. Prerequisite: Ms 27. *Cr 4.*

29. *Differential Equations*—An introduction to ordinary differential equations; applications. Prerequisite: Ms 28. *Cr 4.*

41. *Introduction to Mathematical Logic and the Nature of Proof*—An introductory course designed specifically to view logic and the nature of mathematics. Proof with concepts and symbolism as used throughout modern mathematics. The notions and symbolic logic will be developed with a decidedly set-theoretic background. Prerequisite: Ms 21 and Ms 27. *Cr 2.*

103. *Mathematics of Optimization*—A course in modern mathematical methods emphasizing programming, game and decision theory with applications in social and industrial science and economics. Prerequisite: Ms 24. *Cr 3.*

130. *Mathematical Statistics I*—Probability and principles of inference. Particular emphasis is given to the normal distribution and related sampling distributions. Prerequisite: Ms 28. *Cr 3.*

131/132. *Mathematical Statistics II and III*—A continuation of Ms 130 including topics such as decision functions, non parametric methods and an introduction to analysis of variance. Prerequisite: Ms 130 or permission. *Cr 3.*

133. *Stochastic Processes*—An introduction to stochastic processes with emphasis on normal Poisson and Markov processes. Applications in various fields will be considered. Prerequisite: Ms 130. *Cr 3.*

149. *Mathematics for Teachers*—A modern approach to selected topics in mathematics with methods of presentation to secondary school students. Prerequisite: Ms 28 or consent of the department. *Cr 3.*

150. *Ordinary Differential Equations*—Solution of ordinary differential equations and applications. Prerequisite: Ms 29. *Cr 3.*

151. *Introduction to Vector Analysis and Matrices*—The algebra and calculus of vectors. Matrices and systems of linear equations, eigenvalues and eigenvectors, bilinear and other forms. Prerequisite: Ms 28. *Cr 3.*

152. *Introduction to Complex Variables*—Analytic functions, integration, series, and mapping. Prerequisite: Ms 28. *Cr 3.*

153. *Partial Differential Equations*—Fourier series and integrals, orthogonal functions, the Sturm-Liouville problem, wave and heat flow equations. Prerequisite: Ms 150. *Cr 3.*

154. *Solid Analytic Geometry*—Analytic geometry in three dimensions. Not given every year. Prerequisite: Ms 28. *Cr 3.*

155/156. *Differential Equations*—An introduction to the theory and solution of ordinary and partial differential equations. Not given every year. Prerequisite: Ms 173. *Cr 3.*

161. *History of Mathematics*—The development of elementary mathematics from ancient to modern times. Prerequisite: Ms 12. *Cr 3.*

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164. College Geometry—Modern Euclidean geometry, including such topics as the nine-point circle, harmonic section, and inversion. *Cr 3.*

165. Theory of Numbers—Elementary properties of the integers. Prerequisite: Ms 28. *Cr 3.*

166. Introduction to Sampling Methods—Basic sampling schemes: simple random, stratified, cluster, and multi-stage. Biases and errors. Ratio and regression estimation. Prerequisite: Ms 19 or Ms 130. Not given every Year. *Rec 2, Lab 2, Cr 3.*

167. Statistical Methods in Research—Analysis of variance, factorials, planned comparisons, analysis of covariance, and multiple regression, viewed as tools for research in all fields. Prerequisite: Ms 19 or 130. *Rec 2, Lab 2, Cr 3.*

168. 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 167. *Rec 2, Lab 2, Cr 3.*

169. Computer Programming—Programming logic and techniques. Concentrates on the IBM Fortran language. Students will work on the University's IBM 1620 Computer. Prerequisite: one year of college mathematics or consent of the instructor. *Cr 3.*

171/172. Higher Algebra—A semester of groups, rings, and fields, followed by a semester of linear algebra. Prerequisite: Ms 21. *Cr 3.*

173/174. Advanced Calculus—Functions of real variables, limits, infinite series, partial differentiation, and other topics. Prerequisite: Ms 28. *Cr 3.*

175/176. Higher Geometry—An introduction to various geometries, such as projective and non-Euclidean. Not given every year. Prerequisite: Ms 28. *Cr 3.*

179. Finite Groups—Theory of groups, including Sylow's theorems and Abelian groups. Prerequisite: Ms 171 or consent of the department. *Cr 3.*

185. Mathematical Logic—Church's two basic formulations of non-quantified propositional calculus and the elements of quantified propositional calculus. Normal forms. Axiom schemata. Boolean rings and Boolean algebras in logic. Not given every year. Prerequisite: Ms 28. *Cr 3.*

187. Numerical Analysis—Computational methods for electronic computers with exercises on the IBM 1620 for interpolation, simultaneous linear algebraic equations, non-linear and polynomial equations, numerical integration, and ordinary and partial differential equations. Prerequisite: Ms 28 and Ms 169. *Cr 3.*

191/192. Differential Geometry—Applications of calculus to the study of space curves and surfaces. Not given every year. Prerequisite: Ms 28. *Cr 3.*

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.*

197/198. Foundations of Mathematics—Fundamental concepts and methods of mathematics; viewpoints on the foundation of mathematics. *Cr 3.*

271/272. Abstract Algebra—The basic structure theorems for groups, rings, fields, and modules. Prerequisite: Ms 172. *Cr 3.*

277/278. Topology—An introduction to point set topology. The concept of

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convergence is developed using filters. The development includes regular, compact, normal and uniform spaces. Prerequisite: Ms 174 or consent. *Cr 3.*

‡279/280. *Functions of a Complex Variable*—Prerequisite: Ms 174 or consent of the department. *Cr 3.*

†283/284. *Functions of a Real Variable*—Prerequisite: Ms 174 or consent of the department. *Cr 3.*

300. Seminar in Mathematics Education—Oral and written reports on topics in mathematics which have relevance for experimental and new programs in the secondary schools. Restricted to teachers or supervisors, grades K-12, who are candidates for the M.Ed. degree. Prerequisite: permission of the instructor. Not given every year. *Cr 3.*

399. Graduate Thesis—*Cr Ar.*

MODERN SOCIETY (My)

ASSOCIATE PROFESSOR MCKAY (CHAIRMAN); MR. SCONTRAS

Modern Society is an introductory course in social science, designed to acquaint the student with the meaning and use of the scientific method in the study of human relations. It introduces the student to major concepts in the fields of anthropology, social psychology, sociology, economics, and political science. Some attention is given to basic literature and problems in each field.

Basically a general education course, it is designed both for those students who may major in the social sciences and also for those whose chief interests are in other curricula but who need this contribution to a well-rounded education.

Modern Society is open primarily 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 public opinion, propaganda analysis, group ways and controls, the culture concept, physical resource and population problems, social class, race relations, crime, business and labor organization, trends in agriculture, consumer problems, freedom and power in society, political parties and elections, democracy and totalitarianism. *Cr 3.*

MUSIC (Mc)

PROFESSOR GODWIN; ASSISTANT PROFESSORS CAVANAGH, COLLINS, JACOBS;
LECTURER HARE; MISS FOLEY

The curricula of the Department of Music lead to baccalaureate degrees as follows:

1. Bachelor of Arts Degree with a major in music.

For the student who wants a major in music as part of a general cultural education. The music requirements are as follows:

Basic Music	Theory	16
	History	6
	Literature	2
	Form and Analysis	2
Music Performance	Performance Major	16
	Music Organization	4
	Music Electives	2
Total		48

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A recital on the major instrument or voice is required in the senior year. It should be understood that this degree is non-professional, is not preparation for graduation study, and serves as only partial preparation for teacher training through the College of Arts and Sciences.

2. Bachelor of Science in Music Education—for students in the College of Education who intend to make music a career either as a teacher, and/or a supervisor of music. Majors in music education will register in the College of Education and follow the curriculum outlined there. The specific requirements for the degree may be obtained from the Department of Music. Upon completion of this degree, a student will be certified to teach in the public schools.

See Division of Music Education in the College of Education section of this catalog.

A proficiency examination in piano must be passed by all degree students in music before the senior year. See the music adviser for details.

Courses in Music Performance

The Department of Music provides private instruction in various instruments and voice. The student should enroll under one of the following numbers:

* First level,	MC 1-2 Cr 1 to 4
Second level,	MC 3-4 Cr 1 to 4
Third level,	MC 5-6 Cr 1 to 4
Fourth level,	MC 7-8 Cr 1 to 4

* The level is roughly the equivalent of the year, but the student who does not meet the requirements for the level at the end of each year as determined by the jury examination will continue on the previous level until the requirements are met. Students will be reviewed at the end of their sophomore year to determine whether they should continue as a major in music.

Instruction is provided in the following areas. The letter following the instrument, or voice, indicates the area and should be used in conjunction with the numbers above when enrolling.

Example: MC 1 A

Voice	A	Violin	D	Flute	H	French Horn	N	Percussion	U
Piano	B	Viola	E	Oboe	J	Trumpet	P		
Organ	C	Violoncello	F	Clarinet	K	Baritone Horn	R		
		Double-bass	G	Bassoon	M	Trombone	S		
						Tuba	T		

Music majors enroll for two hours credit for the major instrument or voice, one hour for the second instrument or voice. *All other students* enroll for one hour credit.

Credit in music performance must be matched by an equal number of credits in courses in music history, literature, or theory of music before it will be counted toward graduation. Courses in applied music and music performance may be repeated for credit.

Each student taking instruction in an applied area must take an examination before a jury of the faculty of music at the end of each semester. Attendance at the Tuesday afternoon student recital is required. Prerequisite: qualifying test; see the Secretary of the Department of Music.

One half-hour lesson each week, \$30. One hour lesson each week, \$60.

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Practice facilities are provided in the music building. The University provides, so far as possible, practice opportunities for students who desire to take applied music without credit.

A fee of \$5.00 is charged for the use of a practice room. After being accepted by a teacher, the student should report immediately to the music office for a fee statement. The lesson fee and rental must be paid to the Treasurer's Office before lessons can begin.

Musical Organizations and Ensembles (Mc O)

1. 2. Choir—Rehearsal and performance of choral concert repertoire. Membership through audition requires sight reading ability. Before requesting an audition the student should take the Music Fundamentals Test (See Secretary of the Department of Music). Three hours of rehearsal a week, and attendance at Chorophonic Society rehearsals. Attendance at all rehearsals and public performances required. May be repeated for credit. *Lab 3, Cr 1.*

3. 4. Chorophonic Society—Rehearsal and performance of major choral works. Membership through audition. Attendance at all rehearsals and public performances required. May be repeated for credit. *Lab 2, Cr 1.*

11. Band—During football season the band functions as a marching unit; the remainder of the semester is spent in the rehearsal and performance of concert band repertoire. Membership through audition. Attendance at all rehearsals and public performances required. May be repeated for credit. (Fall semester only.) *Lab 4, Cr 1.*

12. Concert Band—Rehearsal and performance of standard band repertoire. Membership through audition, or previous participation in Marching Band. Attendance at all rehearsals and public performances required. May be repeated for credit. (Spring semester only.) *Lab 4, Cr 1.*

13. 14. Symphonic Band—Rehearsal and performance of symphonic band repertoire. Membership through audition. Attendance at all rehearsals and public performances required. May be repeated for credit. *Lab 4, Cr 1.*

21. 22. University Orchestra—Rehearsal and performance of symphonic works. Membership through audition. Attendance at all rehearsals and public performances required. May be repeated for credit. *Lab 4, Cr 1.*

31. 32. Vocal Ensemble—The study and performance of chamber music for the voice. May be repeated for credit. *Lab 2, Cr 1.*

41. 42. Brass Ensemble—The study and performance of chamber music for brass instruments. May be repeated for credit. *Lab 2, Cr 1.*

45. 46. Woodwind Ensemble—The study and performance of chamber music for woodwind instruments. May be repeated for credit. *Lab 2, Cr 1.*

49. 50. String Ensemble—The study and performance of chamber music for string instruments. May be repeated for credit. *Lab 2, Cr 1.*

Courses in Music Education (Mc E)

1. Music Methods for the Elementary Teacher—A functional course covering the methods, content, and materials of the elementary music program. Prerequisite: MC L 1, and MC T 1 or equivalent. *Cr 3.*

3. Teaching and Supervision of Elementary Music—A comprehensive

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study of the elementary music programs for music specialists. Prerequisite: MC T 14 A, B, and MC L 22. *Cr* 3.

†11. *Teaching of Secondary Music*—Methods, materials, organization, and administration of the various aspects of the secondary school music curriculum. Prerequisite: MC T 14 A, B, and MC L 22. *Cr* 3.

21. *Teaching of General Music*—Organization and teaching of general music classes in the junior high school. Prerequisite: MC E 3, or equivalent. *Cr* 3.

Courses in Performance Techniques (Mc P)

1/2. *Voice Class*—The systematic development of the principles of good singing for beginners in voice. Prerequisite: MC T 1 or passing of Music Fundamentals Test. *Lab* 2, *Cr* 1.

5/6. *Piano Class*—A class designed to give a basic command of the keyboard to those students who need it as a tool. Recommended especially to those students who are required to take a proficiency examination in secondary piano and who lack the basic keyboard skills. Prerequisite: MC T 1, or passing of Music Fundamentals Test. *Lab* 2, *Cr* 1.

‡9/10. *String Class*—Basic skills pertaining to each of the four string instruments. First semester, study of all the instruments; second semester, concentrated work on one instrument. Prerequisite: MC T 1, or passing of Music Fundamentals Test. First semester: *Lab* 4, *Cr* 2; second semester: *Lab* 2, *Cr* 1.

†13. *Woodwind Class*—Basic skills pertaining to the woodwind instruments. Prerequisite: MC T 1, or passing of Music Fundamentals Test. *Lab* 4, *Cr* 2.

†17. *Brass Class*—Basic skill pertaining to the brass instruments. Prerequisite: MC T 1, or passing of Music Fundamentals Test. *Lab* 4, *Cr* 2.

‡21. *Percussion Class*—Basic skills pertaining to the percussion instruments. Prerequisite: MC T 1, or passing of Music Fundamentals Test. *Lab* 2, *Cr* 1.

†31. *Basic Conducting*—Fundamentals of conducting with attention given to conducting patterns, size of beat, baton technique, use of each hand. Conducting experience with the class as a laboratory group. Prerequisite: MC T 1, or passing of Music Fundamentals Test. *Lab* 2, *Cr* 1.

‡41. *Advanced Choral Conducting*—Advanced choral conducting, and study of basic problems in the organization and training of choral groups. Prerequisite: MC P 31. *Lec* 1, *Lab* 2, *Cr* 2.

‡45. *Advanced Instrumental Conducting*—Advanced instrumental conducting, and study of basic problems in the organization and training of bands and orchestras. Prerequisite: MC P 31. *Lec* 1, *Lab* 2, *Cr* 2.

51. 52. *Accompanying*—A course designed for music majors whose concentration is voice-keyboard. Prerequisite: MC 2B or C. *Lab* 2, *Cr* 1.

Courses in Music History (Mc H)

1/2. *History of Music*—The history of music from antiquity to the present day with a technical study of the significant musical trends. Prerequisite: For the major, MC L 22, or sophomore standing. For the general student, permission of the instructor. *Cr* 3.

117. *Music of the Baroque Period*—A study of music in the 17th and first half of the 18th centuries; from Monteverdi and Schutz to Bach and Handel. Prerequisite: MC H 2, or permission of the instructor. *Cr* 3.

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119. *Music of the Classical Period*—The changing style in form and content as evolved by Haydn, Mozart and Beethoven viewed against the background of social and political conditions of the time. Prerequisite: MC H 2, or permission of the instructor. *Cr 3.*

121. *Music of the Romantic Period*—Study of musical expression during the 19th century with emphasis on the intellectual foundations of the romantic movement. Study and detailed analysis of representative works from Beethoven through Debussy. Prerequisite: MC H 2, or permission of the instructor. *Cr 3.*

123. *Music of the Twentieth Century*—Trends in contemporary music and their relationship to the cultural and political life of our time. Prerequisite: MC H 2, or permission of the instructor. *Cr 3.*

Courses in Music Literature (Mc L)

1. *Understanding Music*—A study of the basic elements of music necessary for intelligent listening, with emphasis on the various historical movements, together with a study of the great composers and their contrasting styles as exemplified by their most important compositions. For the general student. *Cr 3.*

21-22. *Survey of Music Literature*—A comprehensive survey of music literature with in-class listening, and with analyses and comments by instructor. Primarily for music majors. *Lab 2, Cr 1.*

Courses in Music Theory (Mc T)

1. *Fundamentals of Music*—Notation and terminology, scales and intervals, chords, ear training, elementary rhythmic and melodic dictation, sight-singing. Open to all students. Required of music majors at no credit for those failing to pass the Music Fundamentals Test. *Cr 3.*

11A/12A. *Elementary Harmony*—Four-part harmony in diatonic relationships. To be taken concurrently with MC T 11B/12B. Prerequisite: MC T 1 or passing of Music Fundamentals Test (see secretary of the Department of Music). *Cr 3.*

11B/12B. *Elementary Sight Singing and Ear Training*—Sight singing, ear training, dictation, and keyboard work. To be taken concurrently with MC T 11A/12A. Prerequisite: MC T 1, or passing of Music Fundamentals Test (see secretary of the Department of Music). *Lab 2, Cr 1.*

13A/14A. *Advanced Harmony*—A continuation of MC T 11A/12A. Function and use of the seventh, ninth, eleventh and thirteenth chords, chromatic harmony, and advanced modulation. To be taken concurrently with MC T 13 B/14 B. Prerequisite: MC T 12 A. *Cr 3.*

13B/14B. *Advanced Sight Singing and Ear Training*—A continuation of MC T 11B; 12B. To be taken concurrently with MC T 13 A/14 A. *Lab 2, Cr 1.*

21. *Modal Counterpoint*—Contrapuntal techniques as practiced by composers of the 16th and 17th centuries. Written exercises and analysis. Prerequisite: MC T 11A/12A, or permission of instructor. *Cr 2.*

22. *Tonal Counterpoint*—Contrapuntal techniques as practiced by composers of the 18th and 19th centuries. Written exercises and analysis. Prerequisite: MC T 11A/12A. *Cr 2.*

55/56. *Canon and Fugue*—Analysis of masterpieces in forms, with particular concentration on the canons and fugues of Bach. Composition projects in

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these polyphonic types. Prerequisite: MC T 13B/14B, and MC T 22, or its equivalent. *Cr 2.*

†**141. *Form and Analysis***—Harmonic and structural analysis of musical forms from the smallest to the largest. Prerequisite: MC T 11A/12A, or the equivalent. *Cr 2.*

‡**151. *Instrumentation and Arranging***—Study of the ranges, tonal possibilities, technical limitations, and transpositions of all orchestral and band instruments; scoring of short pieces for band, orchestra and ensembles. Prerequisite: MC T 11A/12A. *Cr 2.*

161. *Composition I (Small Forms)*—Creative writing in the smaller forms including harmonic textures and use of contrapuntal devices. Prerequisite: A working knowledge of harmony and counterpoint and permission of the instructor. May be repeated for credit. *Cr 2.*

163. *Composition II (Large Forms)*—Continuation of MC T 161. Creative writing for voice and instruments in the larger forms. Prerequisite: MC T 161. May be repeated for credit. *Cr 2.*

THE SCHOOL OF NURSING

PROFESSOR MACLEAN, DIRECTOR; ASSOCIATE PROFESSOR IVANISIN; ASSISTANT PROFESSORS CAMPBELL, COTTON, HAMILTON, HOWARD, JENSEN, ROSCOE, TRYON; INSTRUCTORS MRS. CARROLL, MRS. EDWARDS, MRS. ELLIS, MISS MADDOX; COOPERATING WITH THE FACULTY: MISS DOLAN, DR. CROSS, MISS SULLIVAN

The School of Nursing was established in 1958 through a gift of \$93,000 from Congresswoman Frances Payne Bolton of Ohio. The school, a division of the College of Arts and Sciences, offers a four-year program which combines liberal arts and professional nursing education.

The philosophy of the School of Nursing encompasses and extends the philosophy of the University of Maine and of the College of Arts and Sciences, of which it is a part. The curriculum of the School of Nursing is based on the philosophy that professional nursing education should prepare an individual who will make a positive contribution to the welfare of the community through the effective practice of nursing in a changing world and who will achieve both personal and professional satisfaction.

The professional education is built on the knowledge, discipline and cultural understanding acquired through study of the arts and sciences. The curriculum provides an opportunity for the student to develop ability in critical thinking and communications, an understanding of human needs, a knowledge of the characteristics of health and its deviations, and the skill necessary to use all of these in the nursing care of people of all ages.

The total program is planned to prepare the graduate to practice professional nursing in a beginning position in the community, home, hospital or extended care facility and to work with individuals, families, and other groups. It is also designed to provide a basis for advancement to the responsibilities of leadership positions and for graduate study in the nursing field as well as acceptance of civic responsibility for promoting community health and welfare.

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The first two years of the program are based on the Orono campus and consist largely of the general education courses which provide a foundation for the clinical courses of the junior and senior years. These are taught in Portland and other clinical areas.

The course requires eight full semesters, plus a summer session between the sophomore and junior years. Upon satisfactory completion of the course, students receive the bachelor of science degree and are eligible to take State Board Examinations for licensure as registered nurses.

The student in the School of Nursing, as a regularly enrolled undergraduate in the University, is entitled to use all the facilities of the University for study, scholarship aid, and extracurricular activities.

The Maine Medical Center in Portland and a psychiatric hospital provide the clinical fields for the major portion of the nursing courses. Field experience in public health nursing is provided through cooperation with the Division of Public Health Nursing of the State of Maine, Department of Health and Welfare.

Fees and expenses will be essentially the same as those of other students for all four years, with the addition of the summer session, and nursing uniforms (\$90.00) which are purchased during the spring of the sophomore year.

Dormitory facilities are provided by the University, both on the Orono campus and in Portland. Special living arrangements are made during the courses in psychiatric and public health nursing.

The student must provide herself with a car for public health nursing experience and must pay the cost of this. She must have a driver's license current in some state in order to register for the senior year.

In order to enter the junior year of the program the student must have a minimum accumulative average of 1.8.

The School of Nursing reserves the right to request the withdrawal of any student who fails to make satisfactory adjustment to the field of nursing.

Courses in Nursing (Nu)

1. Introduction to Nursing—A survey of the expanding responsibilities and functions of the professional nurse in contributing to the health of the individual, the family, and the community, with emphasis on the changing health problems. Cr 2. MRS. HAMILTON

2. Introduction to Nursing—The historical interrelationship of social, cultural, and health factors of civilization with the development of nursing and nursing education. Cr 2. MRS. HAMILTON

3. Fundamentals of Nursing—An introduction to the nursing care of patients. Guided learning in selected nursing activities is provided through lectures, seminars and laboratory experience. Emphasis is placed on the development of nurse-patient relationships. Cr 4. MRS. CARROLL AND STAFF

4. Community Health—This course is concerned with the health and welfare needs of individuals and families and with how the community attempts to meet them. It includes some of the essentials of promoting health and preventing disease and stresses the role of the health worker in community health organization. Field trips to local agencies are arranged. Cr 3. MRS. CAMPBELL

5. Nursing of Adults—A course designed to provide the student with knowledge and skills necessary to care for adults with acute and chronic illnesses

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and to prepare the hospitalized patient for return to the community. Emphasis is placed on the patient's individuality, the interrelatedness of the physical and the psychological, the cooperation among members of the health team and development of nursing skills. Guided clinical experiences are provided. *Cr 14*

MRS. CARROLL AND STAFF

6. Nursing of Mothers and Children—A total family centered approach to nursing needs of mothers and children. Guided experience in the field of maternal and infant care and care of the child. Study emphasizes the normal mother and infant and the effect of the ill child on the family. Community resources needed to meet the needs of families during the child rearing and child bearing periods are explored. *Cr 14.*

MRS. HOWARD, MISS TRYON AND STAFF

9. Public Health Nursing—This course is designed to develop understanding of the scope, philosophy, fundamental principles, current trends and problems of public health nursing. Emphasis is placed on the approaches used, responsibilities and activities of the public health nurse in providing family centered nursing service in the community. Clinical practice in a generalized public health nursing agency provides the student with an opportunity to observe and to put into practice the concepts and principles learned in the classroom. *Cr 7.*

MISS ROSCOE

10. Psychiatric Nursing—Provides an opportunity for guided experiences in the nursing care of the acutely and chronically mentally ill with emphasis on the development of therapeutic use of self by the nurse. The approach is based on the concepts of mental health and the dynamics of human behavior. Community aspects are discussed. *Cr 7.*

13. Comprehensive Nursing—A course designed to provide opportunities to integrate knowledge and skills when ministering to individual patients with complex health problems and when assuming the responsibility for the nursing care of a group of patients. Emphasis is on development of efficiency in nursing care, teaching and managerial skills. Guided clinical experiences are provided. *Cr 7.*

MRS. CARROLL AND MRS. ELLIS

15. Introduction to Pharmacology—An orientation to pharmacology including study of legislation and the preparation, administration, and action of drugs. *Cr 1.*

MRS. HAMILTON

18. Nursing Seminar—The present situation in nursing; the problems of the profession and the individual practitioner. Opportunity for independent study. *Cr 2.*

MISS IVANISIN AND STAFF

CURRICULUM IN NURSING

FRESHMAN YEAR				SOPHOMORE YEAR			
Bc	7	Fundamentals of Chemistry	4	By	21	Intro. to Bacteriology	3
Bc	8	Elem. Physiological Chemistry	4	By	21A	Laboratory	1
Eh	1	Freshman Composition	3	Fn	152	Human Nutrition	3
Sh	1	Fund. of Public Speaking	2	Nu	4	Community Health	3
**Sy	3/4	Intro. to Sociology		Nu	15	Intro. to Pharmacology	1
		or		Py	1/2	General Psychology	6
	*	Elective	6	**Sy	3/4	Intro. to Sociology	
						or	
Nu	1.2	Intro. to Nursing	4			* Electives	6
Pe	1.2	Physical Education	0			* Electives	9
Zo	3	General Biology	4				
Zo	10	Anatomy and Physiology	5				

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SUMMER SESSION

Nu 3 Fundamentals of Nursing 4

JUNIOR YEAR

Nu 5 Nursing of Adults 14
 Nu 6 Nursing of Mothers & Children 14
 Py 123 Psychology of Childhood 3
 Eh 16 Masterpieces of English Lit. 3

34

SENIOR YEAR

Nu 9 Public Health Nursing 7
 Nu 10 Psychiatric Nursing 7
 Nu 13 Comprehensive Nursing 14
 Nu 18 Nursing Seminar 2

30

* Humanities requirement must be met.

** Sy 3/4 is required and must be taken either freshman or sophomore year.

PHILOSOPHY (PI)

PROFESSOR VIRTUE; ASSOCIATE PROFESSOR TREDWELL (CHAIRMAN); ASSISTANT
 PROFESSOR BRIMMER; MR. KOEHN

Philosophy, man's search for basic understanding of himself, his culture, and his world, has always been both a generous critic and a dissatisfied goal-maker of liberal education. As a generous critic, it offers insight into intellectual method and evaluational procedures; as a dissatisfied goal-maker, it seeks the union of theory and practice through immediate participation in cultural processes themselves.

While Philosophy and Modern Life (PI 1.2) offers to many an entry into the study of philosophy, Ethics (PI 135), Aesthetics (PI 133), Logic (PI 136), and Philosophy of Religion (PI 116) provides other introductions to philosophical study. Upperclassmen and interested sophomores may well consider the sequence offered by the History of Philosophy (PI 155. 156. 157. 158), though any one of these period courses may be taken independently. Philosophy majors complete a minimum of 24 hours in philosophy exclusive of PI 1.2.

1.2. *Philosophy and Modern Life*—An introduction to philosophical thinking through an examination of contemporary spokesmen on ethics, religion, education, and politics and a critical comparison of their ideas with those of major philosophers of the Western tradition. Representative topics are: classic and contemporary views of social justice; egoism and unselfishness; tradition and the formation of the present. Primarily for freshmen and sophomores. *Cr* 3.

MR. TREDWELL, MR. KOEHN

15. *Our Religious Heritage*—A descriptive study of the historical and contemporary expressions of the Hebrew-Christian tradition. *Cr* 2. Not offered on the Orono campus in 1967-68.

17. *Religions of the East*—Hinduism, Buddhism, Confucianism, Taoism, Shinto, and Islam—their founders, scriptures, modes of worship, and ethics. *Cr* 2. Not offered on the Orono campus in 1967-68.

22. *Readings in Philosophy*—Individual study on a selected topic by special consent. *Cr* 1-3. STAFF

116. *Philosophy of Religion*—Analysis of the nature of religious experience, knowledge, and language. Special attention is given to fundamental problems, classical and contemporary, exhibited in religious experience and pertaining to areas of common concern in the sciences, the humanities, and philosophy. Sophomore standing or consent of instructor. *Cr* 3. MR. BRIMMER

133. *Aesthetics*—Analysis of aesthetic experience and value. Various theories and interpretations, classical and contemporary, of the nature of beauty,

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and to prepare the hospitalized patient for return to the community. Emphasis is placed on the patient's individuality, the interrelatedness of the physical and the psychological, the cooperation among members of the health team and development of nursing skills. Guided clinical experiences are provided. *Cr 14*

MRS. CARROLL AND STAFF

6. Nursing of Mothers and Children—A total family centered approach to nursing needs of mothers and children. Guided experience in the field of maternal and infant care and care of the child. Study emphasizes the normal mother and infant and the effect of the ill child on the family. Community resources needed to meet the needs of families during the child rearing and child bearing periods are explored. *Cr 14.*

MRS. HOWARD, MISS TRYON AND STAFF

9. Public Health Nursing—This course is designed to develop understanding of the scope, philosophy, fundamental principles, current trends and problems of public health nursing. Emphasis is placed on the approaches used, responsibilities and activities of the public health nurse in providing family centered nursing service in the community. Clinical practice in a generalized public health nursing agency provides the student with an opportunity to observe and to put into practice the concepts and principles learned in the classroom. *Cr 7.*

MISS ROSCOE

10. Psychiatric Nursing—Provides an opportunity for guided experiences in the nursing care of the acutely and chronically mentally ill with emphasis on the development of therapeutic use of self by the nurse. The approach is based on the concepts of mental health and the dynamics of human behavior. Community aspects are discussed. *Cr 7.*

13. Comprehensive Nursing—A course designed to provide opportunities to integrate knowledge and skills when ministering to individual patients with complex health problems and when assuming the responsibility for the nursing care of a group of patients. Emphasis is on development of efficiency in nursing care, teaching and managerial skills. Guided clinical experiences are provided. *Cr 7.*

MRS. CARROLL AND MRS. ELLIS

15. Introduction to Pharmacology—An orientation to pharmacology including study of legislation and the preparation, administration, and action of drugs. *Cr 1.*

MRS. HAMILTON

18. Nursing Seminar—The present situation in nursing; the problems of the profession and the individual practitioner. Opportunity for independent study. *Cr 2.*

MISS IVANISIN AND STAFF

CURRICULUM IN NURSING

FRESHMAN YEAR				SOPHOMORE YEAR			
Bc	7	Fundamentals of Chemistry	4	By	21	Intro. to Bacteriology	3
Bc	8	Elem. Physiological Chemistry	4	By	21A	Laboratory	1
Eh	1	Freshman Composition	3	Fn	152	Human Nutrition	3
Sh	1	Fund. of Public Speaking	2	Nu	4	Community Health	3
*Sy	3/4	Intro. to Sociology		Nu	15	Intro. to Pharmacology	1
		or		Py	1/2	General Psychology	6
		* Elective	6	*Sy	3/4	Intro. to Sociology	
Nu	1.2	Intro. to Nursing	4			or	
Pe	1.2	Physical Education	0			* Electives	6
Zo	3	General Biology	4			* Electives	9
Zo	10	Anatomy and Physiology	5				

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SUMMER SESSION

Nu 3 Fundamentals of Nursing 4

JUNIOR YEAR

Nu 5 Nursing of Adults 14
 Nu 6 Nursing of Mothers & Children 14
 Py 123 Psychology of Childhood 3
 Eh 16 Masterpieces of English Lit. 3

34

SENIOR YEAR

Nu 9 Public Health Nursing 7
 Nu 10 Psychiatric Nursing 7
 Nu 13 Comprehensive Nursing 14
 Nu 18 Nursing Seminar 2

30

* Humanities requirement must be met.

** Sy 3/4 is required and must be taken either freshman or sophomore year.

PHILOSOPHY (PI)

PROFESSOR VIRTUE; ASSOCIATE PROFESSOR TREDWELL (CHAIRMAN); ASSISTANT
 PROFESSOR BRIMMER; MR. KOEHN

Philosophy, man's search for basic understanding of himself, his culture, and his world, has always been both a generous critic and a dissatisfied goal-maker of liberal education. As a generous critic, it offers insight into intellectual method and evaluational procedures; as a dissatisfied goal-maker, it seeks the union of theory and practice through immediate participation in cultural processes themselves.

While Philosophy and Modern Life (PI 1.2) offers to many an entry into the study of philosophy, Ethics (PI 135), Aesthetics (PI 133), Logic (PI 136), and Philosophy of Religion (PI 116) provides other introductions to philosophical study. Upperclassmen and interested sophomores may well consider the sequence offered by the History of Philosophy (PI 155. 156. 157. 158), though any one of these period courses may be taken independently. Philosophy majors complete a minimum of 24 hours in philosophy exclusive of PI 1.2.

1.2. *Philosophy and Modern Life*—An introduction to philosophical thinking through an examination of contemporary spokesmen on ethics, religion, education, and politics and a critical comparison of their ideas with those of major philosophers of the Western tradition. Representative topics are: classic and contemporary views of social justice; egoism and unselfishness; tradition and the formation of the present. Primarily for freshmen and sophomores. *Cr* 3.

MR. TREDWELL, MR. KOEHN

15. *Our Religious Heritage*—A descriptive study of the historical and contemporary expressions of the Hebrew-Christian tradition. *Cr* 2. Not offered on the Orono campus in 1967-68.

17. *Religions of the East*—Hinduism, Buddhism, Confucianism, Taoism, Shinto, and Islam—their founders, scriptures, modes of worship, and ethics. *Cr* 2. Not offered on the Orono campus in 1967-68.

22. *Readings in Philosophy*—Individual study on a selected topic by special consent. *Cr* 1-3. STAFF

116. *Philosophy of Religion*—Analysis of the nature of religious experience, knowledge, and language. Special attention is given to fundamental problems, classical and contemporary, exhibited in religious experience and pertaining to areas of common concern in the sciences, the humanities, and philosophy. Sophomore standing or consent of instructor. *Cr* 3. MR. BRIMMER

133. *Aesthetics*—Analysis of aesthetic experience and value. Various theories and interpretations, classical and contemporary, of the nature of beauty,

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feeling, and the arts are studied. Sophomore standing or consent of instructor. *Cr 3.* MR. BRIMMER

135. *Ethics*—An introductory inquiry into problems of the good life and of right and wrong action. Classical moral theories, such as those of Aristotle, Hume, Kant, and Mill, are examined and discussed in the light of contemporary ethical and meta-ethical issues. Sophomore standing or consent of instructor. *Cr 3.*

MR. KOEHN

136/137. *Logic (I, II)*—An introductory two-semester course in modern symbolic logic. Techniques of deductive inference, including decision procedures and axiomatization, are studied in developing the propositional and predicative logics. Some attention, as time permits, is given to natural-language argumenation, contemporary syllogistic, and metalogic. Prerequisite for Pl 136: Sophomore standing or instructor's consent. Prerequisite for Pl 137: Pl 136 or instructor's consent. *Cr 3.* MR. BRIMMER

151/152. *Introduction to the History and Philosophy of Science*—A critical examination of the conceptual and experimental procedures scientists employ in formulating and evaluating their theories. Readings from scientists' writings and from contemporary philosophers of science. Only Pl 151 will be offered in 1967-68. Junior standing or instructor's consent. *Cr 3.*

MR. TREDWELL

155. 156. 157. 158. *History of Philosophy*—The development of philosophic thought, in interrelation with humanistic and scientific concerns, from Ancient Greece to the 20th century. Sophomore standing or consent of instructor.

‡**155. *Ancient Philosophy***—From the earliest Greeks through the Romans, with central emphasis on Plato and Aristotle, and including the Epicureans and Stoics. *Cr 3.* MR. TREDWELL

‡**156. *Mediaeval Philosophy***—The development of thought from the confluence of Greco-Roman philosophy with the Judaic, Christian, and Islamic traditions to the philosophies of the High Middle Ages. *Cr 3.* MR. BRIMMER

‡**157. *Early Modern Philosophy***—The emergence of rationalism and empiricism on the continent and in the British Isles. A study of representative chief thinkers from Descartes and Bacon to Hume. *Cr 3.* STAFF

‡**158. *Late Modern Philosophy***—The philosophy of Kant and later idealism and other representative philosophers such as Comte, Mill, and Spencer in the 19th century. *Cr 3.* STAFF

165. 166. *Topics in Philosophy*—Individual and small group study of problems or systems of philosophical concern. The course is conducted in seminar style, and, relying on careful use of major philosophical resources, attempts fresh exploration of fundamental topics. Topic for 1967-68, Second Semester: Later Pragmatism and Contemporary Metaphysics. Junior standing or consent of instructor. *Cr 3.* MR. BRIMMER

175. 176. *Philosophical Classics*—An intensive study of the works of a major philosopher or school. This course is conducted in seminar style, and ordinarily treats intensively a philosopher or school of the period considered by the history of philosophy course (Pl 155-158) in the preceding term. Subjects for 1967-68: First Semester, Charles Sanders Peirce; Second Semester, Aristotle. *Cr 3.* MR. KOEHN

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70. *Perspectives in Culture*—The interrelations of the sciences and the arts in contemporary culture. For seniors in practice teaching only. *Cr* 3.

MR. VIRTUE

Offered occasionally: 140. *American Thought*; 54. *Man and the Social Order*; 62. *Recent Philosophy*.

Because of their philosophic relevancy, Ms 185, Mathematical Logic and Ms 197/198, and Foundations of Mathematics; and Pol 189.190, Political and Social Thought, 191 American Political Ideas, and 192 Modern Political and Social Thought; and Py 161, Sensation and Perception, are particularly recommended to students of philosophy.

POLITICAL SCIENCE (Pol)

PROFESSORS MAWHINNEY, DOW AND SCHOENBERGER; ASSOCIATE PROFESSORS THOMSON, CLARK, AND COLLINS; ASSISTANT PROFESSORS HEIDRON, HAYES, HORAN, TSURUTANI AND ZIMMERMAN; MR. BAGGETT, MR. DUNHAM AND MR. MARSTERS; MR. FORSTER, MR. HAMILTON, AND MR. HELMKE

Students may major in the following fields: (1) political science, (2) international affairs, or (3) public management.

Specific requirements for majors:

1. Political Science: A minimum of 36 hours of work in the department excluding Pol 7.8 and Pol 21.22. Required courses: Pol 1/2, Pol 183/184 or 189.190, and for all seniors Pol 197. In addition a student is required to select one of the following alternatives: (1) Related Areas—General: Any three of the following full-year courses: Ay 1/2, Ec 1/2, Hy 3.4 or 5.6, Pl 1.2, Py 1/2, or Sy 3/4; or (2) Related Areas—Specific: 18 hours, including a six-hour foundation course, in one of the following fields: economics, history, psychology, or sociology and anthropology.

2. International Affairs: See page 93.

3. Public Management: See page 65.

The department offers M.A. degrees in political science and public management. Students desiring to concentrate in international affairs may do so within the M.A. in political science.

Bureau of Public Administration

Created within the Department of Political Science by the 102nd Maine Legislature, the Bureau of Public Administration is engaged in governmental research and publication and in programs of career development over the state. Political science students are encouraged to use its collections of governmental materials.

Courses in Geography (Ge)

1. *Physical Geography*—Basic knowledge of the world's physical environments, organized under five topics; maps, weather and climate, landforms, soils, and vegetation. Prerequisite: sophomore standing. *Cr* 3.

2. *World Regional Geography*—A study of world regions and their human occupants. Special attention will be given to those regions which are the focus of world attention. Prerequisite: sophomore standing. *Cr* 3.

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26. Economic Geography—The geographical aspects of world resources, production, and trade. Prerequisite: sophomore standing. *Cr 3.*

101. Historical Geography of North America—The growth of the American economy studied in its spatial aspect as reflected by urban and rural settlement patterns. Particular attention given to three historical "cross-sections": 1760, 1860, and 1910. Prerequisite: junior standing. *Cr 3.*

102. Urban Geography—Techniques of regional geographic analysis as applicable to urban study. Emphasis on spatial patterns which transport facilities and associated commercial, residential, and governmental land uses assume in the American city. Prerequisite: junior standing; *Cr 3.*

123/124. 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. *Cr 3.*

MR. SCHOENBERGER

Courses in Political Science (Pol)

1/2. Introduction to Government—The first semester includes the development and nature of the state, theories and types of government, constitutionalism, the nature, structure and control of political power, freedom and order, and the modern state in international relations. The second semester emphasizes the structure, practices and problems of American national government. *Cr 3.*

MR. COLLINS, Chairman

3. State Government—State constitutions, structure and functions of state government, relations with federal, state and local governments. Prerequisite: sophomore standing. *Cr 3.*

MR. HEIDORN

7. 8. Maine Government—Practical operations 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 students. *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 Pol 7. 8. No person may receive credit for both Pol 7 and 7a or for both Pol 8 and 8 a. *Cr 2.*

21. 22. Current World Problems—A study 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

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 June. 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. HEIDORN

133. The American City—The process of government in urban America, including concepts of local self-government, forms and procedures in urban governing, and developments in intergovernmental relations and metropolitan areas. Prerequisite: Pol 1/2. *Cr 3.*

MR. HEIDORN

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134. *Municipal Administration*—The management, financial control and administration of modern American cities; emphasis on personnel and finance administration, the city plan, and line functions: public safety, transportation, health and welfare, housing. Prerequisite: Pol 133. *Cr 3.* MR. HEIDORN

135. *Democratic Governments of Europe*—The political traditions, parties, governmental structures, and special political problems of Great Britain, France and West Germany. Prerequisite: Pol 1/2. *Cr 3.* MR. HORAN

136. *Communist Governments*—Marxism-Leninism and the contemporary Communist party, state, economy and society of the Soviet Union. Survey of the satellites. Prerequisite: Pol 1/2. *Cr 3.* MR. HORAN

144. *Public Relations*—Principles of public relations and a study of their application through cases and problems. National, international, community and educational public relations with press, consumers, taxpayers, and other groups. *Cr 2.* MR. DOW

151. *Public Administration*—The dynamics of governmental administration including administrative principles, decision-making, communication, leadership organizational models and technical, political and personal factors of administration. Prerequisite: Pol 1/2. *Cr 3.* MR. HAYES

152. *Administrative Law*—Primarily case studies of the legal adjustment of administrative authority and individual liberty, including: judicial control over administration, personal liability of officers, scope and limits of administrative powers and the due process measurement of administrative procedure. Prerequisite: Pol 151. *Cr 3.* MR. HAYES

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: Pol 1/2. *Cr 3.* MR. HAYES

158. *Public Opinion*—The role of public opinion in American democracy; definition and measurement; sociological and psychological influences; mass media; linkage to government. Prerequisite: Pol 1/2. *Cr 3.* MR. HAYES

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: Pol 1/2. *Cr 2.* MR. HEIDORN

160. *Problems of State Government*—A consideration of the theory, organization and functions of the American states and their present-day problems. Prerequisite: Pol 1/2. *Cr 2.* MR. HEIDORN

165. *Governments of South Asia*—The governments and politics of selected countries of South and Southeast Asia. Emphasis on common problems of emergent nations of the area. Prerequisite: Pol 1/2. *Cr 3.* MR. TSURUTANI

166. *Governments of East Asia*—A study of the contemporary political systems of China and Japan. Prerequisite: Pol 1/2 or Hy 135 or Hy 136 and Hy 137. MR. TSURUTANI

167. *Emerging Africa*—The transition of Ghana, the Congo and other selected areas, from colonial to independent states. Attention to political and economic organization and the native culture's impact on government. Prerequisite: Pol 1/2. *Cr 3.* MR. THOMSON

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168. Government in Latin America—Concentration on "political styles, the contemporary struggle between tradition and revolution, political elites, economic and political problems. Selected case studies, not necessarily the same each year. Prerequisite: Pol 1/2. *Cr 3.*

MR. THOMSON

173. 174. International Relations—In the first semester an analysis of the international system of states; the impact of nationalism; the restraints imposed on the unilateral actions of governments; and the possibility of peace resulting from war, disarmament, functionalism, and diplomacy. In the second semester a comparative analysis of the recent foreign policies of the major governments of the world. Prerequisite: Pol 1/2 or six hours of history. *Cr 3.*

MR. SCHOENBERGER AND MR. HORAN

†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

183/184. Constitutional Law—The economic, political and social development of the Constitution through Supreme Court decisions. Court procedures. First semester: decisions on the nature of the federal system and commerce, taxation and war powers. Second semester: decisions in civil liberties; Bill of Rights and Fourteenth Amendment. Prerequisite: Pol 1/2. *Cr 3.*

MR. MAWHINNEY

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. COLLINS

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. COLLINS

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 AND MR. ZIMMERMAN

‡191. American Political Ideas—The development of political ideas in America from 1620 to the present. *Cr 3.*

MR. THOMSON

‡192. Modern Political and Social Thought—From the French Revolution to the present. Liberalism, utilitarianism, socialism, fascism, communism. *Cr 3.*

MR. THOMSON

194. Asian Political Ideas—The traditional pattern of Asian thought on man, society and politics: Chinese, Indian (Hindu), Muslim. Seminar style, one two-hour meeting per week. Prerequisite: junior standing. *Cr 3.*

195. Municipal 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

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196. *International Affairs Internship*—Study during the summer in a government agency, an international organization, or a business with overseas operations. Readings, reports, and on-the-job training required. Open to junior or senior International Affairs majors. *Cr 3.* MR. SCHOENBERGER

197. *Scope of Political Science*—The scope and nature of the study of politics; power and society; basic descriptive political theory and the role of political institutions. Prerequisite: Pol 1/2. Open to senior Political Science majors or with permission. *Cr 3.* MR. THOMSON AND MR. ZIMMERMAN

198. *Methods of Political Science*—Present methodological techniques in empirical political research, including analysis of empirical theory, voter surveys, sampling procedures, questionnaire construction, hypothesis testing, statistical quantification, computer applications, and research evaluation. Prerequisite: Pol 197. Open to senior Political Science majors or with permission. *Cr 3.* MR. HAYES

199. *Theory and Methodology of International Relations*—An analysis of traditional politics and the application of such theories to specific international political situations. Particular emphasis to such approaches as systems analysis, game theory, decision-making, simulation, and the development of theoretical models. Prerequisite: Pol 173. Senior standing. *Cr 3.*

MR. SCHOENBERGER AND MR. COLLINS

200. *City and Regional Planning*—Basic principles of city and regional planning; legislative aspects and court decisions; administrative organization and application; zoning; land use; financing; formulation of master plans, and their administration; political problems and public relations. Prerequisite: Pol 133 or permission. *Cr 2.* MR. HEIDORN

297. 298. *Seminar*—Projects for qualified students. *Cr 2 or 3.*

302. *Topics in Public Administration*—*Cr Ar.*

303. *Topics in International Relations*—*Cr Ar.*

310. *Administrative Theory*—Emphasis on empirical theories of informal and formal organization and behavior: organization theories; concepts of authority; compliance systems; communications structures; models of decision-making; small group behavior; and modes of individual accommodation to organization. Prerequisite: Pol 151. *Cr 3.* MR. HAYES

311. *Program Analysis and Evaluation*—Considers definition of social conditions, determination of program goals, allocation of resources in terms of their contributions to goal attainment, selection of efficiency measures, formulation of strategies. Prerequisite: Pol 151. *Cr 3.* MR. HAYES

350. *Independent Readings*—*Cr Ar.*

399. *Graduate Thesis.*

PHYSICS (Ps)

PROFESSORS CAMP, BENNETT, BISCOE, AND KRUEGER; ASSOCIATE PROFESSORS COFFIN, WYLIE, CARR, AND TODD; ASSISTANT PROFESSORS HARMON, ROCKMORE, AND BROWNSTEIN; MR. ALLEN, MR. FLINT, MR. LITTLEFIELD, MR. ORR, MR. OUELLETTE, MR. PARKER, MR. PIQOTT, MR. SMITH

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.

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The following courses should be taken by all candidates for the B.A. degree: Ps 1/2 (or 1a/2a) 17, 18, 153, 155, 162, 169, 172, 176, along with Ms 12, 27/28, 29. 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 prerequisite: Ps 3, 9, 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 used. *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 pre-dental and premedical students. Lec with Dem 2, Rec 1 Lab 2, Cr 4.*

MR. WYLIE AND STAFF

3. Descriptive Physics—For the non-science student. A treatment in non-mathematical 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 Life Sciences and Agriculture. A condensation of Ps 1/2 accompanied by a careful selection of the topics treated. *Lec with Dem 3, Lab with Discussion 4. Cr 5.*

MR. LITTLEFIELD AND OTHERS

9. Climatology—An introduction to general climatology, treating the elements and controls of climate, climate classification, and various relationships between climate and other natural phenomena and human activities. No prerequisite. *Rec 3, Cr 3.*

MR. TODD

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 161. *Rec 3, Cr 3.*

MR. TODD

17. 18. Intermediate Physics—A more mathematical treatment with the calculus of many of the topics in Courses 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 2, Cr 3.*

MR. TODD

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36. Introductory Modern Physics for Engineers—Selected topics in molecular, atomic, electronic, and nuclear physics, intended to meet the needs of the present-day engineering student. College physics, calculus, and some chemistry are prerequisite. *Lec 2, Rec 1, Cr 3.*

Course 17. 18 (or the equivalent) and calculus are prerequisite for the following advanced courses:

153. Electrical Measurements—A third-year laboratory course covering theories and practices in the measurement of electrical and magnetic quantities. *Lab 4, Cr 2.* MR. HARMON AND OTHERS

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

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

162. Heat and Thermodynamics—The laws of thermodynamics and statistical physics. Thermodynamic description of the properties of matter. Elementary concepts of classical and quantum statistics. *Rec 3, Cr 3.* MR. BISCOE

166. Physical Electronics—Electronic ballistics, electronic emission, high-vacuum, solid state, and gaseous electronics. *Rec 3, Cr 3.*

169. Modern Physics—Atomic and molecular physics. Includes atomic structure, X-rays, quantum concepts and spectroscopy. *Rec 3, Cr 3.* MR. WYLIE

170. Nuclear Physics—Basic concepts, radioactivity, nuclear reactions, alpha-, beta and gamma-decay. A more specialized course than Ps 169. 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.*

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

176. Physical Measurements—A third-year laboratory course in which experiments are selected from various branches of physics. *Lab 4, Cr 2.*

MR. CARR AND OTHERS

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. CARR, MR. HARMON, MR. KRUEGER

186. Introduction to Quantum Mechanics—Concepts of quantum theory. The Schrodinger equation and its solution for simple physical systems. Perturbation theory. Prerequisite: Ps 169, and differential equations. *Rec. 2, Cr 2.*

MR. BROWNSTEIN

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.*

193. Topics in Physics—A course primarily for undergraduates dealing with selected topics in areas not already covered by regular course offerings in the department. Given on demand. *Cr Ar.* STAFF

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198a. 198b. Physics Seminar—Oral and written reports on approved topics. Primarily for seniors. *Sem 1, Cr ½*. MR. BENNETT

199. Problems in Physics—A thesis project primarily for undergraduates and ordinarily of an experimental nature. *Cr Ar. (1-3)*. STAFF

201. Mechanics—Kinematics and dynamics of rigid body motion using the Lagrange formulation of the equations of motion. Linear transformation theory and Hamiltonian mechanics. Hamilton-Jacobi theory and applications. Prerequisite: Ps 191 or equivalent. *Rec 3, Cr 3*. MR. HARMON

205. Modern Physics—The fundamental principles underlying present-day modern physics for beginning graduate students. Includes an introduction to quantum mechanics as a basis for more specialized courses. Prerequisite: an undergraduate course in Modern Physics or its equivalent, and mathematics through ordinary and partial differential equations and vector analysis. *Rec 3, Cr 3*. MR. CARR

212. Electrodynamics I—Basic properties of the electromagnetic field and its propagation in isotropic and anisotropic media, guided propagation and stationary wave fields. Interactions between the electro-magnetic field and matter are examined. Prerequisite: Ps 192 or its equivalent, and mathematics through partial differential equations, vector analysis and elementary complex variable theory. *Rec 3, Cr 3*. MR. KRUEGER

218. 219. Methods of Theoretical Physics—Topics selected to strengthen the background in theoretical physics required of Ph.D. students. These may include applications of Green's function methods, integral equations, variational methods, finite dimensional vector spaces, complex variable, conformal mapping, distribution theory, and group theoretic techniques. The level is that of *Methods of Theoretical Physics* by Morse and Feshbach. Prerequisite: Ps 192 or equivalent. *Rec 3, Cr 3*. MR. ROCKMORE

220. Quantum Mechanics I—The physical concepts and mathematical methods currently used on problems dealing with atomic and subatomic physics. Quantum mechanical states as vectors in Hilbert Space. Dirac notation. Representation theory. Perturbation theory. A limited number of applications to physical phenomena will be considered. Prerequisite: Ps 205. *Rec 3, Cr 3*. MR. BROWNSTEIN

230. Statistical Mechanics—Macroscopic properties of matter derived from a statistical consideration of microscope properties of elementary systems. Relationships to thermodynamics and kinetic theory are examined. Prerequisite: Ps 162 or its equivalent, and mathematics through differential equations. *Rec 3, Cr 3*. MR. HARMON

234. X-Rays—Diffraction theory applied to structure determinations of solids, liquids, and gases. Not offered every year. *Rec 3, Cr 3*. MR. BISCOE

291. Special Topics in Theoretical or Experimental Physics—Subjects which may be studied under this heading depend upon current interests of students and staff. Will ordinarily be in areas for which no formal courses are offered. Given on demand. *Cr Ar*. STAFF

300. Graduate Seminar—Reports and discussion of recent developments in physic and related fields based on the literature or the results of current investigations. *Cr Ar*. MR. WHITE

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307. Nuclear Physics—Specialized application to the atomic nucleus of the principles of modern physics as developed in Ps 205, which is prerequisite. Not offered every year. *Rec 3, Cr 3.*

313. Electrodynamics II—Propagation of electromagnetic waves as observed in both fixed and moving frames of reference. Scattering of electromagnetic waves including diffraction theory. Electromagnetic field fluctuations and coherence theory. Prerequisite: Ps 212. Not offered every year. *Rec. 3, Cr 3.*

MR. KRUEGER

315. Spectroscopy at Microwave and Radio Frequencies— Interpretation of spectra at microwave and radio frequencies. Techniques associated with nuclear magnetic resonance and electron spin resonance are considered. Prerequisite: Ps 205, Ps 192, or equivalent. *Rec. 3, Cr 3.*

MR. CARR

321. Quantum Mechanics II— Scattering, phase shifts. Relativistic wave equations, consequences of the Dirac equation. Systems of coupled fields. Prerequisite: Ps 220.

MR. BROWNSTEIN

324. Solid State Physics I—Application of the principles of modern physics to the study of the solid state of matter. Theoretical concepts are correlated with experimental evidence in the physical reasoning which underlies the interpretation of the physical properties of solids. Prerequisite: Ps 205. *Rec 3, Cr 3.*

MR. CAMP

325. Solid State Physics II—An extension of Ps 324 to include such topics as lattice waves, electron states, electron-electron interaction, transport properties, magnetism and superconductivity. Prerequisite: Ps 324 or equivalent. *Rec 3, Cr 3.*

MR. WYLIE

328. Plasma Physics—Gas kinetic theory extended to systems of charged particles; development of macroscopic theory from the Liouville equation; macroscopic properties of plasmas, including a consideration of plasma oscillations and interactions with electromagnetic radiation. Prerequisite: Ps 212 and Ps 230 or equivalent. *Rec 3, Cr 3.*

MR. HARMON

399. Graduate Thesis—*Cr Ar.*

GRADUATE STAFF

GRADUATE WORK IN PHYSICS

The degrees of master of science and doctor of philosophy are offered in physics. See section on Graduate Study for detailed requirements. Research facilities are available in such fields as molecular physics and electronics, optical properties of gases at high pressure, X-ray diffraction, physical optics, solid state physics, nuclear magnetic resonance, electron spin resonance and limited aspects of plasma physics. Several graduate assistantships are available in this department.

SPECIMEN CURRICULUM IN PHYSICS

Freshman Year

FALL SEMESTER			SPRING SEMESTER				
		Hours			Hours		
*Ps	1, or 1a	General Physics	5-4	*Ps	2, or 2a	General Physics	5-4
Ms	12	Anal. Geometry and Calculus	4	Ms	27	Anal. Geometry and Calculus	4
Eh	1	Freshman Composition	3	Eh	2	Elective	3
Gm	11	Scientific German	3	Gm	12	Scientific German	3
Pe	1	Physical Education	0	Pe	2	Physical Education	0
			14-15				14-15

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Sophomore Year

				Hours						Hours	
Ps	17	Intermediate Physics	4	Ps	18	Intermediate Physics	4				
Ms	28	Calculus	4	Ms	29	Calculus	4				
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								
			<hr/>				<hr/>				
			16				14				

Junior Year

				Hours						Hours	
Ch	1	General Chemistry	4	Ch	2	General Chemistry	4				
Ps	153	Electrical Measurements	3	Ps	172	Optics	3				
Ps	155	Electricity and Magnetism	2	Ps	176	Physical Measurements	2				
Ms	150	Ord. Diff. Equations	3	Ms	151	Vectors and Matrices	3				
		Humanities	3			Humanities	3				
		Social Science	3			Social Science	3				
				18						18	

Senior Year

				Hours					Hours
Ps	169	Modern Physics	.....	3	Ps	162	Heat and Thermodynamics	.....	3
		Elective	.....	11-14			Elective	.....	11-14
			.....	14-17				.....	14-17

*Ps 1 and 2 (10 hours) and Ms 12 and 27 are recommended if trigonometry is presented for admission. A suitable major in physics may be developed, however, with Ps 1a, 2a, Ms 1, 3, and 12 taken in the freshman year. Either Ps 181 or Ps 182 (or both) are strongly recommended. Ms 152 and Ms 153 are recommended, but students planning to teach at the secondary school level may wish to substitute courses in Education.

PSYCHOLOGY (Py)

PROFESSORS KAPLAN, ANTONITIS, BRUSH, GLANVILLE, NICHOLS, AND QUINSEY;
ASSOCIATE PROFESSORS ABELSON, WADE; ASSISTANT PROFESSORS FREY, KIRK,
KULBERG, RYCKMAN, STONE; INSTRUCTOR GERSHMAN; LECTURERS BRUSH,
FUCHS, GRANT, HAMMER, HORNBERGER, SANDERS, AND WERBOFF;
GRADUATE ASSISTANTS ANDERSON, BOOTH, BUTLER, ELLIOTT,
HYMOFF, SEIFER, VANDER WEELE

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 psychological theory and methodology as well as in the applications of psychology.

The minimum requirement for a major in the department is 36 hours, which must include Py 1/2, Py 141, Py 171, and Py 74. In addition each major is required to take at least one course from each of the following areas:

I: Py 45 or Py 147/148

II: Py 151, 155, 156, 161, 165, 167

III: Py 130, 132, 133, 138

IV: Py 20, 21, 123, 124, 126, 127, 128

V: Py 111, 114, 117, 143

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All majors are required to take a written comprehensive examination in the senior year covering 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 and discussion of major areas such as motivation, personality, intelligence, learning, etc. In order to provide greater depth to the course, all students are expected to participate in research projects to a maximum of two hours. Not open to freshman. *Cr. 3* STAFF

5. Applied Psychology for Nurses—An introductory course for three-year nurses. *Cr. 2.* MR. BRUSH

Unless other prerequisites are stated, Course 1/2 or the equivalent is prerequisite for the following advanced courses.

20. 21. 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 2, Lab 3, Cr 3.* MR. NICHOLS, MRS. GERSHMAN

45. Principles of Experimental Psychology—General principles, methods and techniques of experimental psychology. Applications of general methodology and specific techniques to major problem areas in behavioral research. Laboratory exercises provide experience in collecting and reporting data. Prerequisite: Py 141. *Rec 2, Lab 2, Cr 3.* MR. ANTONITIS

74. Seminar in Issues in Contemporary Psychology—A review of some of the current theoretical issues and research findings in the general areas of psychology. *Cr. 2.* MR. KAPLAN

111. 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. BRUSH

114. 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

117. Educational Psychology—The underlying psychological principles useful to the teacher. Problems of growth, intelligence, personality, social life, sex hygiene, and attitude. Principles of effective learning. *Cr. 3.* MR. KIRK

123. 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.* MRS. GERSHMAN

124. 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 school, the community, and the world of work. Delinquency and abnormality in adolescents. *Cr. 2.* MRS. BRUSH

126. Psychology of the Retarded Child—Description and analysis of various types and levels of retardation and a study of causative factors. Considera-

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tion of psychological principles and techniques applicable to the identification, care, and training of retarded children. Prerequisite: Py 123 and/or 20. 21. *Cr 3.*

MR. NICHOLS

127. *Psychology of the Superior Child*—Identification, development, and behavioral characteristics of superior children. Discussion of social and psychological problems associated with the superior child. *Cr 2.*

MRS. GERSHMAN

128. *Psychology of the Exceptional Child*—A consideration of the development and behavior of the exceptional child. Special emphasis on the practical problems related to the management of children with intellectual, emotional, orthopedic, sensory, and academic handicaps. Prerequisite: Py 123. *Cr 3.*

MR. NICHOLS

130. *Social Psychology*—The psychological principles that enter into the social behavior of man. Representative topics include culture and personality, crowd behavior, prejudice, and propaganda. *Cr 3.*

MR. RYCKMAN

132. *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 situation will be emphasized. *Cr 3.*

MR. HAMMER

133. *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, social, and psychological determinants of maladjusted behavior. Prerequisite: Py 1/2 with grade of C or better. *Cr 3.*

MR. KAPLAN, MR. KULBERG

138. *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: Py 1/2 with grade of C or better. *Cr 3.*

MR. BRUSH

141. *Statistics in Psychology*—A survey of techniques used to obtain, display, analyze, and interpret data in psychology. Prerequisite: Ms 19. *Cr 3.*

MR. FREY, MR. KIRK

143. *Psychological Test Theory and Individual Differences*—The fundamental theoretical bases of test construction with emphasis on practical applications will be presented along with statistical concepts necessary for proper evaluation of tests and other assessment techniques. *Cr 3.*

MR. KIRK

147/148. *Experimental Psychology*—*First Semester:* techniques and objective approach to the study of human perception, learning, psychophysics, etc. Training in writing psychological research reports. *Second semester:* basic principles in programming and use of operant conditioning procedures with animal subjects. Planning and conducting an original investigation by the student. Prerequisite: Py 141 or taken concurrently. *Rec 2, Lab 4, Cr 4.*

MR. FREY, MR. GLANVILLE

151. *Psychology of Motivation*—A survey of theory, research methodology and experimentally obtained facts related to the activation and direction of behavior. *Cr 3.*

155. *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. WADE

156. Theories of Learning—An examination of the most important 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 (psychoanalysis). Applications of the theories will be made. Cr 3. MR. ANTONITIS

‡**161. Sensation and Perception**—A systematic examination of selected sensory and perceptual processes. Emphasis on experimental methods, research findings and theoretical interpretations. Cr 3. MR. GLANVILLE

165. 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: a basic course in zoology. Cr 3. MR. ABELSON

167. Animal Behavior—An examination of the behavior exhibited by animals in natural and laboratory environments including learning, social behavior, communication, navigation, etc. Various methods of investigating and classifying animal behavior are critically evaluated. Cr 3. MR. FREY

171. History and Systems of Psychology—An historical account of the development of psychology: the development of psychological concepts and points of view prior to Wundt; a consideration of the major modern systems and schools of psychology. Cr 3. MR. GLANVILLE

190. 191. Problems in Psychology—Primarily for graduate students and seniors with grade B or better. Opportunity to select and study particular psychological problems under guidance. Admission by consent of head of the department. Cr Ar. MR. KAPLAN AND STAFF

192. 193. Problems in Experimental Psychology—Prerequisite: Py 45 or Py 147/148 and consent of the head of the department. Cr Ar. STAFF

194. 195. Problems in Psychometrics—Prerequisite: Py 143 and consent of the head of the department. Cr Ar. MR. KAPLAN AND STAFF

196. 197. Problems in Aptitude Testing and Counseling—Prerequisite: Py 114 and consent of the head of the department. Cr Ar.

198. 199. Problems in Psychological Theory—Prerequisite: 12 hours in psychology with grade of B or better and consent of the head of the department. Cr Ar. MR. KAPLAN AND STAFF

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 emotionally handicapped child. Prerequisite: consent of instructor. Cr 3. MR. NICHOLS

224. Experimental Child Psychology—Major research methods, principles, and techniques in the experimental study of child behavior: closely supervised research experiences with children. The student will plan and conduct an original investigation. Prerequisite: Py 123, Py 147/148 or equivalent. Rec 2, Lab 4, Cr 4. MR. NICHOLS

234. Advanced Psychopathology—Intensive readings and discussion of the etiology of maladapted behavior with particular emphasis on topics such as schizophrenia, suicide, sociopathy, behavior disorders in children, etc. Prerequisite: Py 133 and consent of instructor. Cr 3. MR. KULBERG

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242. *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 45 or 147, and 141. *Cr 4.*

MR. WADE

245. *Nonparametric Techniques in Psychology*—A survey of nonparametric techniques of hypothesis testing which are uniquely suited to the data of the behavioral sciences. Prerequisite: Py 141 or consent of instructor. *Cr 2.*

MR. FREY

247. *Introduction to Factor Analysis*—Multivariate techniques used in psychology with special emphasis on factor analysis and techniques of application to a variety of problems. Prerequisite: Py 141 or consent of instructor. *Cr 3.*

MR. FREY

251. *Advanced Physiological Psychology*—Emphasis on development of laboratory skills and techniques; preparing students for independent research in physiological psychology. Supervised research in electro-physiological stimulation, cannulization techniques, and special behavioral response measurements. Prerequisite: Py 165. *Rec 1, Lab 5, Cr 4.*

MR. ABELSON

261. *Advanced Social Psychology*—A consideration of current theoretical and methodological issues in social psychology including interpersonal perception, attitude and attitude change, communication and persuasion, language and cognition. *Cr 3.*

MR. STONE

303. *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.*

MR. GRANT

311. *Scientific Inquiry in Psychology*—A discussion of the philosophy and history of scientific inquiry as it pertains to psychological research; issues related to the scientific method with emphasis on data collection techniques; practice in the development and writing of research proposals. *Cr 3.*

MR. FREY AND STAFF

312. *Advanced Experimental Psychology II*—Conduct of one or more original investigations of limited scope; analysis of results, report, and critique. Prerequisite: Py 311. *Rec 1, Lab 4, Cr 3.*

MR. WADE AND STAFF

315. *Advanced Experimental Design*—Designed to provide graduate students with a sophisticated approach to the planning, conduct, and evaluation of research in psychology. Experimental designs will be considered that are unique to research in psychology. Prerequisite: Py 242. *Cr 2.*

MR. WADE

317. *Experimental Social Psychology*—Experimental methods for the study of attitude change, small group behavior, social perception, conformity, socialization and conflict. Problems of design, control and measurement will be discussed in connection with laboratory projects. Prerequisite: Py 261 or permission. *Rec 1, Lab 4, Cr 3.*

MR. STONE

321. *Individual Psychological Testing*—Intensive training in the administration, scoring, and interpretation of the Revised Stanford-Binet Scale and the Wechsler Adult Intelligence Scale. Historical background and current problems in the theory and practice of testing. Prerequisite: consent of instructor. *Rec 2, Lab 4, Cr 4.*

MRS. BRUSH

323. *Clinical Assessment I*—Intensive training in the administration, scoring, and clinical interpretation of a variety of techniques often used in the psychological assessment of children. Included are the Draw a Person Test, Stanford-Binet,

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WISC, Wide Range Achievement Tests. Prerequisite: consent of instructor. *Rec 2, Lab 4, Cr 4.*

324. Clinical Assessment II—Intensive training in the administration, scoring, and clinical interpretation of a variety of techniques often used in the psychological assessment of adults. Included are the WAIS, Bender Gestalt, Graham-Kendall. Prerequisite: consent of instructor. *Rec 2, Lab 4, Cr 4.*

325. Personality Assessment I—A general orientation to projective techniques. Administration and scoring of the Rorschach Test. Analysis and interpretation of Rorschach protocols (quantitative, sequence and content analysis). Prerequisite: Py 138 and consent of the instructor. *Rec 1, Lab 4, Cr 3.*

MR. BRUSH

326. 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: Py 325. *Rec 1, Lab 4, Cr 3.*

MR. HAMMER

327. Clinical Interviewing—Principles, dynamics, and techniques of interviewing as applied to a variety of clinical situations and settings. Prerequisite: consent of instructor. *Cr 2.*

MR. KULBERG

328. Consultation—Principles and techniques of consultation. A consideration of the role of the psychologist consultant within a variety of settings including the school, social agency, industry, etc. Prerequisite: consent of instructor. *Cr 2.*

331. Practicum in Clinical Diagnosis I—Closely supervised experience in interviewing, administration, scoring, interpreting, and writing psychological test reports in a clinical setting. The student will spend two days each week in such a setting. Prerequisite: Py 323, 324, 325, 326, 341, 342, *Cr 3.*

MR. HAMMER, MR. SANDERS, MR. FUCHS

332. Practicum in Clinical Diagnosis II—A continuation of Py 331 but usually in a different clinical setting. Prerequisite: Py 331. *Cr 3.*

MR. HAMMER, MR. SANDERS, MR. FUCHS

333. Practicum in Psychotherapy I—Closely supervised experience in psychotherapy; a careful analysis of the recordings of students' therapy sessions. The student will spend two days each week in a clinical setting. Prerequisite: Py 332 or consent of instructor. *Cr 3.*

MR. HORNBERGER, MR. SANDERS, MR. FUCHS

334. Practicum in Psychotherapy II—A continuation of Py 333 but usually in a different clinical setting. Prerequisite: Py 333. *Cr 3.*

MR. HORNBERGER, MR. FUCHS, MR. SANDERS

341. Seminar in Personality Theories I—An intensive consideration of the original classic and contemporary writings of the major psychodynamically oriented theorists such as Freud, Jung, Horney, and Alexander. Prerequisite: consent of instructor. *Cr 3.*

MR. HAMMER

342. Seminar in Personality Theories II—An intensive consideration of a variety of personality theories and theorists including field theory, phenomenology, existentialism, personal constructs, social learning, etc. Prerequisite: Py 138 and/or consent of instructor. *Cr 3.*

MR. HORNBERGER

343. 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.*

MR. KULBERG

351. Child Psychopathology—Intensive readings and discussion of the de-

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velopment and dynamics of psychological disorders in children. Consideration will also be given to the implications for psychotherapy. Prerequisite: Py 341, 342. Cr 3. MR. KAPLAN

355. Seminar in Psychotherapy—Intensive readings and discussion of the principles and techniques of psychotherapy as they relate to both children and adults. Prerequisite: Py 341, 342 and consent of instructor. Cr 3. MR. HORNBERGER

357. Case Studies in Psychotherapy—A critical review of actual psychotherapy recordings based on psychological theory, principles and techniques of psychotherapy. Prerequisite: Py 355 and consent of instructor. Cr 2. MR. KAPLAN

361. Seminar in History and Systems of Psychology—Intensive readings and consideration of the historical development of selected psychological concepts, theories, and points of view; also critical discussion of selected systems of psychology. Prerequisite: Py 171 or its equivalent. Cr 3. MR. GLANVILLE

362. 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. ABELSON

363. 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.

364. 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.

365. 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. MR. WADE

366. Seminar in Social Psychology—Consideration of significant topics in the area of social psychology. Reports and discussion of current research and theory. Prerequisite: Py 261 or consent of instructor. Cr 3. MR. STONE

371. Topics in Child Psychology—Intensive study of selected areas in child psychology. Prerequisite: consent of instructor. Cr 3.

372. Topics in Comparative Animal Behavior—Critical discussions of comparative and development aspects of animal behavior stressing phylogenetic and ontogenetic comparisons. Consideration of antecedent factors such as genetic, prenatal, and early postnatal experiences that may alter development processes. Prerequisite: consent of instructor. Cr 3. MR. WERBOFF

373. Topics in Physiological Psychology—Examination of the neurological bases of behavior with emphasis on anatomical, neurological, and biochemical properties of the nervous system and behavioral correlates in man and animals. Prerequisite: Py 165 or consent of instructor. Cr 3. MR. ABELSON

374. Topics in Learning—Intensive examination of selected models of learning emphasizing their roles as laboratory vehicles for investigating behavior. Methodological implications will be considered within a framework of classical instrumental, and statistical research orientations. Prerequisite: Py 155 or consent of instructor. Cr 3.

375. Topics in Sensation and Perception—Consideration of current experimental literature in selected areas of sensation and/or perception; critical examination of the newer theoretical issues; discussion and evaluation of theoretical

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cal interpretation of sensory and perceptual phenomena. Prerequisite: Py 161 or consent of instructor. Cr 3.

376. *Topics in Quantitative Methods in Psychology*—Intensive study of selected areas dealing with experimental design and measurement in psychology. Cr 3.

399. *Graduate Thesis*—Cr Ar.

GRADUATE WORK IN PSYCHOLOGY

The department offers work leading to the master of arts degree and the doctor of philosophy degree, the general requirements for which are listed in the catalog of the graduate school. Candidates will be expected to have taken fundamental courses in psychology, including a laboratory course in experimental psychology and a basic course in statistics.

Graduate programs are offered in general-experimental psychology and in clinical psychology. Those interested in the general-experimental area may concentrate in learning, motivation, physiological psychology, animal behavior, social psychology, child behavior, or experimental design and statistics. The program in clinical psychology provides students with a broad background in theory, psychopathology, assessment, and psychotherapy through courses, seminars, and practicum experiences. Those who are enrolled in work leading to the doctorate in clinical psychology must also satisfactorily complete a one-year internship in a training center acceptable to their program committee. An acceptable thesis is required for both the M.A. and Ph.D. degrees.

SOCIOLOGY AND ANTHROPOLOGY

PROFESSORS VERNON, SEZAK; ASSOCIATE PROFESSORS EMERICK, IVES MCKAY; ASSISTANT PROFESSORS BOLARIA, FINNER, ROWAN, SALEEBEY, SNOW, AND TENNANT; INSTRUCTORS KAPLAN, MOSS, SCONTRAS; COOPERATING MEMBERS: PROFESSOR PLOCH; ASSISTANT PROFESSOR HYATT; GRADUATE ASSISTANTS: CARDWELL, CASTANINO, DOHERTY, EVANS, MACDONALD, MACKNEY

The Department of Sociology and Anthropology presents a program of study designed to further the student's perception and understanding of social interaction and group processes, and to provide fundamental concepts and basic research skills in the disciplines for which the department is responsible—anthropology, folklore, sociology and social welfare.

The undergraduate major in the department may select and develop, in consultation with his adviser, a basic curriculum (or a series of courses) which will give him an opportunity to develop his interests and provide him with the background necessary for his future needs.

Students in the department major in either (1) sociology, which includes those who concentrate in (a) sociology or (b) social welfare, or (2) anthropology, which includes folklore. All students must meet the general requirements of the College of Arts and Sciences, and one of the following:

Specific Requirements for Sociology Majors:

Sociology Option: Introduction to Anthropology (Ay 1/2), Introduction to Sociology (Sy 3/4), Statistical Methods for Sociological Research (Sy 119), Methods of Social Research (Sy 120) and Sociological Theory (Sy 160).

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Non-departmental electives recommended are General Psychology (Py 1/2), Social Psychology (Py 130), Principles of Economics (Ec 1/2), and Introduction to Government (Pol 1/2).

Social Welfare Option: Introduction to Anthropology (Ay 1/2), Introduction to Sociology (Sy 3/4), Statistical Methods for Sociological Research (Sy 119), Sociological Theory (Sy 160), Social Welfare (Sw 150/151) and Social Work as a Profession (Sw 152/153). In addition, Field Experience in Social Welfare (Sw 154/155) is available as an elective. These required Sw courses meet the current recommendations of the Council on Social Work Education, of which this department is a constituent member.

The two introductory courses, Ay 1/2 and Sy 3/4, should be taken during the freshman or the sophomore year. The Introductory Anthropology and Sociology courses may be taken concurrently. A minimum of 36 hours of departmental course work must be taken; the maximum number of hours permitted within the department is 48.

Specific Requirements for Anthropology Majors:

Introduction to Anthropology (Ay 1/2), Introduction to Sociology (Sy 3), Statistical Methods for Sociological Research (Sy 119), Ethnographic Method (Ay 120) and History of Ethnological Theory (Ay 161). Including the above the anthropology major may take a minimum of 36 and a maximum of 48 hours within the department. Any Fo, Sy, or Sw courses count as major credit.

Recommended laboratory science courses for anthropology majors are Principles of Geology (Gy 1/2), or Animal Biology (Zo 3/4). For those students who have not taken Gy 1/2 as a lab science, Descriptive Geology (Gy 1a/2a) is recommended to meet the Arts and Sciences descriptive science requirements. Other recommended electives are General Psychology (Py 1/2), Social Psychology (Py 130), Comparative Anatomy (Zo 133), Glacial Geology (Gy 152), and Pleistocene Epoch (Gy 342).

The two introductory courses, Ay 1/2 and Sy 3, should be taken during the freshman or sophomore year and may be taken concurrently. Fo 1 and Fo 2 may be taken during the freshman or sophomore years. Any two of the following Fo courses may be counted toward an English major: Fo 1, Fo 2, Fo 134, and Fo 179.

Students who wish to explore the requirements for graduate study or the professional or career aspects of any of the disciplines (sociology, social welfare, anthropology or folklore) should consult with their departmental adviser.

Sociology of Education (Sy 5ed), Sociology for Nurses (Sy 6n), and Marriage (Sy 7) do not carry credit toward the department major.

A specimen curriculum for the freshman-sophomore years is provided in the appropriate College of Arts and Sciences section of this catalog.

The department offers a program of study leading to the master of arts degree in sociology. The general requirements are described in the Graduate School Catalog.

SPECIMEN CURRICULUM IN SOCIOLOGY AND ANTHROPOLOGY

The anthropology major is required to take Introduction to Anthropology (Ay 1/2) Introduction to Sociology (Sy 3), Statistical Methods for Sociological Research (Sy 119) Ethnographic Method (Ay 120) and History of Ethnological

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Theory (Ay 161) The sociology major is required to take Introduction to Anthropology (Ay 1/2) Introduction to Sociology (Sy 3/4), Statistical Methods for Sociological Research (Sy 119), Methods of Social Research (Sy 120) and Sociological Theory (Sy 160) The sociology major who elects the Social Welfare option is required to take Introduction to Anthropology (Ay 1/2), Introduction to Sociology (Sy 3/4), Statistical Methods for Sociological Research (Sy 119), Sociological Theory (Sy 160), Social Welfare (Sw 150/151) and Social Work as a Profession (Sw 152/153).

Freshman Year

Ay	1	Introduction to Anthropology	Ay	2	Introduction to Anthropology
Sy	3	Introduction to Sociology	Sy	4	Introduction to Sociology
Eh	1	Freshman Composition or Sh 1, Public Speaking	Eh	1	Freshman Composition or Sh 1, Public Speaking
Fr	3	(or Gm 3) Intermediate French or Intermediate German	Fr	4	(or Gm 4) Intermediate French or Intermediate German
Pe	1	Physical Education	Pe	2	Physical Education
Zo	3	Animal Biology, or Ms 5, Elements of College Mathematics	Sh	1	Funds. Public Speaking
			Zo	4	Animal Biology, or Ms 6, Elements of College Mathematics

Sophomore Year

Py	1	General Psychology	Py	2	General Psychology
Ay	1	Introduction to Anthropology or Sy 3, Introduction to Sociology Foreign Language, if not completed in freshman year Humanities course	Ay	2	Introduction to Anthropology or Sy 4, Introduction to Sociology Foreign Language, if not completed in freshman year Humanities course

Sociology recommended elective: Py 1/2, General Psychology; Ec 1/2, Principles of Economics; Pol 1/2, Introduction to Government. Anthropology recommended electives: Gy 1/2, Principles of Geology; Gy 1a, Descriptive Geology, Physical; and/or Gy 2a, Descriptive Geology, Historical; and Zo 133, Comparative Anatomy. Social Welfare recommended elective: Pol 1/2, Introduction to Government.

Students who major in the Department of Sociology and Anthropology will establish, in consultation with their major adviser, the program for their junior and senior years. Consult this catalog for specific courses in the three program areas offered by the department—sociology, anthropology, and social welfare, and for department requirements concerning advanced courses.

Anthropology (Ay)

1/2. Introduction to Anthropology—The development of man as a bio-cultural phenomenon. Special emphasis on human paleontology and race formation as well as on the nature of culture and such human institutions as social organization, marriage, religion, economics, etc., among primitive people, with some application of derived principles to western civilization. Required of majors. Cr 3.

MR. EMERICK

120. Ethnographic Method—A study of methods and techniques in ethnograph including an introductory survey of some of the methodological issues involved in planning and carrying out field studies. Emphasis is on the ethno-

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grapher's way of looking at and making a record of human behavior. Ay 1/2 or permission. Cr 3 (Spring semester) MR. EMERICK

138. Race and Culture Conflict—Analysis of causal factors in group conflict, with emphasis on the problem of minority groups and non-western people in culture contact situations. Prerequisite: Ay 1/2, or permission of the instructor. Cr 3. MR. EMERICK

139. Culture and Personality—A study of how culture influences the development of personality. Major emphasis is on the different ways in which human societies socialize the child and on the relationships between cultural systems and personality systems. Prerequisite: Ay 1/2 or permission of instructor. Cr 3. MR. EMERICK

141. Peoples and Cultures of the Pacific Islands—The problem of migration to and the peopling of the Pacific world will be examined. The development of distinct cultural traditions traced in Australia, Melanesia, Micronesia, and Polynesia. The possibility of trans-Pacific contact with pre-Columbian America will be discussed, as well as the special problems of these Oceanic people in the modern world. Prerequisite: Ay 1/2, or permission of instructor. Cr 3. MR. EMERICK

150. Hunters and Food Gatherers—A survey of the vanishing people whose subsistence economy has remained at the hunting and gathering level. Attention will be focused on selected groups in all major geographical and culture areas. Both unique and common problems of these people will be dealt with and special emphasis will be placed on ethnohistorical, environmental, and acculturation factors. Prerequisite: Ay 1/2, or permission of instructor. Cr 3. MR. EMERICK

151. North American Indian Ethnology—A survey of the ethnology of the North American Indian from the southern edge of the Eskimo area to northern Mexico. Emphasis upon cross-cultural comparison through the use of specific ethnographic studies. The formulation of generalizations of geographical and temporal significance. Prerequisite: Ay 1/2, or permission of the instructor. Cr 3. MR. SNOW

152. Central and South American Indian Ethnology—A survey of the ethnology of Central and South American Indian cultures including the West Indies but excluding contemporary peasant societies. Designed as a sequence course to Ay 151 and using the same approach. Prerequisite: Ay 1/2, or permission of the instructor. Cr 3. MR. SNOW

160. Peoples and Cultures of the Circumpolar Area—The development of northern cultures in both the Old and the New Worlds will be traced from pre-historic times to the present. Problems of economics, social structure, and cultural organization will be emphasized. Prerequisite: Ay 1/2, or permission of instructor. Cr 3. MR. EMERICK

161. History of Ethnological Theory—A survey of the main schools of theory (evolutionary, historical, functional,) as they have developed and played their part in the history of anthropology. Using illustrations drawn from the literature, attention will also be given to current thought regarding social structure, particularly in the area of kinship, and an integrated body of definitions will be provided. Prerequisite: Ay 1/2 or permission. Cr 3. (Spring semester) MR. SNOW

170. Archaeological Theory and Method—An introduction to the methods of archaeological research. Techniques of excavation and analysis; theoretical

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basis of methods and fundamental principles; application to specific case studies; interpretation of findings; the use of geological, biological, geographical and other tools in archaeological research. Prerequisite: Ay 1/2 or permission of the instructor. Cr 3.

MR. SNOW

171. Old World Prehistory—The prehistory of man in the eastern hemisphere from the beginnings of culture through the development of agriculture and urbanism. The development and elaboration of human society as inferred from material remains. Prerequisite: Ay 1/2, or permission of the instructor. Cr 3.

MR. SNOW

172. North American Prehistory—The prehistory of man in North America from his arrival to European contact. A survey of major developments such as the spread of agriculture. Emphasis upon late and post-glacial adaptations to environment. Prerequisite: Ay 1/2, or permission of the instructor. Cr 3.

MR. SNOW

173. Mesoamerican Prehistory—The prehistory of man in Mesoamerica, covering the area from northern Mexico to the Isthmus of Panama. The development of agriculture and urbanism with reference to parallel developments in the Old World. The emergence of civilization leading up to European contact. Prerequisite: Ay 1/2, or permission of the instructor. Cr 3.

MR. SNOW

197/198. Department Projects—For the advanced student. Minimum of 15 hours of department courses as a prerequisite. Apply directly to Professor Vernon before registration. Cr 2 or 3.

Folklore (Fo)

1. Introduction to Folksong—A survey of the various forms of music and poetry as they exist in folk tradition: epics, ballads, lyrics, work-songs, dance and play-party songs, blues, religious songs, etc. Emphasis will be on listening to field recordings. Cr 3, Lec 2, Lab 2. (Fall semester)

MR. IVES

2. Introduction to Folklore—Survey of the different genres of folklore, with emphasis on belief custom, and legend. Cr 3, Lec 3. (Spring semester)

MR. IVES

106. North American Indian Mythology—Myths, tales, and legends of selected representative American Indian groups of the United States and Canada, with special emphasis on the Northeast. Prerequisite: 3 hours of folklore or permission of the instructor. Cr 3, Lec 3. (Spring semester)

MR. IVES

134. Folksong in America—Types and traditions of folksong in America, especially the ballad; English, Scottish, Irish, Spanish, French, and Negro materials. Prerequisite: Fo 1 or permission. Cr 3, Lec 2, Lab 2. (Spring semester)

MR. IVES

179. Folk Narratives—A study of the folktale (*Marchen*) and such allied forms as jests, tall tales, and various types of hero cycles found in both the Old and the New World. Prerequisite: Fo 2 or permission of the instructor. Cr 3. (Fall semester)

MR. IVES

191. Projects in Folklore—Individual supervised projects, particularly in the field of collecting folk materials. Prerequisite: 6 credits of folklore and permission of the instructor. Cr 2 or 3. (Fall semester)

MR. IVES

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Sociology (Sy)

3/4. Introduction to Sociology—The fundamental concepts, principles, and methods of sociology; analyzes the influence of social and cultural factors upon human behavior; evaluates effect of group processes, social classes, stratification, and basic institutions on contemporary society. The first semester (Sy 3) concentrates on concepts and principles; the second semester (Sy 4) on application of these to various social problem areas. *Cr 3* STAFF

5ed. Sociology of Education—The major principles of sociology; the culture concept and its use in perceiving and understanding the diversity of the social system in relation to the school and education; discussion of school-community relationships, social groups, and pattern of social behavior. Offered concurrently with Mhe 50 and Py 70. Credits are not accepted toward the department major. *Cr 3*. MR. SEZAK

6n. Sociology for Nurses—An introductory semester course which presents the fundamentals of sociology; description and analysis of the structure and dynamics of human society; social norms, intergroup relations, social change, stratification and institutions. Discussion of hospital-community relationships. A course for nurses at Eastern Maine General Hospital. Credits are not accepted toward the department major. *Cr 2*. MR. SEZAK

7. 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. Open to all students in the University. No prerequisite. Credits are not accepted toward the department major. *Cr 2*. MR. BALDWIN

24. Sociology of Rural Life—Significance of rural society in American culture. The impact of forces of change, including population movement. The significance of changes in the institution of family, religion, education, and stratification. The course is the same as Ab 24. *Cr 3*. MR. HYATT AND MR. PLOCH

110. Social Organization—An examination of selected institutions in modern society, analysis of social roles, processes and structures within typical organized groups, such as industrial, military, religious and fraternal organizations; discussion of bureaucracy, decision making, social conflict; the implication of cultural and technological change. Prerequisite: Sy 3 or permission of instructor. *Cr 3*. MR. BOLARIA, MR. ROWAN

113. Social Disorganization—The origins and causes of socially disapproved behavior: ways in which society interprets and copes with the deviant. Study of the major forms of social disorganization; specific social problems are considered, such as suicide, crime, drug addiction, alcoholism, prostitution, mental illness, divorce, group conflict. Prerequisite: Sy 3 or permission of the instructor. *Cr 3*. STAFF

114. Social Change—Analysis of sociocultural factors related to social change and the dynamics of the change process. Sy 3 or permission of the instructor. *Cr 3*. MR. ROWAN

115. Sociology of Adolescence—Attention is given to the social behavior of adolescents, the development of adolescent culture and the involvement of adolescents in the various social systems and the class structure of society. Prerequisite: Sy 3 or permission of instructor. *Cr 3*. MR. SEZAK

118. Sociology of the Family—A sociological approach to the study of the

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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 3 or permission of the instructor. *Cr* 3.

MR. SEZAK

119. *Statistical Methods for Sociological Research*—Emphasis on the uses of statistics in the organization, interpretation and presentation of sociological research data. Prerequisite: Ms 19 or permission of the instructor. *Cr* 3.

MR. FINNER

120. *Methods of Social Research*—An introductory research course. Nature of scientific social inquiry; problem formulation; sources of data; basic methods and techniques; use of specific tools in social research; theoretical relation between data collection and findings. Field studies. Prerequisite: Sy 3, Sy 119, or permission of instructor. *Cr* 3.

MR. FINNER

121. *Juvenile Delinquency*—The problem of adolescence in modern society. Discontinuities of teenage roles; influence of various subcultures on patterns of behavior; problems of the adolescent in his social environment; delinquency as a social problem; theories of delinquency causation; issues, programs. Prerequisite: Sy 3, or permission of instructor. *Cr* 3.

STAFF

122. *Criminology: The Adult Offender*—Social and cultural factors in the causation of crime among adults; organized crime as a social phenomenon in American life; specific types of criminal careers; legal and judicial aspects of crime. Prerequisite: Sy 3, or permission of instructor. *Cr* 3.

STAFF

123. *Social Stratification*—Systematic analysis of social differentiation and evaluation. Theories of, and research in, the structure and function of class, caste, and ethnic stratification. Descriptive materials will be drawn from studies of American and other societies. Prerequisite: Sy 3, or permission of instructor. *Cr* 3.

MR. ROWAN

125. *Industrial Sociology*—Social factors involved in the development of industries; social consequences of technological change; social organization within industry; problems encountered within the social structure(s) of industry. Prerequisite: Sy 3, or permission of instructor. *Cr* 3.

MR. BOLARIA

126. *Sociology of Urban Life*—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. No freshmen. Prerequisite: Sy 3, or permission of the instructor. *Cr* 3.

MR. FINNER, MR. SEZAK

129. *The Individual and the Community*—Analysis of the functioning and structure of the community. Emphasis on ways in which individuals and groups are affected by community dynamics. Group processes, leadership, program planning and development are stressed. Community project. Prerequisite: Ab/Sy 24 or Sy 26 or permission. Course same as Ab 129. *Cr* 3.

MR. PLOCH

134. *Population*—Theories of population. Demography; analysis of birth, death, and migration trends. Problems and policies. Prerequisite: Sy 3/4 or permission of instructor. *Cr* 3.

MR. FINNER

135. *Human Ecology*—Spatial distribution of human beings and related activities and social processes. Prerequisite: Sy 3 or permission of instructor. *Cr* 3.

MR. ROWAN, MR. FINNER

138. *Race and Culture Conflict*—Analysis of factors involved in group

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conflict, with emphasis on minority groups in culture contact situations. Prerequisite: Sy 3 or permission. *Cr 3.* MR. ROWAN

140. Social Control—Examination and comparison of major control mechanisms used in sacred and secular societies. Emphasis on various institutions of social control and their role in establishing and maintaining social order. Sy 3 or permission of the instructor. *Cr 3.* MR. BOLARIA

160. Sociological Theory—A critical examination of the sociological theories of Marx, Max Weber, Durkheim, and contemporary theorists such as Parsons and Robert Merton. Study of developments in sociological theory as related to methodology, social issues, and current trends in contemporary sociology. Prerequisite: Sy 3, and two other courses in sociology, or permission of the instructor. *Cr 3.* MR. ROWAN

161. History of Sociology—Trends and leading figures in the history of sociology. Survey of current approaches and established principles in the field. Prerequisite: Sy 3, and two other courses in sociology, or permission. Seniors only. *Cr 3.* MR. ROWAN

169. Collective Behavior and Social Movements—Behavior of groups such as mobs, crowds, and riots which involve little cultural direction. Relatively unstructured mass behavior and broad society-wide movements are analyzed. Sy 3 or permission of the instructor. *Cr 2.* MR. MOSS, MR. VERNON

170. Small Group Analysis—Communication and interaction patterns within small groups are identified and analyzed. Course involves participation in and observation of such interaction. Prerequisite: Sy 3 or permission of instructor. *Cr 3.* MR. VERNON

171. Sociology of Medicine—Attention is given to the relationship between sociocultural factors and the occurrence of disease and the social systems which are developed in the treatment and prevention thereof. Prerequisite: Sy 3/4 or permission of instructor. *Cr 3.* MR. BOLARIA

180. The Science of Social Man—The course will review and seek to integrate to the extent possible, basic concepts, theoretical systems and methodological issues in the behavioral sciences. It will be inter-disciplinary in nature and help the student understand the degree to which a unified science of man has been approached, as well as the problems yet to be resolved. It will also consider the implications of outstanding recent contributions. It will be jointly taught by members of this department as well as by other faculty who may be invited to participate. Prerequisite: senior sociology majors or permission of instructors. *Cr 3.* STAFF

182. Sociology of Religion—An objective study of religion as a social institution. Attention is given to the social correlations of religion and the functions of religion in society. Prerequisite: Sy 3 or permission of instructor. *Cr 3.* MR. VERNON

197/198. Department Projects—For the advanced student. Minimum of 15 hours of department courses as a prerequisite. Apply directly to Professor Vernon before registration. *Cr 2 or 3.*

305. Advanced Sociology of Education—An analysis of the social processes and social patterns involved in the educational system. Selected problems in the sociology of education will be given intensive study. Individual research will be required. *Cr 3.* MR. SEZAK

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310. Seminar in Social Organization—Attention is given to the relationships between social variables that contribute to the organization of society. Inter-institution as well as intra-institution relationships are considered. *Cr 3.*

MR. BOLARIA, MR. ROWAN

313. Seminar in Social Disorganization—Attention is given to the inter-relationships of social variables and to the factors that hinder the effective functioning of the group. *Cr 3.*

STAFF

318. Advanced Sociology of the Family—A comparative analysis of family organization among selected societies. Special emphasis will be focused on the nuclear family of Western society, relating the structure and function of the family to broader forms of social organization. Individual research will be required. *Cr 3.*

MR. SEZAK

320. Seminar in Research Methods—Advanced course for those who intend to do research or graduate work. Attention is paid to various methods and techniques used by sociologists. *Cr 3.*

MR. FINNER

326. Seminar in Formal Organization—Examination of the nature and types of formal organizations, the relationships between them and the larger social context of which they are a part, and various aspects of their internal structure. Major emphasis is on theoretical orientations and methodological considerations. *Cr 3.*

MR. BOLARIA

329. Seminar in Community Studies—Changes in the structure and function of rural, suburban and urban communities and of their interrelationships and relationships with the larger society. Emphasis upon theory and research. *Cr 3.*

MR. ROWAN

360. Seminar in Sociological Theory—Considers the development of major sociological theories, with attention given to the relationship of such theories to the understanding of social behavior and to contemporary research. *Cr 3.*

MR. VERNON, MR. ROWAN

368. 369. Manpower Research Seminar—An examination of the economic, social, and psychological factors affecting manpower development and utilization. This inter-disciplinary seminar is part of the University's manpower research project. It gives students a unique opportunity to participate in current research, from problem formulation to data collection and analysis. *Cr 3.*
Course same as Ba Py Ec 368.369. By permission.

MR. CLARK, MR. FORSGREN, MR. FINNER, MR. STONE

382. Advanced Sociology of Religion—Advanced study of the social dimensions of religion. Particular emphasis is placed on current research and theory. *Cr 3.*

MR. VERNON

399. Graduate Thesis—*Cr 6.*

Social Work (Sw)

150/151. Social Welfare—Study of social welfare as a social institution. An examination of social welfare programs, their philosophy and methods, within a social and cultural context. Prerequisite: courses Ay 1/2 or Sy 3. *Cr 3.*

MR. SALEEBEY

152/153. Social Work as a Profession—Study of the ideology and methods of the social work profession. An examination of the role of the social worker in modern society, and the relationship of social work to other helping pro-

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fessions: psychology, psychiatry, medicine, and the ministry. Prerequisite: Sy 150/151, seniors, or permission of instructor. *Cr 3.* MR. SALEEBEY

154/155. Field Experience in Social Work—Field observation and experience in community agencies to enable students to apply social science and social welfare knowledge and to test their motivation and capacity for the field of social work. Prerequisite: seniors and permission of instructor. *Cr 2.*

MR. SALEEBEY

DEPARTMENT OF SPEECH

PROFESSORS GARDNER AND BRICKER; ASSOCIATE PROFESSORS GILLESPIE, BARUSHOK, BOST, AND COOK; ASSISTANT PROFESSORS COLE, CYRUS, AND MACLAUCHLIN*, MR. HENDERSON, MR. FENTER, MR. BENNER, MISS WOOD

The major studies may lead to either a degree in speech or a degree in theatre. In addition, the major in speech permits the student, by meeting special requirements, to concentrate in one of the following areas: broadcasting; rhetoric and public address; speech education; or speech and hearing therapy.

Departmental courses required of all speech or theatre majors are Sh 1, Sh 31, Sh 41, and Sh 198, plus twenty-six or more additional hours as prescribed by the major and/or area of concentration. Specific requirements for each are available at the departmental office, including suggestions for preferred courses in meeting college requirements.

All majors are expected to take advantage of the laboratory opportunities offered by the department through University Forensics, the Maine Masque Theatre, WMEB-FM and WMEB-TV, and the Speech and Hearing Clinic.

The department offers work leading to the master of arts degree in speech as outlined in the general requirements for graduate work. Students will be admitted as candidates upon presentation of credentials indicating excellent undergraduate records.

Courses in Rhetoric and Public Address

The University forensic program 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 program.

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. COLE, 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: Sh 1. *Cr 2.*

MR. COLE

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. *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. *Lab 2, Cr 1.* MR. GARDNER, MR. COLE

105. Group Discussion—The theory and methods of group procedure in problem-solving. Emphasis on current theories in group methods and participation in group discussions. Limited to juniors and seniors. *Cr 3.*

154. Public Discussion and Debate—Philosophy, principles, and methods of group procedures in dealing with controversial problems. Consideration of the points of similarity and difference. Attention to analysis, evidence, and reasoning as the basis for preparation and participation. Not offered every year. *Cr 3.*

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 upperclassmen. Prerequisite: Sh 1. *Cr 3.* MR. COLE

156. Persuasion—An advanced study of the problems involved in influencing an audience. Consideration of such factors as mental attitudes, attention, rationalization, adaption, suggestion, and motivation. Limited to upperclassmen. Prerequisite: Sh 1. *Cr 3.* MR. GARDNER

157. Classical Rhetoric—An analysis of Greek and Roman rhetoric in relation to theories and methods of public speaking, with particular emphasis on Aristotle, Cicero, and Quintilian. Prerequisite: four hours in the rhetoric and public address area. *Cr 3.* MR. COLE

‡**158. Secondary School Forensic Program**—An analysis of the duties, responsibilities, and opportunities of the director or coach of extemporaneous speaking, oratory, discussion and debate, with attention to the training procedures in these areas. *Cr 3.*

Courses in Theatre

The Maine Masque Theatre presents four major productions each year and serves as a practical training ground in theatre. All 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 examination of 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; to play construction; and to styles in drama and criticism as these apply to play presentation. *Cr 2.* MR. BRICKER

15. Stagecraft—An introduction to the physical and technical aspects of stage presentation, including the elements of design, staging, and theatre lighting. Backstage work on major and laboratory theatre productions will be required. *Lec 2, Lab 2, Cr 3.* MR. CYRUS, MR. FENTER

16. Play Production—An introduction to the responsibilities of the director and to the basic principles of stage directing, including choosing and analyzing plays, scheduling rehearsals, blocking action, and determining stage business. Backstage work on major and laboratory theatre productions will be required. *Lec 2, Lab 2, Cr 3.* MR. BRICKER

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17. Fundamentals of Acting—The basic skills of acting. The course will include the actor's internal preparation for playing a role and the development of his external techniques for projecting the role to his audience. *Lab 4, Cr 2.*

MR. BOST

†**162. Theatre History**—A survey of the drama, physical theatre, and modes of production from early Greek festivals to the present day. Limited to upperclassmen. *Cr 3.*

MR. BARUSHOK

‡**163. Scene Designing**—Principles, methods, and materials used in scene designing, with consideration of the director-designer relationship. Laboratory projects in preparing the complete design for a particular production, including drawings, models, and plans. Limited to upperclassmen. Prerequisite: Sh 15. *Lab 4, Cr 2.*

MR. CYRUS

†**164. Stage Lighting**—Principles, methods, and materials used in stage lighting, including their artistic and technical applications in theatre, film, and television. Projects will include problems in lighting particular productions. Limited to upperclassmen. Prerequisite: Sh 15. *Cr 2.*

MR. CYRUS

166. Stage Directing—The translation of all aspects of the theatre production into an artistic unity, with emphasis on theatre aesthetics. Consideration of the principles of art, such as balance, proportion, light and shadow, rhythm, color, and line, as applied to theatre. Limited to upperclassmen. Prerequisite: Sh 16. *Cr 3.*

MR. BOST

‡**167. Advanced Acting**—The adaptation of basic acting skills to the particular dramatic production, with emphasis on the actor's role-interpretation as it is influenced by the director-actor relationship. Limited to upperclassmen. Prerequisite: Sh 17. *Lec 2, Lab 2, Cr 3.*

MR. BRICKER

168. Creative Theatre—Designed for teachers, youth leaders, and recreational directors. A study of the principles, methods, and techniques involved in the use of creative dramatics in the classroom, in the church, and on the playground. Not offered every year. *Cr 3.*

169. Theatre Laboratory—Advanced laboratory work in the divisions of designing, lighting, or directing. The student may register, in different semesters, for credit in each of the divisions. Prerequisite: in designing, Sh 163 and permission; in lighting, Sh 164 and permission; and in directing, Sh 166 and permission. *Lab 4, Cr 2.*

MR. BARUSHOK, Chairman

†**260. Production of Pre-Modern Drama**—An investigation of the problems involved in the presentation of selected pre-modern dramas, from Aeschylus to Ibsen, for present-day audiences. Prerequisite: permission. *Cr 3.*

MR. BARUSHOK

‡**261. Production of Modern Drama**—An investigation of the problems involved in the presentation of selected masterpieces of modern drama, from Ibsen to Miller, for present-day audiences. Prerequisite: permission. *Cr 3.*

MR. BOST

‡**265. Dramatic Theory**—An analysis of major theories of dramatic writings and dramatic production from Aristotle to the present day, with consideration of their influence on the theatre and drama. Prerequisite: Sh 162 and permission. *Cr 3.*

MR. BARUSHOK

Courses in Radio and Television

Radio Station WMEB-FM provides practical experience in broadcasting. All students have the opportunity to work for staff positions and program assignments. Certain opportunities are available on University television station WMEB-TV.

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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. BENNER

22. *Radio-TV Announcing*—Problems and responsibilities of the announcer: articulation and pronunciation; operation of studio equipment; and the handling of various speaking situations. Prerequisite: Sh 21. *Lec* 1, *Lab* 2, *Cr* 2. MR. HENDERSON

171. *Writing for Broadcast*—An analysis of the problems in writing for radio and television. The preparation of different forms of continuity copy and the creation of various types of programs. Limited to upperclassmen. Prerequisite: Sh 22 or permission. *Cr* 3. MR. BENNER

172. *Producing the Radio Program*—The problems involved and the philosophy underlying the planning and production of a radio series. Sound production practices will be emphasized through intensive laboratory sessions. Major class productions will be broadcast over WMEB-FM. Prerequisite: Sh 22 or permission. *Lec* 2, *Lab* 2, *Cr* 3. MR. HENDERSON

173. *Television Techniques*—An introduction to the theory and procedures of television production. Laboratory sessions in studio operation will use facilities of WMEB-TV. Prerequisite: Sh 172 or permission. *Lec* 2, *Lab* 2, *Cr* 3. MR. BENNER

174. *Broadcast Programming*—The problems in planning, preparing, and scheduling programs for radio and television. Major consideration will be given to the interrelationships of audience analysis, station policy, advertising needs, and industry and federal guidelines. Prerequisite: Sh 22 or permission. *Cr* 3.

176. *Television Production*—An analysis of the problems in creating, producing, and directing the television program. The facilities of WMEB-TV will be used for laboratory sessions. Prerequisite: Sh 173. *Lec* 2, *Lab* 2, *Cr* 3. MR. BENNER

177. *Using Television in the Classroom*—The values and potentials of utilizing radio and television in education, with particular emphasis on current utilization of the media in elementary and secondary schools, colleges and universities, and adult education. *This is not a course in producing the instructional television program.* *Cr* 3. MR. HENDERSON, MR. BENNER

179. *Problems in Broadcasting*—Independent investigation of special problems related to radio and television. Prerequisite: nine hours of broadcasting and permission of the head of the department. *Cr* 1-3. STAFF

Courses in Speech and Hearing Therapy

The Speech and Hearing Clinic is available for both diagnosis and therapy for all who can benefit from its services. It also provides training opportunities for those who are preparing to become speech therapists.

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 upperclassmen. *Cr* 3. MR. GILLESPIE, MISS WOOD

182. *Speech Correction Methods*—Further study of the causes of speech disorders with emphasis given to methods of therapy used at the classroom level.

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Supervised planning of actual therapy sessions will constitute a portion of the course. Prerequisite: Sh 181. *Cr* 3. MR. GILLESPIE, MISS WOOD

183. Articulation Disorders—An analysis of the nature and causes of abnormal articulation; diagnostic testing; etiological therapy; and articulation therapy. Prerequisite: Sh 180 and 181. *Cr* 3. MR. GILLESPIE

184. Voice Disorders—An analysis of the types, symptoms and causes of abnormal voice production. Consideration of diagnostic practices, medical and psychological referral procedures, and methods used in correction of vocal problems of pitch, intensity, rate and/or quality. Prerequisite: Sh 180 and 181. *Cr* 3. MR. GILLESPIE

185. 186. Problems in Speech Defects—Detailed analysis of particular speech problems followed by the planning and administration of remedial speech procedures. Experience in the Speech and Hearing Clinic. Prerequisite: Sh 182. *Cr* 1. STAFF

187. The Hard of Hearing Child in the Classroom—The types, symptoms, and causes of hearing loss and the use of testing procedures. Consideration of the effects of hearing loss upon the communicative, educational, and personality development of the student. Emphasis upon the application of the principles and methods of retraining the handicapped in hearing. Not offered every year. *Cr* 2.

†**188. Introduction to Audiology**—The anatomy and physiology of the ear; the psycho-acoustics of audition; theories of hearing; causes and types of hearing loss; detection of hearing loss; administration of pure-tone tests of auditory acuity and hearing conservation. Prerequisite: Sh 180 and 181. *Cr* 3. MISS WOOD

189. Stuttering—A consideration of the symptoms, theories of causation, and principles involved in the management of stuttering. Prerequisite: six hours in speech and hearing therapy. *Cr* 3.

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, CHAIRMAN

†**190. Choric Speaking**—Application of the basic principles of oral reading to the problems of group interpretation of literature. Emphasis on methods, materials, and actual participation in group reading. Limited to upperclassmen. Prerequisite: Sh 41 or permission. *Cr* 3. MR. BOST

191. Oral Reading of Literature—A study of the art of oral interpretation, including evaluation and analysis of material and the development of skills for reading literature aloud. *Not open to students who have taken a course in fundamentals of oral interpretation.* Limited to upperclassmen. Not offered every year. *Cr* 3.

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 upperclassmen. Prerequisite: Sh 41. *Cr* 3. MR. BARUSHOK

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General Courses

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, MR. COOK, MISS WOOD

32. Phonetics—A study of the formation, auditory recognition, and phonetic (IPA) transcription of the sounds of English language, with an examination of the causes of sound change in connected speech. *Cr 2.*

MR. GILLESPIE

180. Bases of Speech—An examination of the physical, physiological, psychological, and sociological foundations of speech. The interrelationship of information provided by the natural and behavioral sciences in the understanding of the speech and hearing process. *Cr 3.*

MR. GILLESPIE

193. Speech Education in the Elementary School—The relation of speech education to the total elementary curriculum. Consideration of the development of good speech through classroom activities. Attention to fundamental principles, materials, and methods of procedure. Not offered every year. *Cr 3.*

194*. Speech for Teachers—Designed to improve the oral effectiveness of the individual teacher through study and practice in giving extemporaneous speeches, reading aloud, and using discussion procedures. *Cr 3.*

STAFF

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.*

STAFF

†**197. Teaching of Speech**—Problems, methods, and materials related to the teaching of speech. Particular attention to the extra-curricular speech program. Prerequisite: permission. *Cr 3.*

MR. GARDNER

198. Seminar in Speech—Oral and written reports by class members. Required of all senior majors and graduate students. Prerequisite: permission. *Cr 2.*

MR. GARDNER

399. Graduate Thesis—*Cr Ar.*

* Graduate credit with the approval of the student's adviser.

ZOOLOGY (Zo)

PROFESSORS ALLEN, MURRAY, SPEICHER, MEYER, FLYNN, BARDEN, DEAN; ASSOCIATE

PROFESSORS HATCH, MAJOR, MUN, SASS, COOK, VALLEAU; ASSISTANT PROFESSORS

HAEFNER, ROBERTS, DEARBORN; LECTURERS BRANCH, PORTER, RODERICK,

SCHLAGER, WADSWORTH, RIDGWAY, KANDUTSCH, STEVENS; MRS.

WEATHERBEE, MRS. COOK, MRS. MAJOR; MR. LAWRENCE,

MR. WEIBUST, MR. HANEGAN, MR. SAVARD, MISS WORLD,

MR. BULLOCK, MR. EASTWOOD, MR. EMBICH,

MR. SCHNEIDER, MISS WOOD

Zoology, or animal biology, includes the study of every aspect of animal life: the structure of animals, their development, functions, heredity, and interactions with other organisms and their environment. The department's introductory course, Zo 3/4, Animal Biology, fulfills one year of the college requirement of a basic year course in laboratory science or mathematics. This course, or a combination of Zo 3 and Bt 1, General Botany, is a prerequisite to all advanced courses in the department.

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A zoology major is prepared for graduate training in biology, for entrance into medical or dental school, or for medical technology. Specimen curricula for several of these fields are given in this catalog and should be carefully considered by the student in planning a program. Other curricula can be worked out in consultation with the department head.

Upon graduation a zoology major may also enter various fields: business, education, industry, government agencies, and research laboratories. Among the positions held by zoology majors the following may be mentioned: museum curator, research assistant, teacher, hospital administrator, librarian, biological aide, aquatic biologist, ranger-naturalist, biological supply house employee, book publisher's representative, medical and biological illustrator, and science writer.

FISHERY SCIENCE

A zoology major may elect a sequence of courses introducing the basic skills necessary for careers in fishery management and biological oceanography. Graduates of this sequence are eligible for Civil Service examinations for positions at the technician level in federal and state agencies concerned with management of aquatic resources. More advanced positions in these fields generally require graduate preparation. Undergraduates anticipating graduate study are urged to secure a broad base in the biological and physical science. The zoology major requirements are ideally suited to such preparation.

A graduate program in Fishery Science leading to the degrees of master of science and doctor of philosophy is offered in the Department of Zoology. Opportunities for research in fresh water and estuarine environments are available through the cooperation of state and federal agencies. Research assistantships are usually available for graduate students.

The Maine Department of Inland Fisheries and Game has maintained close liaison with the University fishery science program for 25 years. Natural populations of warm water and cold water game fish abound in the state, providing unlimited opportunity for field study. Two fish cultural stations nearby provide facilities for controlled studies on large groups of fish.

The Maine Cooperative Fishery Unit, the second such unit established in the nation, provides opportunities for training and research in the field of fishery science. The unit is operated under a cooperative program by the U.S. Fish and Wildlife Service, Bureau of Sport Fisheries and Wildlife, the Maine Department of Inland Fisheries and Game, and the University. The unit offers advanced training in modern fishery management and research techniques, conducts a program of fishery research, and participates in extension programs.

Preparation for the Zoology Major

In addition to the general requirements of the college, the department requires the following courses for the B.A. degree in zoology:

Zo 3/4, Animal Biology; or Zo 3 and Bt 1, General Botany

Ch 1/2, General Chemistry

Ch 151/152, 161/162, Organic Chemistry (with lab), or Bc 1, Organic Chemistry and Bc 2, Biochemistry

Ms 12, Calculus; Ms 19, Principles of Statistical Inference

Ps 1a/2a, General Physics

COLLEGE OF ARTS AND SCIENCES

Requirements for the Zoology Major

Twenty-two hours of advanced work in zoology are required. The following courses must be included in the advanced work in zoology:

Zo 133, Comparative Anatomy or Zo 136, Developmental Biology

Zo 162, Genetics

Zo 177, Animal Physiology

Courses in Zoology (Zo)

3/4. Animal Biology—A basic two-semester course. The first semester deals with principles of life, including properties of cells, heredity, ecology, evolution and a brief review of major invertebrate types. The second semester is an introduction to vertebrate structure and function including embryology. *Lec 2, Lab 4, Cr 4.*

MR. SPEICHER AND MR. VALLEAU

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 133 rather than Zo 8. *Lec 2, Rec 1, Lab 2, Cr 4.*

MR. FLYNN, MR. MURRAY

10. Anatomy and Physiology—Similar to Zo 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.*

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. Prerequisite: Zo 3-Bt 1 or Zo 3/4. *Lec 2, Lab 4, Cr 4.*

STAFF

133. Comparative Anatomy—The structure, origin, and history of the vertebrate organ-systems. Prerequisite: Zo 3/4. *Lec 2, Lab 4, Cr 4.*

MR. FLYNN

136. Developmental Biology—The transformation of the fertilized egg into a new adult individual: the concepts of growth and development of organisms. Prerequisite: Zo 3/4. *Lec 2, Lab 4, Cr 4.*

MR. MUN

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

139. Mammalogy—The characteristics of mammals, their life histories and economic importance. Lectures supplemented by laboratory study of skins and mounted specimens. Prerequisite: Zo 3-Bt 1 or Zo 3/4. *Lec 2, Lab 3, Cr 3.*

MR. BARDEN

151. Histology—Microscopic anatomy of animal tissues and methods of preparing microscopic slides. Prerequisite: Zo 3-Bt 1 or Zo 3/4. *Lec 2, Lab 4, Cr 4.*

MR. ROBERTS

UNIVERSITY OF MAINE

152. Animal Microtechnique—Histological and histochemical techniques in the preparation of animal tissues for microscopic study. Prerequisite: Zo 3-Bt 1 or Zo 3/4. *Lab 4, Cr 2.* MR. ROBERTS

153. Invertebrate Zoology—The morphology, physiology, life histories, phylogenetic relationship, and economic importance of invertebrates exclusive of insects. Prerequisite: Zo 3-Bt 1 or Zo 3/4. *Lec 2, Lab 4, Cr 4.* MR. MEYER

156. Animal Ecology—The interrelationships between animals and their physical and biotic environment. Topics include essentials of existence, ecosystem concepts, energy relationships, populations, communities, distribution, adaptations and applications. Prerequisite: Zo 3-Bt 1 or Zo 3/4. *Lec 2, Lab 4, Cr 4, several required field trips.* MR. BARDEN AND MR. DEARBORN

158. Animal Parasitology—The life histories, economic importance, methods of control, host necropsy and the preparation of parasites. Prerequisite: Zo 3-Bt 1 or Zo 3/4. *Lec 2, Lab 4, Cr 4.* MR. MEYER

160. Ornithology—The characteristics of birds, their life histories and economic importance. Lectures, laboratory study of skins and mounted specimens, and field identifications. Prerequisite: Zo 3-Bt 1 or Zo 3/4. *Lec 2, Lab 4, Cr 4.* MR. BARDEN

162. Principles of Genetics—The nature of hereditary factors and the mechanisms by which they are transmitted and expressed. Prerequisite: Zo 3. *Lec 3, Cr 3.* MR. SPEICHER

164. Genetics Laboratory—Practical experience in the rearing of some genetically important laboratory species, and analysis of the resulting data. Prerequisite: Zo 162 or concurrently. MR. SPEICHER

168. Limnology—The ecology of inland waters, with primary emphasis on the physical, chemical and biological factors controlling productivity. Prerequisite: first-year courses in zoology and chemistry. Prerequisite: Zo 3-Bt 1 or Zo 3/4, Ch 1/2. Zoology 153, and Entomology are recommended. *Lec 2, Lab 4, Cr 4.* MR. HATCH

169. Introduction to Biological Oceanography—The study of marine organisms and their interrelationships with the chemical, geological, and physical aspects of their environment. Prerequisite: introductory zoology and introductory chemistry. Prerequisite: Zo 3-Bt 1 or Zo 3/4, Ch 1/2. Zo 153 is recommended. *Lec 2, Lab 4, Cr 4.* MR. HAEFNER

171. Fish Management—Modern methods of fish management including propagation and distribution, fisheries legislation, biological surveys, and environment improvements. Prerequisite: Zo 132 and En 26. *Lec 2, Lab 4, Cr 4.* STAFF

177. Animal Physiology—Physiological processes in vertebrates with emphasis on the integration of organ systems. Prerequisite: at least one year of chemistry. *Lec 2, Lab 4, Cr 4.* MR. MAJOR

178. General Physiology—The vital phenomena common to all organisms. Membrane properties are treated at length. Prerequisite: Zo 177, Organic Chemistry, and one year of physics. *Lec 2, Lab 4, Cr 4.* MR. MAJOR

179. Experimental Endocrinology—A comprehensive survey of the vertebrate endocrine glands and their functional relationships. The experimental and comparative approach is emphasized. Prerequisite: Zo 3/4 or equivalent, Zo 177, and Organic Chemistry. *Lec 2, Lab 4, Cr 4.* MR. VALLEAU

COLLEGE OF ARTS AND SCIENCES

180. Cell Mechanisms—A physico-chemical analysis of cell metabolism. Emphasis is placed on mechanisms controlling growth and division. Prerequisite: Zo 3/4, Organic Chemistry or Biochemistry. *Lec 2, Cr 2.* MR. COOK

187. 188. 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.* STAFF

195. 196. Zoology Seminar—Oral reports and discussion by class members, covering biological topics of current interest. *Rec 2, Cr 1.* STAFF

GRADUATE STUDY IN ZOOLOGY

The department offers work leading to the degree of master of science and doctor of philosophy, the general requirements for which are listed under Graduate Study.

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 199 may be taken for graduate credit, with the prior approval of the student's advisory committee. 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

210. Marine Invertebrate Zoology—The morphology, functional anatomy, systematics and phylogenetic relationships of free-living marine invertebrates, excluding protozoans, with laboratory emphasis on studies of living material from the local fauna. Numerous field trips required. To be offered each summer at The Darling Center. Prerequisite: Zo 3-Bt 1 or Zo 3/4, Zo 153 or equivalent. *Lec 2, Lab 6, Cr 5.* STAFF

337. Experimental Embryology—Causal analysis of the mechanisms, interactions, and genetic and biochemical factors in morphogenesis, neurogenesis and protein synthesis in the embryo. Prerequisite: Zo 136 and permission of the instructor. *Rec 2, Lab 4, Cr 4.* MR. MUN

352. General Cytology—The problems of cell structure, cell division and the interrelation of cytology and genetics. Prerequisite: Zo 151 and Genetics, or permission of instructor. *Lec 2, Lab 4, Cr 4.* MR. SPEICHER

354. Advanced Genetics—Advanced consideration of hereditary phenomena with emphasis on current research in molecular, physiological and developmental genetics. Prerequisite: Zo 162 or equivalent. *Lec 3, Cr 3.* MR. ROBERTS

355. 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: Zo 153 or permission of instructor. *Lec 2, Lab 4, Cr 4.* MR. MEYER

357. Population Dynamics—Methods of estimating population size, growth rate and mortality rates, production and yield. Problems of predicting population fluctuations and cycles, theories of population harvest for maximum sustained

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yield, and various types of yield equation. Prerequisite: Ms 19, or Fy 247, or S 271, and calculus. Zo 171, Zo 356, or En 211 recommended. *Lec 2, Cr 2.*

MR. HATCH

362. *Estuarine Ecology*—Analysis of the geology, physics, chemistry, and biology of the estuarine ecosystem. Prerequisite: Zo 169 and Zo 356 or equivalent. *Rec 2, Lab 4, Cr 4.*

MR. HAEFNER

370. *Advanced Topics in Aquatic Biology*—A seminar-type course designed to acquaint the student with current research in biological oceanography and fishery science. May be repeated for credit. Prerequisite: consent of instructor. *Cr Ar.*

STAFF

380. *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: Zo 177, or permission of instructor. *Lec 3, Cr 3.*

STAFF

381. *Experimental Physiology*—Advanced laboratory and surgical procedures. Last half of course will be devoted to a class project, the entire group functioning as a research team. Prerequisite: consent of instructor. *Lab 4, Cr 3.*

MR. MAJOR

384. *Advanced Cell Physiology*—Seminar in current topics in cellular and molecular biology including modern methods of investigation. Prerequisite: consent of instructor. *Lec 2, Cr 2.*

MR. COOK

385. *Comparative Endocrinology*—This course is concerned with endocrine mechanisms in lower vertebrates and invertebrates. The comparative physiological and comparative biochemical approach is emphasized through lecture and laboratory demonstration. Prerequisite: year of physiology. *Lec 3, Cr 3.*

MR. VALLEAU

391. 392. *Problems in Zoology*—*Cr Ar.*

STAFF

393. 394. *Problems in Biological Oceanography*—To be given fall, spring, or summer at Orono or The Darling Center. *Cr Ar.*

STAFF

399. *Graduate Thesis*—*Cr 6-10.*

STAFF

COLLEGE OF BUSINESS ADMINISTRATION

W. STANLEY DEVINO, DEAN



*Pedestrian traffic outside Memorial Union
(background) and Fogler Library*

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and as such must be studied in the perspective of a broad training in the liberal arts and sciences. Many students who plan to attend graduate and professional schools will find the undergraduate economics program to be valuable training for advanced academic work. Within the field of economics, courses are available in such fields as: price and value theory, money and banking, income and employment theory, history of economic thought, international trade and finance, labor and industrial relations, comparative economic systems, public finance and taxation, econometrics and the social control of business.

GENERAL INFORMATION

Admission—Students are usually admitted to the College of Business Administration as first-year students in the University. The specific requirements for admission are given on page 40 of this catalog. All deficiencies in entrance requirements must be removed before registering for the sophomore year. Students who transfer from other colleges with advanced standing must satisfy all basic entrance requirements within one year.

Transfer Credit—No transfer credit is granted for courses completed at another accredited institution in which grades below C have been received. Responsibility for evaluating course work for which transfer credit is requested rests with the Director of Admissions and the Dean of the College.

Students in other colleges of the University of Maine who wish to transfer to the College of Business Administration must present an academic record which meets at least the minimum standards of quality established by the University. Also, they are required to complete at least one full year of academic work as students in the College of Business Administration.

Graduation Requirements—Completion of the required work of the College of Business Administration leads to the degree of bachelor of science. All students are required to complete 120 degree hours, exclusive of credit for basic military training.

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. This grade point average is computed by multiplying each credit hour of the letter grade by a factor in the following manner: A hours by 4, B hours by 3, C hours by 2, D hours by 1, and E hours by 0.

All course work taken in Business (Ba) and Economics (Ec) must be completed with a 2.0 (C) average for a student to be eligible for a degree.

The required course work for the B.S. in Business Administration and the B.S. in Economics are given below:

I. B.S. IN BUSINESS ADMINISTRATION PROGRAM

A. General Foundation Subjects - 48 credits

1. Humanities and Fine Arts (21 credits)

Eh 1—Freshman Composition

Eh 19—Expository Writing

Sh 1—Fundamentals of Public Speaking

At least three of the remaining 14 credit hours must have an Eh designation. The remainder may be selected in such fields as: art, the classics, English composition, foreign languages, journalism, literature, music, philosophy, speech,

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and the theatre. Strongly recommended is: Pl 1.2 - Philosophy and Modern Life.

2. Social Sciences (15 credits)

This requirement may be fulfilled by course work in such fields as anthropology, government, history, modern society, psychology, and sociology. No course work in economics may be used to fulfill any part of this requirement.

3. Mathematics and Sciences (12 credits)

Ms 5/6—Elements of College Mathematics

Ms 19—Principles of Statistical Inference

The remaining credits required may be taken in an advanced mathematics course or in a science such as astronomy, biology, botany, chemistry, geology, physics, and zoology.

B. Core Requirements in Business and Economics - 33 credits

Ec 1/2—Principles of Economics

Ec 168—Social Control of Business

Ba 9 —Principles of Accounting I

Ba 10 —Principles of Accounting II

Ba 23 —Elements of Industrial Management

Ba 63 —Marketing

Ba 130—The Legal Environment of Business

Ba 147—Business Data Processing*

Ba 149—Business Economics

Ba 151—Business Finance

* Ms 169 or another computer course may be substituted for Ba 147. In that event, the student must complete three additional hours in a Ba elective.

C. Major Field - 15 credits

Accounting Major

Ba 41/42—Intermediate Accounting

Ba 143—Advanced Accounting

Ba 145—Cost Accounting I

Ba 148—Auditing

Marketing Major

Ba 159—Business Management and Policy

Ba 165—Advertising

Ba 167—Sales Management

Ba 169—Marketing Research

Ba 170—Managerial Marketing

Finance Major

Ba 41 —Intermediate Accounting

Ba 156—Investment Strategy

Ba 157—Forward Planning and Capital Decisions

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Ba 158—Corporate Treasury Dynamics
Ec 153—Money and Banking
Management Major
Ba 159/160—Business Management and Policy
Ba 161—Personnel Management
Ba 162—Industrial Relations
Ec 133—Labor Economics

D. Electives - 24 credits

II. B.S. IN ECONOMICS PROGRAM

A. General Foundation Subjects

1. Humanities and Fine Arts
Eh 1—Freshman Composition
Sh 1—Fundamentals of Public Speaking
A minimum of nine additional credit hours must be taken in a field (s) such as art, the classics, English composition, journalism, literature, music, philosophy, speech, and the theatre; at least three of these nine credit hours must have an Eh designation.
2. Social Sciences
Students must select at least 12 credit hours, including one full-year course, from the following list:
Ay 1/2—Introduction to Anthropology
Hy 3.4—United States History*
Hy 5.6—History of Western Europe*
My 1/2—Modern Society
Pol 1/2—Introduction to Government
Py 1/2—General Psychology
Sy 3/4—Introduction to Sociology

*Students may not select more than six hours of history to fulfill the 12-hour minimal requirement.
3. Laboratory Science
Students must select at least one full-year course in a scientific field such as astronomy, biology, botany, chemistry, geology, physics, and zoology.
4. Mathematics or Foreign Language
This requirement must be fulfilled by completion of an intermediate course in a foreign language (e.g., Fr 3/4 - Intermediate French) or completion of Ms 5/6 - Elements of College Mathematics.
5. Ms 19—Principles of Statistical Inference

B. Course Requirements in Economics and Business

1. Core Requirements:
Ec 1/2—Principles of Economics

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and the theatre. Strongly recommended is: Pl 1.2 - Philosophy and Modern Life.

2. Social Sciences (15 credits)

This requirement may be fulfilled by course work in such fields as anthropology, government, history, modern society, psychology, and sociology. No course work in economics may be used to fulfill any part of this requirement.

3. Mathematics and Sciences (12 credits)

Ms 5/6—Elements of College Mathematics

Ms 19—Principles of Statistical Inference

The remaining credits required may be taken in an advanced mathematics course or in a science such as astronomy, biology, botany, chemistry, geology, physics, and zoology.

B. Core Requirements in Business and Economics - 33 credits

Ec 1/2—Principles of Economics

Ec 168—Social Control of Business

Ba 9 —Principles of Accounting I

Ba 10 —Principles of Accounting II

Ba 23 —Elements of Industrial Management

Ba 63 —Marketing

Ba 130—The Legal Environment of Business

Ba 147—Business Data Processing*

Ba 149—Business Economics

Ba 151—Business Finance

* Ms 169 or another computer course may be substituted for Ba 147. In that event, the student must complete three additional hours in a Ba elective.

C. Major Field - 15 credits

Accounting Major

Ba 41/42—Intermediate Accounting

Ba 143—Advanced Accounting

Ba 145—Cost Accounting I

Ba 148—Auditing

Marketing Major

Ba 159—Business Management and Policy

Ba 165—Advertising

Ba 167—Sales Management

Ba 169—Marketing Research

Ba 170—Managerial Marketing

Finance Major

Ba 41 —Intermediate Accounting

Ba 156—Investment Strategy

Ba 157—Forward Planning and Capital Decisions

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Ba 158—Corporate Treasury Dynamics
Ec 153—Money and Banking
Management Major
Ba 159/160—Business Management and Policy
Ba 161—Personnel Management
Ba 162—Industrial Relations
Ec 133—Labor Economics

D. Electives - 24 credits

II. B.S. IN ECONOMICS PROGRAM

A. General Foundation Subjects

1. Humanities and Fine Arts
Eh 1—Freshman Composition
Sh 1—Fundamentals of Public Speaking
A minimum of nine additional credit hours must be taken in a field (s) such as art, the classics, English composition, journalism, literature, music, philosophy, speech, and the theatre; at least three of these nine credit hours must have an Eh designation.
2. Social Sciences
Students must select at least 12 credit hours, including one full-year course, from the following list:
Ay 1/2—Introduction to Anthropology
Hy 3.4—United States History*
Hy 5.6—History of Western Europe*
My 1/2—Modern Society
Pol 1/2—Introduction to Government
Py 1/2—General Psychology
Sy 3/4—Introduction to Sociology

*Students may not select more than six hours of history to fulfill the 12-hour minimal requirement.
3. Laboratory Science
Students must select at least one full-year course in a scientific field such as astronomy, biology, botany, chemistry, geology, physics, and zoology.
4. Mathematics or Foreign Language
This requirement must be fulfilled by completion of an intermediate course in a foreign language (e.g., Fr 3/4 - Intermediate French) or completion of Ms 5/6 - Elements of College Mathematics.
5. Ms 19—Principles of Statistical Inference

B. Course Requirements in Economics and Business

1. Core Requirements:
Ec 1/2—Principles of Economics

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Ec 132—Business Cycles
Ec 173—Economic Analysis
Ba 9 —Principles of Accounting I

2. Completion of at least 18 additional hours in economics (Ec) courses. However, no student will be granted degree credit for course work in business and economics in excess of 48 hours.

THE FRESHMAN YEAR

Students admitted to a degree program in the College of Business Administration should pursue the following program during the freshman year:

FALL SEMESTER					SPRING SEMESTER				
		Subject	Hours				Subject	Hours	
Eh	1	Freshman Composition	3	*Ms	6	Elements of College			
*Ms	5	Elements of College				Mathematics		3	
		Mathematics	3	Ec	2	Principles of Economics		3	
Ec	1	Principles of Economics	3			Social Science and Humanities			
Sh	1	Fundamentals of Public				Electives		9	
		Speaking	2	Pe	2	Physical Education		0	
		Humanities or Social Science							
		Elective(s)	3-6						
Pe	1	Physical Education	0						
			14-17					15	

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63. 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: Ec 1/2; Ba 9. Cr 3.

MR. ALMOND

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: Ba 9, 10. Cr 3.

MR. SIEDLIK

90. Problems of Small Business—A consideration of those aspects of management that are uniquely important to small firms, in the interest of developing an understanding of the economic and social environment in which the small concern functions. Course will afford the student practice in decision-making on the same types of problems that small businessmen face. Directed toward students who wish to explore opportunities for operating their own small businesses, and to those who expect to have small businesses as customers or suppliers. Problems relevant to small business operations in Maine will be stressed. Prerequisite: Ba 9.

MR. ALMOND

125. Business Logistics—An introduction to the elements of the logistical system includes consideration of transportation modes, plant and warehouse location, inventory size determination, etc. Cases and problems are utilized to sharpen analytical techniques. Final attention turns to the total cost approach to logistical system analysis and decision-making. Prerequisite: Ba. 23, 63. Cr 3.

MR. ZIEGENBEIN

130. The Legal Environment of Business—An examination of fundamental legal concepts and their application to the business community. Among the topics discussed are the evolution of law and its underlying conceptual framework from which legal rules and principles of business develop. Selected legal cases will be critically analyzed and discussed. (Juniors and seniors only.) Cr 3.

MR. SIEDLIK

143. Advanced Accounting I—Principles, theory, and procedures of parent and subsidiary accounting. A comprehensive study of consolidated statements, affiliation structures, and consolidations and mergers. Also includes home office and branch accounting. Prerequisite: Ba 41/42. Cr 3.

MR. MCCLURE

144. Advanced Accounting II—The application of accounting principles to accounting problems arising in connection with: partnerships, joint ventures, insurance, consignments, installment sales, statement of affairs, receiverships, estates and trusts, statement of realization and liquidation, foreign exchange, and governmental and institutional accounting. Prerequisite: Ba 41/42. Cr 3.

MR. MCCLURE

145. Cost Accounting I—The principles and methods of job order costs, including inventory control and pricing, labor and analysis and allocation of factory overhead. Principles and practices of process cost accounting. Prerequisite: Ba 9, 10. Cr 3.

MRS. GOODMAN

146. 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: Ba 145. Cr 3.

MRS. GOODMAN

147. Business Data Processing—The application of electronic data proc-

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essing equipment to accounting systems. Basic principles of operation and programming. Selected case problems. Prerequisite: Ba 9. *Cr* 3. MR. SIEDLIK

148. Auditing—The systematic verification of financial statements including a study of the responsibilities, liabilities and ethics of the independent public accountant. Prerequisite: Ba 9, 10, 41. *Cr* 3. MR. SIEDLIK

149. Business Economics—Application 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: Ec 1/2, Ba 9. MR. SANDS

151. Business Finance—This course deals with the promotion, organization, and financing of the single proprietorship, partnership, and corporation. It also utilizes advanced cases and problems related to the above topics. Prerequisite: Ec 1/2, Ba 9. *Cr* 3. MR. ALPERIN

156. Investment Strategy—Emphasis is on analysis and selection of stocks and bonds as part of the investor's approach to financial security. The relationships between the securities markets, the total money market and the general economy are examined. Prerequisite: Ba 151. *Cr* 3. MR. TALLEY

157. Forward Planning and Capital Decisions—Basic financial forecasting and risk evaluation are combined with profit-volume-cost analysis as essentials in fully evaluating capital expenditure proposals. Cost of capital and other tools are developed for use in the decision-making process. Prerequisite: Ba 151. *Cr* 3. MR. ZIEGENBEIN

158. Corporate Treasury Dynamics—The counterflows of cash between the corporate unit and the money market due to seasonal, cyclical, and secular demands are first analyzed. Numerous approaches to debt limit determination are then presented. The student finally turns to the total problem of making optimal financing decisions in specific corporate settings. Prerequisite: Ba 151. *Cr* 3. MR. ZIEGENBEIN

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: Ec 1/2; Ba 23, 63, 149, 151. MR. SANDS

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. Prerequisite: Ec 1/2. *Cr* 3. MR. FORSGREN

162. Industrial Relations—A study of industrial relations patterns in the U.S. Major focus is on the relationship between management and organized labor, and the bargaining, administration and interpretation of contracts. The problem of disputes settlement and a comparison of methods used in the U.S. and abroad. Attention is also given to industrial relations in unorganized firms and in the civil service. Prerequisite: Ec 133. *Cr* 3. MR. ALPANDER

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: Ba 63. *Cr* 3. MR. BARTLETT

167. Sales Management—An analysis of the problems facing marketing

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management in formulating sales policy and in managing the sales organization. Prerequisite: Ba 63. Cr 3. MR. ALMOND

169. Marketing Research—A consideration of marketing research as a tool in solving problems of production and distribution. Emphasis is upon problem formulation, exploratory research, research design, basic observational and sampling requirements, data analysis, interpretation, and sampling. Prerequisite: Ba 63 and Ms 19. MR. ALPERIN

170. Managerial Marketing—A managerial approach emphasizing the integration of marketing, as an organic activity, with other activities of the business firm. Study is directed toward recognition and appreciation of the problems encountered by top marketing executives in modern business, with a consideration of the policies and procedures that may be followed in their solution. By case analysis and consideration of current marketing literature, students are provided opportunities for development of abilities in solving marketing management problems. Prerequisite: Ba 63 and Ms 19. MR. ALMOND

195. Financial Research Seminar—Techniques of research and analysis are introduced and applied to topical areas in finance, such as money, credit, banking and debt instruments. Prerequisites: Ba 151, Ec 153, Ms 19 and permission. Cr 3. MR. JOHNSON

310. Management Policy—Administrative practice at the higher levels of business management. Coordinates the analysis of all pertinent business functions in specific case studies, for the purpose of developing administrative competence in the formulation of business policy at the decision-making level. Prerequisite: 6 hours in business subjects and permission. Cr 3. MR. SANDS

311. Managerial Economics—Application of economic analysis to the management of business enterprises. Designed to develop the student's ability to understand and use some of the important economic concepts, tools, and methods, relevant to operations and decisions within a business firm. Particular attention is given to the analysis of market demands, price policy, cost structures and production functions, capital budgeting, planning, and financing. Prerequisite: 9 semester hours in economics or permission. Cr 3. MR. SANDS

312. Managerial Accounting—Development, analysis, and interpretation of accounting data and financial statements for managerial control, coordination, and decision-making; emphasis upon accounting as a tool of management. Topics are developed by utilization of case studies, problems, and reference material. Prerequisite: 6 semester hours in accounting. Cr 3. MR. MCCLURE

313. Business Cycles and Forecasting—An examination of cyclical movements in the level of economic activity and appropriate methods for their measurement. Includes an analysis of the principal theories of the forces that shape these fluctuations. Relates the statistical methods of forecasting activity in the major economic sectors to the planning function of management. Prerequisite: 6 semester hours in economics. Cr 3. MR. JOHNSON

314. Financial Management—A consideration of management decisions in the administration of corporate funds. Specific areas covered include capital budgeting, inventory control, working capital management, and the cost of capital. The side effects of taxation, depreciation methods, and earnings retention policies are noted. Current capital structure patterns are analyzed and evaluated. Prerequisite: One course in finance and permission. Cr 3. MR. ALPERIN

315. Marketing Management—This course is concerned with developing

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an ability to analyze marketing problems while acquiring a positive attitude as to the role that marketing plays in overall business strategy. Emphasis will be given to the building of integrated marketing programs designed to implement the long-term objectives of a business organization. In general, the viewpoint emphasized will be that of the high level marketing executive. Prerequisite: One course in marketing and permission. *Cr 3.*

MR. ALMOND

316. *Industrial Relations and Personnel Management*—A comprehensive investigation of the changing pattern of industrial relations in the United States. Major emphasis is on the human, social, and economic aspects of employer—employee relationship in both union and non-union settings. Provides an understanding of and appreciation for the crucial importance of the development of sound and flexible personnel policies by top management. Among the areas considered are: the changing nature of the labor force; wages, salaries and fringe benefits; hours of work; and the impact of technological change on the work force. Prerequisite: One course in management or industrial relations and permission. *Cr 3.*

MR. ALPANDER

320. *Market Research and Analysis*—A study of the procedures and applications of market research. Such areas as the organization and operation of a research department, survey methods, experimentation, measurement of potential demand and the analysis of distribution costs are considered. Emphasis will be placed on developing the student's ability to apply these and other techniques toward the solution of marketing problems. Prerequisite: Ba 315 and one course in statistics. *Cr 3.*

MR. ALPERIN

321. *Human Relations in Industry*—This course is designed to acquaint the student with the complex system of interdependent human, social, technical, and organizational forces which underlie the feelings, actions, and relationships of people in organizations. Such subjects as leadership theory, organizational theory, individual and group behavior, and communication theory are presented. Prerequisite: 6 hours in business subjects and permission. *Cr 3.*

MR. ALPANDER

322. *Operations Research*—This course centers around the logic of the economic choices that have to be made in the management of business operations. Among the specific topics considered are: selection of an economical product mix; scheduling and utilization of equipment over time; and the formulation of inventory policies, research expenditures and investment decisions. In analyzing these areas an introduction to the use of mathematical programming and probabilistic techniques will be provided. Prerequisite: Ba 310, 311, and one course in statistics. *Cr 3.*

STAFF

323. *Production Management*—The basic production functions are oriented to top management decision-making. These functions include production development, plant modernization, methods and process improvement, and the control of production quality and cost. Social responsibility is emphasized when dealing with the organization of employee relations, both to achieve high productivity and retain superior human values and benefits. Prerequisite: Ba 310 and 316. *Cr 3.*

STAFF

324. *Investment Management*—Emphasizes analysis and valuation procedures required to determine the investment quality of specific securities. Sets forth criteria for the formulation of a sound investment policy and the selection of investment media to implement it. Develops the techniques of continuing port-

COLLEGE OF BUSINESS ADMINISTRATION

folio management and the task of periodic reappraisal. Prerequisite: One course in finance and permission. *Cr* 3. MR. TALLEY

325. *Collective Bargaining*—Discusses the major issues and problems in the collective bargaining process. Provides the business manager with the knowledge of sound collective bargaining attitudes and techniques necessary to achieve a responsible and mature attitude in his relationship with employee representatives. To this end, major focus is on the development of the union movement in this country, the changing nature of public policy toward collective bargaining and the public responsibility of both unions and management. In addition, attention is given to the specific tools of collective bargaining, including strikes, lock-outs, grievance procedures, arbitration, mediation, and bargaining strategies and techniques. Prerequisite: Ba 316. *Cr* 3. MR. CLARK

326. *Organizational Behavior in Business*—Behavior in work organizations is studied with emphasis on the importance of the influence process, motivational settings, and the structural backgrounds of organizational status and social relations. Analysis through case discussion and readings will develop a conceptual framework for improving individual decision-making ability with respect to individual, group, and intergroup problems. Prerequisite: One course in management and permission. *Cr* 3. MR. FORSGREN

368. 369. *Manpower Research Seminar*—An examination of the economic, social, and psychological factors affecting manpower development and utilization. This interdisciplinary seminar is part of the University's manpower research project. It gives students a unique opportunity to participate in current research, from problem formulation to data collection and analysis. By permission. MR. FORSGREN

Courses in Economics (Ec)

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

37. *Comparative Economic Systems*—The structures and operating principles of the major contemporary economic systems are examined and compared. Prerequisite: Ec 1/2. *Cr* 3. STAFF

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: Ec 1/2. *Cr* 3. MR. BEEMAN

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: Ec 1/2. *Cr* 3. MR. CLARK

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: Ec 1/2. *Cr* 3. MR. DUCHESNEAU

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138. Economic Development—The theories and practices of interregional and international economic development. Special attention is given to development problems of emerging nations. Prerequisite: Ec 1/2. Cr 3. MR. BURKE

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: Ec 1/2. Cr 3. MR. BURKE

153. 154. Money and Banking—The first semester involves an extensive examination of the operation and performance of the American banking and financial system. The second semester is devoted primarily to a detailed study of monetary theory and policy. In addition, debt management and present international monetary problems are discussed briefly. Prerequisite: Ec 1/2. Cr 3.

MR. TALLEY

168. Social Control of Business—Public policy toward business; government powers and private rights; government aids; regulation of competition and monopoly; public enterprise. Prerequisite: Ec 1/2. Cr 3. MR. DUCHESNEAU

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: Ec 1/2. Cr 3. MR. BEEMAN

173. Economic Analysis—Price, income, and employment theory as tools in the study of economics. Prerequisite: Ec 1/2. Cr 3. MR. COUPE

174. Economic Policy—Current economic problems on national and international levels. Prerequisite: Senior standing in B.A. Program in Economics, or permission. Cr 3. MR. JOHNSON

198. The Dollar in World Affairs—The U. S. dollar as an international money. Its use in U. S. financial policy and foreign relations. Factors governing the international value and strength of the dollar. Prerequisite: Ec 1/2. Cr 3.

STAFF

210. Micro-economic Theory—An examination of the development of modern economic analysis with regard to the consumer, the firm and market structures. Prerequisite: permission. Cr 3. MR. COUPE

211. Macro-economic Theory—An examination of the development of modern economic analysis with regard to employment, income distribution, and stabilization policies. Prerequisite: permission. Cr 3. MR. BEEMAN

212. 213. Economics Research Seminar—The study of research methodology in economics developed by critical analysis of specific student research problems. Prerequisite: permission. Cr 3. MR. JOHNSON, MR. COUPE

220. Monetary Theory and Policy—A review of the development of contemporary banking and monetary theory. Primary emphasis is given to an analysis of the effects of alternative monetary policies. Prerequisite: Ec 153. Cr 3.

STAFF

221. Public Finance and Fiscal Policy—An analysis of the theories of taxation and government spending. The impact of borrowing and tax policies. Special emphasis is on the fiscal policies of government activity under differing general economic conditions. Prerequisite: Ec 171. Cr 3. MR. BEEMAN

222. International Economic Theory and Policy—An analysis of major factors in international economic relations. Subjects discussed include patterns of

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international specialization, balance of international payments, foreign exchange, U.S. international commercial policy and foreign investments. Prerequisite: Ec 139. *Cr* 3.

MR. BURKE

223. Seminar in Labor Economics—An examination of basic theories of the labor union movement, the attempts to formulate new approaches in wage theory, and the relationship of wages, prices, employment and economic growth. Discussion includes the role of a free labor union movement in modern society and appropriate public policy. Prerequisite: Ec 133. *Cr* 3.

MR. CLARK

229. Readings in Economics—Specialized topics in economics can be pursued by the student on an independent basis. Prerequisite: permission. *Cr* 3. STAFF

230. Econometrics—An introduction to economic concepts and relationships expressed in quantitative terms. Major emphasis will be given to economic models related to demand, supply, production and cost functions; input-output analysis and other models will also be considered. Prerequisite: Ms 6 or 12, Ms 19, Ec 173, or permission of instructor. *Cr* 3.

MR. COUPE

368. 369. Manpower Research Seminar—An examination of the economic, social, and psychological factors affecting manpower development and utilization. This interdisciplinary seminar is part of the University's manpower research project. It gives students a unique opportunity to participate in current research, from problem formulation to data collection and analysis. By permission.

MR. CLARK

399. Graduate Thesis—*Cr* 6.



Zoology class



University of Maine Orchestra

COLLEGE OF EDUCATION

MARK R. SHIBLES, DEAN



*Child psychology majors at work on
campus playground*

College of Education

The College of Education offers four-year programs designed to prepare elementary, junior and senior high school teachers and teachers of physical education, athletics, health, recreation, music and art. 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 ordinarily are admitted to the College of Education as first-year students in the four-year program. The specific admission requirements are given on page 41 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, "Four-Year Programs 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.

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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 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, Business Administration, Life Sciences and Agriculture, and Technology who want to 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 Life Sciences and 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 meets the minimum standards of quality established by the University. Such students may be required to complete two full years in the College of Education.

Students from any other college of the University of Maine who are considering 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 State Colleges**—Undergraduate students from Maine State Colleges will be considered for admission by transfer with advanced standing if they are recommended by the institution involved.

Graduates of the three-year courses in the normal schools who have had teaching experience and 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 ordinarily is restricted to elementary school teachers, supervisors, and administrators who plan to remain in the elementary school field.

Normal school and State College students 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 transfer from another institution to the University of Maine to prepare for teaching should apply for admission to the College of Education. Initial correspondence concerning 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 students coming as freshmen directly from secondary schools.

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Summer Session and Continuing Education Students—Students whose only work in the College of Education has been or will be in the Summer Session or Continuing Education Division program are strongly urged to apply for admission to the University exactly as they would if they expected to apply for resident work during the regular school year. This recommendation applies both to students who expect to work for a degree in the various colleges of the University and also those who have not yet fully decided on the matter.

Among the advantages 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 before their first registration; students whose first work is to be by continuing education class should apply during their first 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 before 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 to students who desire this service.

Test results will be made known to the student through his adviser. Test results will be used by the adviser as a basis for counseling.

Counseling—Upon admittance to the College of Education each student is assigned a staff member who acts as his major adviser. The major adviser will assist the student in selecting 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 (if elected), is required for graduation. In addition, each student must accumulate a total number of "grade points" equal to twice the number of hours in which he receives grades. Grade points are computed by multiplying each hour of the letter grade by the 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 51 degree hours in general education, 26 degree hours of courses in professional subjects, and 24 hours in a major academic field. Special work in appropriate fields (such as art, music and health and physical education) also is required.

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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 50 degree hours in the field of concentration, plus electives.

Students who expect to qualify to teach in a *specialized field*, such as physical education, music education, or art education, will use the work in these special areas as their field of concentration. In addition, students who follow the physical education program will be required to complete a 30-hour academic teaching field and an 18-hour teaching minor in either another academic field or in the area of health or recreation. Those who follow the music or art education program are required to complete a 24-hour academic major.

Students who follow the *elementary teacher* program are required to complete a 24-hour academic teaching field in addition to other specialized subjects such as music and art. Details will be found in the folder outlining the complete program, which may be obtained by writing to the Dean of the College of Education.

General Education Subjects Required—Information concerning the specific courses required in general education is available from the Office of the Dean. The subjects are:

- English
- Speech
- Social Studies
- Science
- General Psychology
- Cultural Perspectives
- Man and His Environment
- Educational Sociology
- Electives 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 no less than 30 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. There are two student teaching plans. In one, the

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student spends a half-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.

RESIDENCE REQUIREMENTS

A minimum of 30 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 attending Summer Sessions; however, regularly enrolled students in the University who wish to transfer to the college may be expected to complete two full years, or the equivalent, to meet degree requirements. For students enrolled in Continuing Education Division and Summer Session courses, the 30 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 in the C.E.D. is considered resident credit for undergraduate students in the College of Education. Off-campus students, before enrolling for a course, should ascertain from the Dean of the College of Education the amount of such work that is allowed toward fulfilling the requirements for the degree.

Exceptions to these rules will not be permitted except by a vote of the faculty.

EDUCATION COURSES IN THE SUMMER SESSION AND BY EXTENSION IN THE CONTINUING EDUCATION PROGRAM

Numerous education courses are offered during the Summer Session and by class extension through the Continuing Education Division. Detailed information regarding the Summer Session may be obtained by communicating with the director, Mark R. Shibbes, College of Education, Orono, Maine 04473. Information concerning extension programs in the C.E.D. program may be obtained by writing Dean Winthrop C. Libby, College of Life Sciences and Agriculture, Orono, Maine 04473.

BUREAU OF EDUCATIONAL RESEARCH AND SERVICE

Organized as an integral part of the College of Education, the Bureau of Educational Research and Service offers specialized service in connection with testing programs, surveys, and counseling 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 IBM 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 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 placement tests also are carried on by the bureau.

Testing Service Off-Campus—The bureau is available for consultation

with 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 IBM scoring machine can be rented from the bureau.

AUDIO-VISUAL CENTER

The Audio-Visual Center, under the auspices of the College of Education, maintains a rental library of educational motion pictures, and assists in their selection and use. These materials and services are available to Maine schools, 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.

To assist in the selection and use of audio-visual teaching aids, interested persons are invited to inspect these materials, catalogs and descriptive publications of the 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.

THE HONORS PROGRAM

With the cooperation of the other divisions, the College of Education participates in the University Honors Program. Twice during their freshman year, students of high academic standing and exceptional promise are considered for enrollment in honors courses. Students who do not enter the program during the spring semester of their freshman year may, if qualified, be selected to begin honors study the following fall. Although as a rule students are invited to become candidates for the program by a selection committee, a student himself may initiate his candidacy by requesting a written endorsement from his academic adviser addressed to the committee. Information about this program may be obtained from Prof. G. T. Davis, 132 Education Building.

A more detailed statement of the University Honors Program begins on page 92 of this catalog. Honors (Hr) courses are as follows:

41. Distinguished Freshman Seminar—Limited to Distinguished Maine Students and to a limited number of other students, by invitation. Discussions and demonstrations displaying the range and nature of the Liberal Arts and Sciences. Cr 3. MR. SIMPSON, CHAIRMAN

45. Honors Colloquium—Readings and discussions on the basic concepts of Western civilization. Cr 3.

47. 48. Honors Group Tutorial—Oral and written reports under tutorial direction, upon a planned sequence of books representative of the various fields of liberal education. Hr 47. 48 fulfills the sophomore humanities requirement for those students interested in the Honors Program. Cr 3. MR. THOMSON, CHAIRMAN

51. 52. Honors: Specialized Studies—A tutorially conducted survey of the student's major field, issuing in the choice of an approved thesis topic. Cr 3.

53. 54. Honors Thesis—The planning and completion of an honors thesis or research project. Cr 3.

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TEACHER EDUCATION PROGRAM

Teacher education is a function and responsibility of the entire University. A Universitywide Advisory Council on Education oversees the admission of students to the Teacher Education Program. Regardless of a student's college or department affiliation, the student must enroll as a teacher candidate if he desires to receive the University's approval for certification as a public school teacher. Application forms may be obtained at the Information Desk, College of Education Building. The Advisory Council screens applications submitted usually at the end of the sophomore year.

Students admitted to the University Teacher Education Program who make satisfactory records in student teaching, and who meet the graduation requirements of their college, will be recommended by the University for the provisional teaching certificate.

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.

To provide for the many types of school positions, the State Department issues several types of certificates. However, upon successful completion of his program, the undergraduate student in the College of Education will generally be eligible for the provisional teaching certificate at either the elementary or secondary school level, whichever is applicable. The graduation requirements of the College of Education are established so that all students graduated from the college will meet or exceed the requirements for the provisional certificate.

In addition to furnishing courses for its own students, the College of Education 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.

Pattern A

- (1) A minimum of 30 semester credit hours in a subject field together with
- (2) a minimum of 18 semester credit hours in a second subject field.

Pattern B

A minimum of 50 semester credit hours which may include special methods within an area of specialization (i.e., social studies, English, science and mathematics, the sciences).

Requirements for certificates in the areas of physical education, music education, and art education differ from the above. Information may be obtained at the office of the College of Education.

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, East Annex, University of Maine, Orono, Maine 04473.

COURSES OF INSTRUCTION

PROFESSORS SHIBLES, CAUGHRAN, DAVIS, FREEMAN, MACCAMPBELL, PRESCOTT, SANFORD, SUPPLE AND ZINK; ASSOCIATE PROFESSORS APOSTAL, ISABEL BISHOP, HAAS, LINDLOF, MYERS, NICHOLS, PORTER-SHIRLEY, ROBERTS, AND TRUBOV; ASSISTANT PROFESSORS DAVID BISHOP, BOYCE, CHIAPPONE, CROXFORD, D'ELIA, GENTRY, JARDINE, JOHNSON, LEPLEY, LOWELL, MURO, RYAN, VROOMAN, WHITE, AND WORK; LECTURERS FOBES, FRISBIE, AND PUFFER; COOPERATING STAFF MEMBERS CARLSON, ENGLISH; LEWIS, ART; JACOBS, MUSIC; MILES AND NICHOLS, FOUNDATION COURSES; WOOTTON, MATHEMATICS; O'NEIL, FOREIGN LANGUAGES

Courses numbered 1-99 are for undergraduate credit and are open to graduate students only with consent of adviser. Courses numbered 100-199 are upper-class undergraduate courses but are available for beginning graduate students with approval of adviser. Courses numbered 200-299 are primarily graduate courses but are open to undergraduate honor students or upon recommendation of adviser. Courses numbered 300-399 are exclusively for graduate students.

The following courses may be offered during the regular academic year, through the Continuing Education Division, or the Summer Session.

Appraisal—Pupil Adjustment and Personnel Practices (Ed A)

120. Evaluating Pupil Achievement—Philosophy, principles and techniques of evaluation in the schools (K-12). Methods of measuring pupil achievement will be emphasized. Practice in the construction of teacher-made tests and the interpretation of standardized tests will be provided. Prerequisite: Ed B2 and Ed B3, or their equivalents. *Cr 3.* MR. PRESCOTT

150. Guidance and the Teacher—Role of the classroom teacher in studying individual pupils and utilizing accumulative records; resources available to the teachers for help in studying individual pupils; teachers' function in homeroom activities. For either elementary or secondary school classroom teachers. This course is particularly designed for the certified classroom teacher. *Cr 3.*

MR. SANFORD, MR. MURO

251. Introduction to School Guidance Services—Basic graduate course for students planning to specialize in guidance. Philosophy, principles, and practices of school guidance activities. Survey of school guidance services. May also be useful to school administrators who wish to gain a thorough understanding of a well-balanced guidance program. Prerequisite: Ed B 3 and Ed B 4 or their equivalents. *Cr 3.*

MR. SANFORD, MR. MURO, MR. WORK, MR. RYAN

252. Guidance in Groups—Dynamics of small groups; effects of the group on the individual member; methods of group leadership; group activities for guidance. Prerequisite: Ed A 251 and Ed A 255 or their equivalents. *Cr 3.*

MR. SANFORD, MR. MURO

253. Guidance in the Elementary School—An introductory course designed to give a broad overview of the philosophy, objectives, and nature of guidance as it applies to the elementary school, and to accomplish an integration of related, concurrent studies. The counselor's relationship with teachers, school ad-

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ministrators, and other specialized personnel will be examined. School psychologists, social workers, and school administrators will make special presentations to underscore the team approach to elementary school guidance. Community resources for child welfare and development will be visited and studied. Students will study specialized guidance techniques for obtaining information about pupils in the elementary school. Each student will design a complete program of guidance in the elementary school based upon class presentations and a critical review of the literature. Prerequisites: Ed B 3, Ed B 4, Py 123, and Sy 3. *Cr* 4.

MR. MURO

254. *Introduction to Counseling the Young Child*—An examination of the goals of counseling, counseling philosophy, and the operational issues involved with special attention to counseling with young children. The different roles in counseling with young children among psychologists, psychiatrists, social case workers and school counselors will be studied. Students will study both verbal and non-verbal aspects of counseling and use CCTV to examine play and activity techniques. Prerequisite: Ed A 253. *Cr* 3.

MR. MURO

255. *Introduction to Counseling*—Study of the counseling process. Methodology and philosophy of counseling with special emphasis on counselor behavior in the one-to-one counseling relationship. Particularly designed for individuals preparing to serve as counselor to well-adjusting students in educational settings. Prerequisite: Ed A 251 or taken concurrently with Ed A 251. *Cr* 3.

MR. SANFORD

261. *Student Personnel Services in Higher Education*—A survey of the history, philosophy, and current trends in student personnel services. The inter-relationships between these services as they assist the student to attain his academic potential is emphasized. *Cr* 3. Prerequisite: Permission of instructor.

MISS ZINK

320. *Educational Measurement*—Basic measurement theory; use of descriptive statistical techniques for pupil diagnosis and evaluation; use of tests and testing programs in school. Prerequisite: Ed B 4 or Ed 120 or equivalent. *Cr* 3.

MR. PRESCOTT

321. *Statistical Methods in Education*—A course which presupposes and builds upon the statistics offered in Ed A 320, dealing with problems of sampling, probability, tests of significance, and correlation techniques not carried out in Ed A 320. Considerable emphasis to be placed on non-parametric statistics. Statistical techniques required by students doing research will be considered. Prerequisite: Ed A 320. *Cr* 3.

MR. LINDLOF

351. *Vocational Development Theory*—A study of vocational behavior as it is related to personality development and social background. The course considers the relationships between life stages and career patterns, and how the concept of self is implemented and possibly changed through work experiences. Close attention is given to programs of research on vocational behavior. *Cr* 3.

MR. RYAN

352. *Group Procedures in Counseling*—An extension of counseling theory and practice to the group rather than the one-to-one relationship. An evaluation of small group discussions as a learning medium for personal growth of participants. Research in group counseling will be examined. The role of the counselor as he develops his relationships with groups will be given particular attention. Prerequisite: Ed A 255 or equivalent. *Cr* 3.

MR. SANFORD, MR. MURO

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353. Occupational and Educational Information—Sources and nature of occupational and educational information; collection, evaluation, and use of informational materials with individuals and groups. Prerequisite: Ed A 251 or equivalent. Cr 3. MR. RYAN

354. Organization and Administration of School Guidance Services—Planning the guidance services for a school system; budget making; staff relationships. Prerequisite: Ed A 251, Ed A 255, Ed A 320, Ed A 353 or their equivalents. Cr 3. MR. SANFORD, MR. RYAN

355. Advanced Counseling—Counseling theory and philosophy. A close look at various theories of counseling. Designed to follow a more basic course in counseling and some supervised practice in counseling. Prerequisite: Ed A 255, or equivalent. Cr 3. MR. SANFORD, MR. APOSTAL, MR. MURO

390. Guidance Institute—See special announcement in current Summer Session Catalog. Cr 6.

Basic Professional Courses (Ed B)

2. The American School—Examines the nature, role, purposes, and curriculum of elementary and secondary schools with special attention to the place and function of the teacher within this social institution. This is one of the courses prerequisite to student teaching in all regular undergraduate programs. Not open to freshmen. Cr 3.

MR. TRUBOV, MR. VROOMAN, MR. BISHOP AND MRS. BISHOP

3. Growth-Learning Process—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. Not open to freshmen or sophomores. Cr 3. MR. DAVIS, MISS MILES, MR. JOHN NICHOLS, MR. WHITE

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. Not open to freshmen or sophomores. Cr 3.

MR. CAUGHRAN, MR. LINDLOF,
MR. DAVID NICHOLS AND MR. GENTRY

Curriculum and Instructional Materials (Ed C)

113. Principles of Curriculum Construction (Conservation) for Elementary School Teachers—This course is open to all elementary teachers who have completed a Conservation Education Workshop or its equivalent. The program of the Curriculum Workshop is concerned with the production of instructional materials on natural resource conservation for schools. Specifically, it provides opportunities for writing reference and reading materials for children, units of study, instructional guides, bibliographies, and for making many types of visual aids useful in teaching conservation at the various school levels. Cr 3.

120. Principles of Team Teaching—The theory and practice of instructional teams. Emphasis on cooperative planning, pupil groupings, and curriculum innovation. Prerequisite: Ed B 2, Ed B 3, Ed B 4 or their equivalents. Cr 3.

MR. NICHOLS

123. Principles of Curriculum Construction (Conservation) for Secondary School Teachers—This course is open to all secondary teachers who have completed a Conservation Education Workshop or its equivalent. The program of the Curriculum Workshop is concerned with the production of instructional materials on natural resource conservation for schools. Specifically, it provides opportunities for writing reference and reading materials for children, units of study, instructional guides, bibliographies, and for making many types of visual aids useful in teaching conservation at the various school levels. *Cr 3.*

132. Student Activities in Secondary Schools—The place, organization and direction of student activities in the modern secondary school. Prerequisite: Ed B 2, Ed B 3, Ed B 4 or their equivalent. *Cr 3.* MR. MYERS, MR. CROXFORD

133. Instructional Media—Basic course in the improvement of learning and teaching through the effective use of instructional media and related materials. Learning principles in relation to visual communications media; nature and applications of media and instructional materials; evaluation and selection of media and instructional materials. *Cr 3.* MR. GENTRY

134. Teacher-Made Instructional Material—Planning and producing inexpensive instructional materials for both elementary and secondary school subjects; selection and use of media such as posters, charts, tape, etc. *Cr 2-3.*

MR. TRUBOV

140. Studies in Physical Science—An introductory study of selected topics in physical science for elementary and junior high school teachers. Studies include mechanics, magnetism, electricity, heat, light, atoms, elements, compounds, ionization, etc. *Cr 3.*

142. Field Course in the Earth Sciences (Elementary)—The studies included in this course are intended for elementary and secondary school teachers who need some introductory information in the earth sciences of geology, meteorology and soils. Where possible, the studies will be undertaken in a natural setting using equipment and materials appropriate to the learning tasks. Lectures, films and library assignments will be scheduled to supplement the field work. *Cr 3.*

MR. DAVIS

143. Field Course in the Earth Sciences (Secondary)—The studies included in this course are intended for elementary and secondary school teachers who need some introductory information in the earth sciences of geology, meteorology and soils. Where possible, the studies will be undertaken in a natural setting using equipment and materials appropriate to the learning tasks. Lectures, films and library assignments will be scheduled to supplement the field work. *Cr 3.*

MR. DAVIS

144. Basic Field Ecology—This course is designed for secondary school science teachers with a broad background in the natural sciences and for qualified elementary school teachers who desire studies beyond those ordinarily included in introductory natural history courses. The course involves accumulating, interpreting and applying data acquired primarily from the natural environment. The unique facilities offered at the Bryant Pond Campus and surrounding areas make possible biotic studies ranging from the lower inland elevations to subalpine environments. This program is intended to serve the needs of teachers conducting studies in the Green Version of BSCS biology. *Cr 3.*

MR. DAVIS

146. Natural Science Education—Primarily for elementary school teachers. Field studies of plants, animals, rocks, minerals, stars and weather, with special

attention to marine life of the Maine coast. Areas to be studied are selected with the needs of the elementary school teacher in mind. Lectures and library work will supplement the field studies; offered only in Summer Session, at Goose Cove, Maine. *Cr 3.* MR. WALDRON

147. *Natural Science Education—Coastal*—Primarily for secondary school teachers. See general description under Ed C 146. *Cr 3.*

148. *Natural Science Education—Inland*—Primarily for elementary school teachers. Lectures, library work and field studies in the natural history of inland Maine, with special attention to the Bryant Pond area. Such areas as general ecology, geology, weather and climate will be studied. Opportunity will be given to study various types of habitats found in Maine. This course is directed to the needs of the elementary school teacher. Given only in the Summer Session at the Freeman-Waterhouse Campus, Bryant Pond, Maine. *Cr 3.*

149. *Natural Science Education—Inland*—Primarily for general science and biology teachers in the secondary school. See general description under Ed C 148. *Cr 3.*

210. *Planning the Curriculum for The Retarded Child*—The aims and philosophy of education for the retarded child, present status of the curriculum and the factors affecting current curriculum changes. Prerequisite: Ed B 2, Ed B 3, Ed B 4 or their equivalents. *Cr 3.* MR. CHIAPPONE

211. *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. Prerequisite: Ed B 2, Ed B 3, Ed B 4 or their equivalents. *Cr 3.* MRS. BISHOP

221. *Planning the Secondary School Curriculum*—Current plans of curriculum revision and reorganization with special attention to reorganization programs designed to bring the curriculum into harmony with the needs of modern life. Prerequisite: Ed B 2, Ed B 3, Ed B 4 or their equivalents. *Cr 3.* MR. BISHOP

224. *Planning the Junior High School Curriculum*—Current plans of curriculum revision and reorganization of the junior high school program. Prerequisite: Ed B 2, Ed B 3, Ed B 4 or their equivalent *Cr 3.* MR. BISHOP

233. *The Dynamics of the Curriculum*—The various problems and issues of curriculum development related to all areas of instruction; the nature and scope of educational experiences and opportunities essential for a vital program; the role of administration, supervision, and guidance in the improvement of instruction. Prerequisite: Ed B 2, Ed B 3, Ed B 4 or their equivalents. *Cr 3.*

236. *Campus Culture and Student Activities in Higher Education*—A study of the role of the student personnel administrator in relation to student government, student organizations, the development of student leadership, faculty-student relations. Prerequisite: Ed A 261 or equivalent. *Cr 3.* MISS ZINK

237. *New Media in Education*—Current development and utilization of new media in educational instruction. An advanced course. Prerequisite: Ed B 2, Ed B 3, Ed B 4 or their equivalents. *Cr 3.* MR. GENTRY

312. *Principles of Curriculum Construction (Elementary)*—Designed to give supervisors, administrators and teachers a general overview of principles and methods of curriculum construction and revision; contributions of research to curriculum building, selection of content material and the development of new courses of study in the elementary school. Prerequisite: Ed C 211. *Cr 3.*

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322. Principles of Curriculum Construction (Secondary)—Designed to give supervisors, administrators and teachers a general overview of principles and methods of curriculum construction and revision; contributions of research to curriculum building, selection of content material and the development of new courses of study in the secondary school. Prerequisite: Ed C 211, Ed C 224, or their equivalents. *Cr 3.*

Seminars, Research and the Thesis (Ed G)

Each seminar except Ed 300 and Ed G 306 requires an appropriate course completed at the graduate level as a prerequisite.

300. 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.*

MRS. BISHOP, MR. NICHOLS

301. Seminar in Reading—Discussions and individual reports on problems related to better reading instruction. Prerequisite: Ed M 150 or equivalent. *Cr 3.*

MR. CAUGHRAN, MR. ROBERTS

302. Seminar in Arithmetic—Study and reports on special problems in arithmetic instruction. Prerequisite: Ed M 251, or equivalent. *Cr 3.*

MRS. BOYCE

303. 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 215, or equivalent. *Cr 3.*

MR. SUPPLE

304. Seminar in Science (Elementary)—Problems in curriculum, materials, resources, and methods of science in the elementary school. Prerequisite: Ed M 116, or equivalent. *Cr 3.*

MR. DAVIS

305. Seminar: The Retarded Child—Study of the current problems of the retarded and development of individual projects related to the retarded. Prerequisite: Ed M 270, Methods of Teaching the Retarded, or equivalent *Cr 3.*

306. Seminar in Higher Education in the U. S.—An examination of the American system of higher education. The history, philosophy, and legal basis of higher education will be studied. Current issues in administration, teaching, research, and student services are examined under leadership of members of University of Maine administration and faculty. *Cr 3.*

MR. SHIBLES

307. Seminar in Language Arts—Discussions and experiences designed to improve the practices and the background of language arts. Prerequisite: Ed M 230, or equivalent. *Cr 3.*

MR. ROBERTS, MR. CAUGHRAN

308. Seminar in Student Personnel Problems—Selected problems in student personnel administration will be studied in depth according to needs and interest of seminar participants. Prerequisite: Ed A 261, Ed G 306, Ed A 255 or their equivalents. *Cr 3.*

MISS ZINK

309. Seminar in College Teaching—Discussion and analysis of effective college teaching practices. The special services which support the instructor's activities will be related to the total teaching process. Open to all graduate students preparing for work on higher education. Registration by permission. *Cr 3.*

315. Seminar in Methods of Teaching—Study and reports of specific problems in the area of teaching. Prerequisite: a basic course in methods or a year of teaching experience. *Cr 3.*

MR. SUPPLE, MR. NICHOLS

316. Seminar in Audio-Visual Aids—Special problems or projects in the

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field of audio-visual aids to instruction selected to meet the needs of the individual student. Prerequisite: Ed C 133 or equivalent. *Cr 3.* MR. GENTRY

321. Seminar in Social Studies (Secondary)—Problems in curriculum, materials, resources and methods in social studies in the secondary school. Prerequisite: Ed M 141, or equivalent course. *Cr 3.* MR. SUPPLE

322. Seminar in Science (Secondary)—Problems in curriculum, materials, resources, and methods in science in the secondary school. Prerequisite: Ed M 142, Teaching Science in the Secondary School, or equivalent course. *Cr 3.* MR. DAVIS

331. Seminar in Elementary School Curriculum—Study and reports on specific problems in the field of curriculum construction and curriculum reorganization. Prerequisite: Ed C 211 or equivalent. *Cr 3.* MRS. BISHOP

332. Seminar in Secondary School Curriculum—Study and reports on specific problems in the fields of curriculum construction and curriculum reorganization. Prerequisite: Ed C 221, C 224 and C 233 or their equivalents a basic course in the curriculum field or a year of teaching experience. *Cr 3.* MR. BISHOP

341. 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 210, 311, 321 or their equivalents. *Cr 3.* MR. PORTER-SHIRLEY, MR. VROOMAN

342. Seminar in School Administration—Problems related to the operation and control of the school. Prerequisite: Ed L 210 and L 311, or L 321, or their equivalents. *Cr 3.* MR. PORTER-SHIRLEY, MR. VROOMAN MR. O'ELIA

343. Seminar—The Superintendent—Study and reports on specific problems in the field of high school superintendency. Prerequisite: master's degree in administration. *Cr 3.* MR. PORTER-SHIRLEY

351. 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 320, or equivalent. *Cr 3.* MR. PRESCOTT

361. Seminar in Guidance—Study of current problems in guidance and the development of individual projects in guidance activities. Prerequisite: Ed A 251, Ed A 255, Ed A 353 or their equivalents. MR. MURO

362. Advanced Seminar in Counseling, Guidance, and Student Personnel Administration—A seminar designed to afford the doctoral student an opportunity to make an intensive study of research literature and to explore and clarify his philosophy and goals within the total field of counseling, guidance and student personnel administration. Open only to doctoral students. *Cr 3.* MR. MURO, MR. SANFORD, MR. RYAN, MR. WORK

365. Seminar in Self-Actualization—Lectures, discussions, and directed readings pertaining to the nature of creativity, psychological health, human potentialities, and self-fulfillment. *Cr 3.* MR. SANFORD

366. Advanced Seminar in Human Development—A study of continuity and dynamics of human development through all life stages. Implications for teachers, counselors, and student personnel workers will be emphasized. Prerequisite: 18 credits in behavioral sciences. *Cr 3.*

373. Seminar in Business Education (Administration and Supervision)—Problems related to administration and supervision in business education. Prerequisite: Ed V 271, V 272 and V 275. *Cr 3.*

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391. Graduate Apprenticeship—Apprenticeship training in one of the following areas such as supervision, administration, guidance or student personnel services in higher education. Usually available only to full-time graduate students who gain permission of instructor well in advance of class meeting. Prerequisite: permission of instructor and adviser to graduate students. *Cr* 2-6.

MR. PORTER-SHIRLEY, MR. SANFORD, MISS ZINK,
MR. MURO, MR. RYAN, MR. WORK

392. Field Observation in Guidance—Familiarization with guidance programs through CCTV observation and visits to selected schools. Study of community agencies as referral sources in guidance. Prerequisite: permission of instructor. *Cr* 2.

393. Educational Internship—This internship provides on-the-job experience and normally comes after a master's degree has been completed. Special arrangements have to be made with either cooperating University departments, community agencies, or public schools, so the instructor must know well in advance. Prerequisite: permission of instructor and adviser to graduate students. *Cr* 3.

395. 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. This course is required of CAS candidates for the principalship and for those superintendents enrolled in the CAS program prior to September 1, 1965. *Cr* 3. MR. PRESCOTT

396. Doctoral Seminar in Education—Doctoral students present doctoral thesis proposals to faculty and students for criticism. Required before approval of students' dissertation title may be obtained from his advisory committee. Open only to doctoral students. *No credit*. STAFF

397. Advanced Educational Research I—An integration of research theory and methodology, measurement theory, and statistics. Development of hypotheses, principles of research design, sampling techniques, and methods of analyzing data will be considered. Concepts from measurement theory and statistics necessary for sound research design are included. Students are expected to participate in the solution of research problems. Required of master of science, master of arts, and doctoral candidates. *Cr* 6. MR. PRESCOTT, MR. D'ELIA

398. Advanced Educational Research II—A continuation and extension of Ed G 397 in which more sophisticated research designs—particularly experimental—are considered. Principles underlying construction and use of instruments for purposes of measurement in research will be continued. Multivariate analysis, analysis of variance and covariance, and nonparametric methods will be introduced as they apply to the solution of educational research problems. Specific topics emphasized will reflect the particular needs of students planning doctoral dissertations. Required of doctoral candidates. Prerequisite: Ed G 397. *Cr* 2-6. MR. PRESCOTT, MR. D'ELIA

399. Graduate Thesis—Required of candidates for the master of arts or master of science degree. *Cr* 6. *Time arranged*. STAFF

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History and Philosophy (Ed II)

2. History of Education—A study of educational thought in its historical bearings with particular emphasis on current modes of thought relative to the values, objectives, purposes, and outcomes of American education. *Cr 3.*

MR. NICHOLS

130. Trends in Elementary Education—Current and emerging practices in organization, curriculum and teaching in the elementary school. Discussion of the philosophy of elementary education, various types of grouping, evaluation, instructional materials and the utilization of new media for teaching and learning. Prerequisite: Ed B 2, or equivalent course. *Cr 3.*

251. Education for Intercultural Understanding—Forces of international, racial and religious conflict in contemporary community life; ways in which schools teach understanding of and adjustment to such cultural conflicts. *Cr 3.*

MR. EMERICK

261. Comparative Education—An analysis of the forces that create differences between national systems of education. England, France, U.S.S.R. and the United States are studied specifically. *Cr 3.*

MR. NICHOLS

362. Philosophy of Education—Contributions of philosophers to modern education. An analysis of principles and practices of schools in relation to ideals as contributed by the philosophers. Prerequisite: Ed B 2, Ed B 3, and Ed B 4 or their equivalents. *Cr 3.*

MR. SUPPLE

School Leadership (Ed L)

210. School Administration and Supervision—Nature and scope of democratic administration and supervision of the public schools, including selected problems in areas such as personnel policies, finance, public relations, evaluation techniques, and supervisory practices. Prerequisite: Ed B 2, Ed B 3, and Ed B 4 or their equivalents. *Cr 3.*

MR. PORTER-SHIRLEY, MR. VROOMAN, MR. D'ELIA

230. Public Relations—Practical application of techniques and approaches in the development of a desirable public relations program for schools; an evaluation of reporting practices, and the participatory process in working with lay citizens of a community. Prerequisite: Ed L 210 or equivalent. *Cr 3.*

MR. D'ELIA

231. School Law—A study of the legal bases of public education in the state of Maine. Prerequisite: Ed B 2, Ed B 3, and Ed B 4 or their equivalents. *Cr 3.*

311. The Elementary School Principalship—Organization and administration of the elementary school, with special emphasis upon the duties of the elementary school principal. Prerequisite: Ed L 210, or equivalent. *Cr 3.*

MR. NICHOLS, MR. VROOMAN

321. The Secondary School Principalship—Organization and administration of the secondary school, with special emphasis upon the duties of the secondary school principal. Prerequisite: Ed L 210, or equivalent. *Cr 3.*

MR. NICHOLS, MR. BISHOP

330. School Finance and Business Management—Making and presenting school budget proposals; purchasing and accounting; administering the school budget; legal requirements of budgetary practices. Prerequisite: master's degree with emphasis in school administration and permission of the adviser to graduate students in education. *Cr 3.*

MR. PORTER-SHIRLEY

340. Housing the School Program—Population and building surveys; con-

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struction and maintenance of school buildings; legal aspects of schoolhouse building. Prerequisite: master's degree with emphasis in school administration and permission of the adviser to graduate students in education. *Cr 3.*

MR. PORTER-SHIRLEY

350. *School Personnel Management*—Recruitment, assignment, and in-service training of teachers; techniques of job analysis and evaluation; leave, tenure and salary policies, staff participation in management. Prerequisite: master's degree with emphasis in school administration and permission of the adviser to graduate students in education. *Cr 3.*

MR. VROOMAN, MR. PORTER-SHIRLEY

351. *Theory of Administration*—The theory and principles of educational leadership. An advanced course. Prerequisite: MEd with emphasis in school administration and permission of adviser to graduate students in education. *Cr 3.*

MR. NICHOLS, MR. VROOMAN, MR. D'ELIA

360. *Educational Surveys of the School System*—Nature, source and analysis of information basic to planning and operating the local school system; patterns for organizing local systems into larger units; methods of informing the community of the purposes of the survey; procedures for implementing the survey recommendations; the techniques for keeping the survey results up to date. Prerequisite: master's degree with emphasis in school administration and permission of the adviser to graduate students in education. *Cr 3.*

MR. PORTER-SHIRLEY

Methods (Ed M)

113. *Teaching of Reading in the Elementary School*—General background for teaching reading in the elementary school; reading readiness, comprehension, word analysis skills, directed reading lessons, recreational reading, and evaluation. An introductory course. Prerequisite: Py 1 and Py 2; open to juniors and seniors. *Cr 2-3.*

MRS. BOYCE, MISS JARDINE

114. *Teaching Arithmetic in Elementary School*—The arithmetic curriculum in the elementary school; methods and the techniques in teaching arithmetic; the arithmetic readiness program; instructional and evaluation material. An introductory course. Prerequisite: Py 1, Py 2, Ms 107, junior or senior standing. *Cr 2-3.*

MRS. BOYCE

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. Prerequisite: Py 1, Py 2, junior or senior standing. *Cr 2-3.*

MR. SUPPLE

116. *Teaching Science in the Elementary School*—Materials, methods, devices, and activities appropriate to the program of science in the elementary school. Prerequisite: Py 1, Py 2, junior or senior standing. *Cr 2-3.*

MR. DAVIS

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. Prerequisite: Py 1, Py 2, Ed M 13, junior or senior standing. *Cr 3.*

MR. MACCAMPBELL

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. Prerequisite: Py 1 and 2; open to junior and seniors. *Cr* 2-3.

120. *Teaching Geography in the Elementary School*—Materials, methods, devices, activities, and appropriate background information to the program of teaching geography in the school. Prerequisite: Py 1, Py 2, junior or senior standing. *Cr* 3. MR. SUPPLE

140. *Teaching Reading in the Secondary School*—Appraisal of reading achievements and needs; teaching reading and study skills in the content areas: survey of reading programs in the junior-senior high school. Prerequisite: Py 1, Py 2, junior or senior standing. *Cr* 3. MR. ROBERTS

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. Prerequisite: Py 1, Py 2, junior or senior standing. *Cr* 3. MR. SUPPLE

142. *Teaching Science in the Secondary School*—Methods and materials in teaching of science; development of the science curriculum, and equipment, supplies, and supplementary materials for science teaching in the secondary schools. Prerequisite: Py 1, Py 2, junior or senior standing. *Cr* 3. MR. DAVIS

143. *Teaching Geography in the Secondary School*—Materials, methods, devices, activities, and appropriate background information to the program of teaching geography in the school. Prerequisite: Py 1, Py 2, junior or senior standing. *Cr* 3. MR. SUPPLE

150. *Newer Practices in Reading*—Objectives, materials, and procedures for the improvement of the teaching of reading; methods and materials used in evaluating the reading program; comparison of current practices in reading instruction. Prerequisite: Ed M 13 or Ed M 140, or equivalent. *Cr* 3.

MR. CAUGHRAN, MR. ROBERTS, MR. LOWELL

165. *Methods of Teaching the Superior Child*—Methods, materials and techniques for teaching the gifted child. Prerequisite: Ed B 2, B 3, B 4 or their equivalents. *Cr* 3. MR. BISHOP

OBSERVATION AND STUDENT TEACHING

The University's arrangement for Observation and Student Teaching is generally made a year in advance and based upon the need of students. The demand for this course has increased to the point where it has become necessary to make application with the Director of Student Teaching, Room 144. This application must be approved well in advance of actual registration for the course.

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. Special conferences and group discussions as required. Prerequisites: Ed B 2, Ed B 3, Ed B 4 or their equivalents, methods course, and senior standing. *Cr* 8. MR. PORTER-SHIRLEY, MR. NICHOLS

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. Special conferences and group discussions as required. Prerequisites:

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Ed B 2, Ed B 3, Ed B 4, or their equivalents, methods course, and senior standing. *Cr* 6.

MR. PORTER-SHIRLEY, MR. DAVIS, MR. VROOMAN,
MR. NICHOLS, MR. LINDLOF

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. Special conferences and group discussions as required. Prerequisites: Ed B 2, Ed B 3, Ed B 4, or their equivalents, methods course, and senior standing. *Cr* 8.

MR. PORTER-SHIRLEY, MR. NICHOLS

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. Special conferences and group discussions as required. Prerequisites: Ed B 2, Ed B 3, Ed B 4, or their equivalents, methods course, and senior standing. *Cr* 6.

MR. PORTER-SHIRLEY, MR. DAVIS, MR. RHOADES, MR. VROOMAN,
MR. NICHOLS, MR. LINDLOF, MR. SOULE

194. *Student Teaching, K-12 (Music or Art Education)*—A program of observation and student teaching in selected elementary and secondary schools. Special conferences and group discussions as required. Prerequisites: Ed B 2, Ed B 3, Ed B 4, or their equivalents, a methods course, and senior standing. *Cr* 6.

MR. JACOBS, MR. LEWIS

215. *Newer Practices in Social Studies in the Elementary*—A study of the literature, research, materials, and emerging curriculum practices in the social studies program in the elementary schools. An advanced course. Prerequisite: Ed M 115 or equivalent. *Cr* 3.

MR. SUPPLE

216. *Advanced Studies in Science Education (Elementary)*—These studies will include a critical appraisal of contemporary programs in elementary school science, a review of the relevant research in teaching and learning science at this level, and practice in planning and conducting laboratory and field investigations. Prerequisite: a basic course in science education. *Cr* 3.

230. *Advanced Study in Language Arts*—Intensive study of literature, research, and current practices in the teaching of the language arts. Primarily for thesis candidates. Prerequisite: permission of instructor. *Cr* 3.

MR. ROBERTS

241. *Newer Practices in Social Studies in the Secondary School*—A study of the literature, research, materials, and emerging curriculum practices in the social studies program in the secondary schools. An advanced course. Prerequisite: Ed M 141 or equivalent. *Cr* 3.

MR. SUPPLE

242. *Advanced Studies in Science Education (Secondary)*—These studies will include an appraisal of school science programs at all levels with special attention given to the recent curricular developments intended for secondary schools, a review of the relevant research in teaching and learning science at this level, and practice in planning and conducting laboratory and/or field investigations. Prerequisite: a basic course in science education. *Cr* 3.

251. *Newer Practices in Arithmetic*—Objectives, materials and procedures for the improvement of the teaching of the fundamentals of arithmetic; an arithmetic readiness program, a sensible drill load, and the development of meaningful problem units. Prerequisite: Ed 114 or equivalent. *Cr* 3.

MRS. BOYCE

253. *Remedial Reading*—Diagnosis and correction, methods, materials and procedures for corrective work. Corrective work with an individual or group.

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Prerequisite: Ed M 140, or Ed M 150, or their equivalents, and teaching experience. *Cr 3.* MR. CAUGHRAN, MR. ROBERTS, MR. LOWELL

269. *Clinical Practices in Reading*—Practice in diagnosing and correcting reading deficiencies in elementary and secondary school children. Prerequisite: Ed M 253 or equivalent, and permission of instructor. *Cr 6.* MR. LOWELL

270. *Methods of Teaching the Retarded Child*—Methods, materials, and techniques in teaching retarded children at the special class level. Prerequisite: Ed B 2, Ed B 3, Ed B 4 or their equivalents. *Cr 3.* MR. CHIAPPONE

272. *The Education of the Superior Child*—Deals with characteristics, identification, educational provisions, adjustment and guidance of superior students. MRS. BISHOP

280. *Institute for Teachers of Disadvantaged Youth*—A special program designed to increase the competence of teachers of disadvantaged youth. Classroom instruction in sociology of rural poverty, learning problems and processes in culturally disadvantaged youth, and methods of teaching disadvantaged youth. Laboratory work in new instructional aids and media. Field work with disadvantaged youth. Seminar discussions. *Cr 6.* MR. LINDLOF

301. *Diagnosis in Reading*—Theory, demonstration, and practice in the diagnosis and appraisal of factors in reading and related areas. Emphasis is on the construction and use of teacher-made measuring instruments designed to appraise word perception, vocabulary, and comprehension skills, and other facets of reading performance. Prerequisite: Ed A 320, Ed M 269, or their equivalents, and permission of instructor. *Cr 3.* MR. ROBERTS

320. *Theories of Teaching*—A study of the major theoretical formulations concerned with rationalizing teacher behavior. Several theories will be compared and their utility in generating research evaluated. Prerequisite: Ed B 4, a special methods course or equivalent. *Cr 3.* MR. DAVIS

357. *Education Practicum (Activity)*—Intensive supervised practice in applying professional skills to such activities as counseling, group work, individual appraisal, language arts instruction, supervision, testing. The activity will be selected by the student with the consent of his adviser. Usually available only to students who gain permission of instructor well in advance. (Note: the activity will be designated in parenthesis as part of the course title at the time of registration.) Prerequisite: permission of the instructor. *Cr 3.*

MR. APOSTAL, MR. RYAN, MR. WORK,
MR. SANFORD, MR. MURO, MR. CAUGHRAN

Vocational (Ed V)

271. *Improvement of Instruction in the Vocational Business Subjects*—An advanced course covering methods, selection of instructional materials and curriculum building in vocational business subjects. Enrollment open only to experienced teachers of business education. *Cr 3.*

272. *Improvement of Instruction in the Non-vocational Business Subjects*—An advanced course covering methods, selection of instructional materials and curriculum building in non-vocational business subjects. Enrollment open only to experienced teachers of business education. *Cr 3.*

275. *Business Education Curriculum*—This course deals with the curricula

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in business education for various levels and types of schools. The student learns how to evaluate present programs and to make recommendations for needed changes. *Cr 3.*

General (Ed X)

51. Basic Driver Education—A short, basic, intensive course in driver education for teachers has been arranged in cooperation with the American Automobile Association. This training is designed specifically to aid high schools in establishing plans for a course in driver education, not for the purpose of teaching an individual how to drive. *Cr 3.*

52. Driver and Traffic Safety Education—An intensive course in driver and traffic safety education for teachers who have completed the basic course in driver education, Ed X 51, and have had a minimum of one year's teaching experience in this area of education. Deals with problems experienced by teachers in teaching driver education and highway safety. Prerequisite: Ed X 51. *Cr 3.*

110. Workshop for Critic Teachers—A workshop concerning the nature and scope of the activities of the critic teacher who serves in the University of Maine student teaching program. Issues and problems in the supervision of student teachers will be studied. *Cr 3.*

MR. CROXFORD

162. Workshop in Elementary Education (Music)—This workshop is conducted for music teachers and supervisors of music, elementary classroom teachers with no prior experience in teaching music, and administrators. Daily sessions include singing, dancing, listening, use of percussion instruments, piano, autoharp, instrumental and vocal ensembles, and junior high school music. Cooperative planning by students and staff insures a program best suited to meet individual needs and interests. *Cr 3.*

163. Workshop in Conservation Education—Most of this elementary school teacher workshop program relates to the mineral, soil, water, forest, fish, wildlife, and recreational resources of Maine. Field studies are emphasized. *Cr 3.*

172. Workshop in Secondary Education (Music)—This workshop is conducted for music teachers and supervisors of music, secondary classroom teachers with no prior experience in teaching music, and administrators. Daily sessions include singing, dancing, listening, use of percussion instruments, piano, autoharp, instrumental and vocal ensembles, and junior high school music. Cooperative planning by students and staff insures a program best suited to meet individual needs and interests. *Cr 3.*

173. Workshop in Conservation Education—Same as course 163 except for secondary teachers. *Cr 3.*

181. Educational Travel—Europe—A project involving study of and visits to places and institutions in Europe which have made major contributions to our cultural heritage. The tour will emphasize Great Britain and Italy, with shorter visits to Paris, Switzerland, Austria, Germany, Denmark, and Norway. Areas of each country have been selected for a specific purpose to visit and should offer the tour member a reasonable insight into the sources of our own culture. *Cr 6.*

MR. PORTER-SHIRLEY

182. Educational Travel—United States—A Summer Session study tour of historic sites and scenic wonders of the United States with shorter visits to Canada and Mexico. This course will provide for study and research in the social, eco-

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nomic, historical and geographic aspects of the areas visited. The primary objective of the work is to expand the student's understanding and appreciation of the geography and the history of the United States and neighboring countries. *Cr 6.*

198. *Problems in Education*—Individual work on a problem of the student's own selection. Primarily for majors in education. *Cr Ar.*

MR. BISHOP, MR. FOBES

271. *Institute on the Education of the Mentally Retarded*—This workshop will give special attention to problems of teaching the language arts, and of adjusting other areas of the curriculum to the needs of the retarded child. The unit-experience approach to teaching will be considered. Prerequisite: consent of instructor. *Cr 3.*

272. *Workshop for Teachers of Children with Learning Disabilities*—A major outcome of this workshop will be the orientation of regular and special education teachers relative to what specifically constitutes a learning disability—how the problems are manifested in children and how the difficulties are recognized in the classroom. The identification, screening, diagnosis, referral, and treatment aspects will all be reviewed. Emphasis will be given to the clarification of terms used to define the cerebral handicapped child such as minimal brain dysfunction, neurologically handicapped, perceptually disorganized, and brain-injured. *Cr 3.*

276. *Workshop for Teachers of Emotionally Disturbed Children*—This workshop is designed to help teachers understand emotionally disturbed children in regular classroom settings and to help teachers acquire skill in dealing with such children. Lectures on the manifestations and causes of emotional disturbance will be supplemented by teaching demonstrations, laboratory periods, and seminar discussions of methods of teaching disturbed children. Admission with the approval of the State Department of Education. *Cr 3.*

398. *Individual Study in Education (field of specialization)*—Individual study will provide the doctoral student with the opportunity to increase his professional competence in various fields through independent readings and research. In consultation with his advisory committee the student will plan individual projects which enable him to gain needed competencies in such fields as counseling, guidance, language arts, student personnel. Prerequisite: permission of instructor. *Cr 3-6.*

(Note: The field will be designated in parenthesis as part of the course title at the time of registration.)

DIVISION OF MUSIC EDUCATION

The College of Education offers a program in music education for students who intend to make music a career either as a teacher, and/or a supervisor of music. Majors in these programs will register in the College of Education. Upon satisfactory completion of the course of study, the student will graduate with the bachelor of science in education degree and will be certified to teach music in the public schools. Students who are interested in this program should obtain a special folder from the College of Education concerning this program.

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DIVISION OF ART EDUCATION

A program in art education is offered by the College of Education. It is designed for those who plan to teach art or become supervisors of art in the public schools. Students who are interested in this program should obtain a special folder from the College of Education concerning this program.

COURSES TO BE OFFERED PERIODICALLY

(All courses are 3 credit hours except as noted by figure in parenthesis following course title)

DIVISION OF 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, a second major in an academic teaching area, and a minor in health recreation or an academic area. A bachelor of science degree in education is awarded graduates of this program.

Definite evidence of intellectual capacity, positive qualities of character and personality, good health, and reasonable proficiency in motor skills are the factors determining 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).

COURSES OF INSTRUCTION (Pe)

PROFESSORS WESTERMAN, WOODBURY, AND SEZAK; ASSOCIATE PROFESSORS HAAS, BROWN, CASSIDY, BUTTERFIELD, MCCALL, STYRNA, AND SULLIVAN*; ASSISTANT PROFESSORS ABBOTT, LEPLEY, AND WALKUP; INSTRUCTORS, MISS ANDERSON, MR. FOLGER, MR. HADLEY, MISS HASHEIDER, MR. JORDAN, MR. LIVESEY, MR. MARTIN*, MR. PHILBRICK, MR. PICKETT, MR. RAND, MR. STURGEON*, AND MR. WALLACE

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 6 credit hours through the freshman and sophomore years. Pe majors only.

STAFF

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. Pe majors only. *Rec 2, Cr 2.*

MR. WOODBURY

61W-62W. *Methods in Sports Activities (Individual and Team Sports for Women)*—Instruction and experience in teaching, techniques and progressions of individual and team sports and games. Activities include hockey, basketball, volleyball, softball, speedball, soccer, lacrosse, archery, tennis, badminton, bowl-

* University of Maine in Portland.

ing, golf, skiing, and fencing as well as recreational games. Prerequisite: Pe 11W and 12W. *Rec 1, Lab 2, Cr 2.* MISS WALKUP

63M. Coaching Football and Basketball (Men)—Practical instruction in football and basketball for men preparing to enter the coaching profession. Pe majors, junior class standing. *Rec 2, Cr 2.* MR. ABBOTT, MR. MCCALL

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. Prerequisite: Pe 14W. *Rec 3, Cr 2.* MISS CASSIDY

64M. Coaching Track and Baseball (Men)—Devoted to a study of the mechanics of running, jumping, and weight throwing, with discussions of different styles involved; also a study of approved methods in coaching baseball in all its phases. Pe majors, junior class standing. *Rec 2, Cr 3.*

MR. STYRNA, MR. BUTTERFIELD

64W. Methods in Intramurals and School Recreation (Women)—Interpretation, instruction and experiences in organizing and administering the intramural and school recreation programs. *Rec 1, Lab 2, Cr 2.* STAFF

73. Athletic Training—Methods necessary to the conditioning of athletes, care of injuries and injury prevention. Diagnosis, prescription, diet, massage, taping, first aid, etc. Pe majors, junior class standing. *Rec 1, Lab 2, Cr 2.*

124. Safety and First Aid—Provides an advanced consideration of safety and first aid subject matter, methods, techniques, and teaching devices. This course also considers the need for civil defense and disaster procedures in a nuclear age. Completion of the course may qualify one for the instructor's certificate. *Cr 3.*

MR. LEPLEY

140. Outdoor Education and Recreation Education—School camping, conservation education, and integration of the school curriculum with the out-of-doors including practical experience. Current practices in the use of the out-of-doors as adjunct to modern school recreation programs. *Cr 3.* STAFF

145. Community Centers and Playgrounds—Covers various aspects of organization, administration, management, facilities, equipment, and activities of building-centered programs and community playgrounds. *Cr 3.* MISS BROWN

148. Field Experience—Supervised experience in conducting recreation programs in camp, community, social agency or institution situations. *Cr 3-6.* STAFF

150. Camp Leadership—Designed for the training of camp counselors. The course consists of lectures, discussions, practice, and participation in the varied activities of camping. In addition to the regular two hours per week in the classroom, field trips will be arranged. Physical education majors only. *Cr 2.*

MR. SEZAK

156. Physical Education Activities and Program Planning for Elementary Schools—Understanding and analysis of skills, progressions, curriculum development, and elements that make activities interesting for children. Emphasis on imaginative use of facilities and equipment. Methods of presentation are given in rhythms, games, gymnastics. For physical education majors. *Cr 2.* MISS HAAS

169. Foundations of Recreation—Fundamental concepts, principles, and practices in the field of recreation. Historical background, significance of recreation in society today and professional opportunities. *Cr 2.* MISS BROWN

171. Philosophy and Principles of Physical Education—An interpretation of the scientific and philosophical foundations of physical education. Open to

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juniors who are preparing to teach physical education. Physical education majors only. *Cr* 2-3. MR. LEPLEY

172. Tests and Measurements in Physical Education—A practical course in the use of objective measurements and statistical methods in physical education and athletics. Physical education majors only. *Cr* 3. MISS HAAS

176. Kinesiology—Fundamentals of body mechanics and applied anatomy. *Cr* 3. MISS WALKUP

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. Physical education majors, junior class standing. *Cr* 2. MR. LEPLEY

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. Pe majors only. *Cr* 2. MR. LEPLEY

180. Health, Physical Education, and Recreation Programs in the Elementary School—Study of skills, progressions in rhythms, sports, and gymnastics. Health programs including curriculum planning, and methods of presentation. Organization and administration of elementary school recreation programs. For elementary classroom teachers. *Cr* 2-3. MISS ANDERSON

185. Recreation Leadership—Skills and practical experiences essential to the development of effective recreation leadership. Emphasis on the organization and administration of programs and selection of activities for various size groups and age levels. *Cr* 2. MR. SEZAK

255. Philosophy and Organization of Physical Education for Elementary Schools—Philosophy, planning and organization of the physical education program in the elementary school. Skills, progressions, and methods of presentation are included. *Cr* 3. STAFF

265. Leadership Organization in the Intramural Programs—Principles, administration, organization, and supervision of intramural activities in the physical education program in elementary, junior and senior high schools. *Cr* 3. MR. LEPLEY, MR. WOODBURY

268. Protective Practices and Safety in Physical Education and Recreation—This course is designed to acquaint teachers and coaches with modern principles and practices in care, conditioning, and safety in physical education and athletic programs. Applied anatomy, physical examination, diet, taping, and first aid. *Cr* 3. MR. LEPLEY, MR. WOODBURY

270. Interpretations of Health, Physical Education and Recreation—For teachers, supervisors and administrators. The broad philosophical bases upon which the modern program of physical education is predicated. Biological, psychological, sociological, and educational implications in interpreting the functions of physical education in contemporary democratic society. *Cr* 3. MISS HAAS

274. Organization and Administration of Recreation Programs—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. *Cr* 3. MISS BROWN

COLLEGE OF EDUCATION

275. *Current Studies in Health, Physical Education and Recreation*—A study of modern trends in health, physical education, and recreation. *Cr 3.*

MISS HAAS

276. *Physiology of Activity*—The study of physiological function as it relates to good use of the body in sports activity and posture. *Cr 3.* MR. LEPLEY

279. *Current Studies in the Administration of Athletics*—For administrative officers as well as for the teachers and directors of physical education. Deals with the policies in the organization of the program and the method of administration to secure the best results. *Cr 3.* STAFF

281. *Recreation in the American Community*—Problems involved in organizing and administering community recreation, including school-community programs. Legal aspects, organization of a department and its program, budgeting and financing public relations, facilities and equipment, selection and supervision of staff. *Cr 3.* MISS BROWN

282. *Adaptive and Corrective Physical Education*—Instruction in methods of meeting the physical needs of children with certain physical defects. Causes and corrections of faulty body mechanics, physical examinations, methods for diagnosis of postural defects, and program adaptation. *Cr 3.* MISS WALKUP

283. *Administration of Elementary and Secondary School Health Programs*—Designed to develop teacher competencies in improving the school health program. Principles of developing the program, home, school, and community resources and operation, solving health problems, evaluation of health materials. *Cr 3.* STAFF

284. *Evaluative Procedures in Health, Physical Education, and Recreation*—Familiarizes the student with the practical use and value of tests and measurements in health, physical education, and recreation. *Cr 3.* MR. LEPLEY

310. *Seminar in Health, Physical Education, and Recreation*—Limited to advanced students. Provides discussion and applications of methods and techniques of educational research to problems in health, physical education, and recreation. Each student is required to report upon research studies. *Cr 3.*

MR. LEPLEY

398. *Problems in Health, Physical Education and Recreation*—Limited to advanced students. Contemporary problems in health, physical education, and recreation designed to broaden the student's understanding of principles and current practices as they relate to school programs. Students are required to isolate, describe, and seek solutions to problems related to these fields. *Cr 3.*

MR. LEPLEY

COURSES TO BE OFFERED PERIODICALLY:

(All courses are 3 credit hours except as noted by figure in parenthesis following course title.)

Ed M—Methods

261. *Institute in the Teaching of Reading in the Secondary School.*

271. *Observation and Practice in Special Class Education.*

273. *Problems in Teaching the Slow-Learning Child.*

Ed X—General

- 112. Business Administration and Communication Media.*
- 121. National Training Laboratory in Human Relations Training.*
- 122. National Training Laboratory in Personal Growth and Creative Expression.*
- 123. National Training Laboratory in Conflict Management (Advanced).*
- 124. Human Relations Factors in Guidance.*
- 125. National Training Laboratory for Community Leaders.*
- 126. N.T.L. for Educational Leaders (Advanced).*
- 127. National Training Laboratories for Leadership in Higher Education.*
- 128. National Training Laboratories Internship on Educational Change (5).*
- 129. National Training Laboratory for School Administrators.*
- 130. National Training Laboratories Internship on Organizational Behavior (5).*
- 131. Laboratory in Organizational Consultation (Advanced).*

(The foregoing are offered in cooperation with the National Training Laboratory, Bethel, Maine. Each course is offered at 3 credit hours unless otherwise noted in parenthesis.)

- 150. Aerospace Science Education Workshop.*

COLLEGE OF LIFE SCIENCES AND AGRICULTURE

WINTHROP C. LIBBY, DEAN



Fogler Library

College of Life Sciences and Agriculture

The College of Life Sciences and Agriculture is composed of the School of Forestry, the School of Home Economics, and the Departments of Agricultural Business and Economics, Agricultural Engineering, Animal Science, Animal Pathology, Bacteriology, Biochemistry, Botany and Plant Pathology, Entomology, Food Science, and Plants and Soils.

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. This gives the student a fundamental education in the biological, physical, and social sciences and an opportunity to elect courses in the arts and humanities. In addition, specific technical courses are offered in each major area of specialization.

Students may select a major upon entering the college or they may wait until the sophomore year.

Degrees, Majors, and Specializations

The college offers programs leading to the bachelor of science degree in the following fields:

1. **Agricultural Business and Economics**
2. **Agricultural Engineering (Jointly with College of Technology)**
3. **Agricultural Mechanization**
4. **Animal Sciences**
5. **Bacteriology**
6. **Biochemistry**
7. **Biology**
8. **Botany**
9. **Entomology**
10. **Forestry and Wildlife Management**
11. **Home Economics**
12. **Plant and Soil Sciences**

In addition to the above, special programs in Agricultural Education, 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 to transfer to other specified New England universities for the remain-

COLLEGE OF LIFE SCIENCES AND AGRICULTURE

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

The college has a Two-Year Technical Division that offers associate-degree technical training to young men and women in Animal Technology, Laboratory Technology, Business Management, Food Service Management and Merchandising.

Graduation Requirements

For the bachelor of science degree a total of 120 credits are required in all fields except Agricultural Engineering and Forestry and Wildlife*. For Agricultural Engineering 138 credit hours are required and in Forestry and Wildlife 132 credit hours plus 8 credit hours for summer camp. In addition, each student must accumulate a minimum grade point average of 1.8 and receive a passing grade in all required courses in his program of study.

For the degree of associate in applied science students must satisfactorily complete a prescribed technical curriculum with a minimum of 64 credit hours earned at an accumulative grade point average of at least 1.8.

Course Explanations

Courses numbered 1-99 are for undergraduates; courses numbered 100-199 are also for undergraduates but may be taken for graduate credit with special permission; courses numbered 200-299 are for graduates but may be taken for undergraduate credit with special permission; courses numbered 300-399 are for graduates.

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 slant is used (e.g., 1/2), the first semester may be taken by itself, but the second semester 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 1967-68 and alternate years are indicated by the sign (†) placed before the number of the course; courses offered in 1968-69 and alternate years are indicated by the sign (‡) placed before the number of the course.

* Effective commencing with the class graduating in 1969.

Freshman Year

Students admitted to degree programs of the College of Life Sciences and Agriculture usually enroll in one of the following freshman programs.

Agricultural Business and Economics

FALL SEMESTER				SPRING SEMESTER			
Subject			Credit Hours	Subject			Credit Hours
LSA	1	Orientation	0	Ab	24	Sociology of Rural Life	3
Ec	1	Prin. of Economics	3	Bt	1	General Botany	4
Ch	1	Chemistry	4	Ec	2	Prin. of Economics	3
or Bc	7	Chemistry	4	Ms	1	Trigonometry	2
Eh	1	Freshman Composition	3	Pe	2	Physical Education	0
Ms	3	College Algebra	2			Electives	3
Pe	1	Physical Education	0				
		Electives	3				
			15				15

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Agricultural Engineering

FALL SEMESTER				SPRING SEMESTER			
		Subject	Hours			Subject	Hours
LSA	1	Orientation	0	Ch	2	General Chemistry	4
Ch	1	General Chemistry	4	Eh	1	Freshman Composition	3
Eg	1	Engineering Drawing	2	Eg	2	Engineering Drawing	2
Gc	5	Orientation	0	Ms	27	Calculus	4
Ms	12	Anal. Geom. & Cal.	4	Pe	2	Physical Education	0
Pe	1	Physical Education	0	Ps	2a	General Physics	5
Ps	1	General Physics	5				
			15				18

Agricultural Mechanization

FALL SEMESTER				SPRING SEMESTER			
		Subject	Hours			Subject	Hours
LSA	1	Orientation	0	Ec	2	Prin. of Economics	3
Ec	1	Prin. of Economics	3	Eg	2	Engineering Drawing	2
Eg	1	Engineering Drawing	2	Ms	1	Trigonometry	2
Eh	1	English Composition	3	Ps	1a	General Physics	4
Ms	3	College Algebra	2	Pe	1	Physical Education	0
Ps	1a	General Physics	4			Electives	4
Pe	1	Physical Education	0				
			14				15

Animal Sciences—Plant and Soil Sciences

FALL SEMESTER				SPRING SEMESTER			
		Subject	Hours			Subject	Hours
LSA	1	Orientation	0	Ch	2	General Chemistry	4
Ch	1	General Chemistry	4	Ms	1*	Trigonometry	2
Eh	1	Freshman Composition	3	Pe	2	Physical Education	0
Ms	3*	College Algebra	2	S	2	Soils	4
Pe	1	Physical Education	0	or Zo	4	Animal Biology	
Bt	1	General Botany	4			Electives	5
or Zo	3	Animal Biology					
		Electives	2				
			15				15

* Ms 5 & 6 Ms 12 may be substituted

Biological Sciences

(Bacteriology-Biochemistry-Biology-Botany-Entomology)

FALL SEMESTER				SPRING SEMESTER			
		Subject	Hours			Subject	Hours
LSA	1	Orientation	0	Ch	2	General Chemistry	4
Ch	1	General Chemistry	4	Ms	12	Anal. Geom. & Cal.	4
Eh	1	Freshman Composition	3	Pe	2	Physical Education	0
Ms	1	Trigonometry	2	Bt	2	Plant Kingdom	4
Ms	3	College Algebra	2			or	
Pe	1	Physical Education	0	Zo	4	Animal Biology	3
Bt	1	General Botany	4			Elective	
		or					
Zo	3	Animal Biology					
			15				15

COLLEGE OF LIFE SCIENCES AND AGRICULTURE

Forestry and Wildlife

FALL SEMESTER				SPRING SEMESTER			
Subject			Hours	Subject			Hours
Bt	1	General Botany	4	Ch	2	General Chemistry	4
		or		Eg	12	Forestry Drawing	2
Zo	3	Animal Biology	4	Fy	2	Introduction to Forestry	2
Ch	1	General Chemistry	4	Ms	1	Trigonometry	2
Eh	1	Freshman Composition	3	Pe	2	Physical Education	0
Eg	1	Engineering Drawing	2	Zo	3	Animal Biology	4
Fy	1	Introduction to Forestry	2			or	
Ms	3	College Algebra	2	Bt	1	General Botany	3
Pe	1	Physical Education	0			Electives	
<hr/>				<hr/>			
17				17			

Home Economics

(See Page 222)

AGRICULTURAL BUSINESS AND ECONOMICS

PROFESSORS METZGER, PLOCH, PULLEN; ASSOCIATE PROFESSORS DELPHENDAHL,
DUNHAM, KROFTA, ROBINSON; ASSISTANT PROFESSORS
HYATT, WING

The Department of Agricultural Business and Economics offers a curriculum leading to the B.S. degree in agricultural business and economics, with emphasis in business management, marketing, resource economics, rural sociology, and international affairs. The department's program is designed to develop abilities to handle managerial responsibilities in the economic and social aspects of the food and fiber industries and allied fields and provide a broad education in agricultural business, economics, and rural sociology. An international affairs major is available through proper selection of electives.

Areas of instruction include the business and economic aspects of production, with emphasis on the economic use and management of capital, labor, land, and water resources; the business aspects of marketing, with emphasis on pricing, financing, merchandising, work simplification, quality control, and consumption; economics related to development of area resources; and social and human factors associated with food production processing, distribution, consumption, and community development; and foreign languages and the political, legal, and economic aspects of international relations. In addition, economic training is complemented with a comprehensive, integrated program of courses in the life sciences, other social sciences, communication, and humanities.

Employment opportunities exist in food and agricultural businesses such as manufacturing and processing firms, wholesale and retail distribution firms, insurance and credit agencies, cooperatives, feed, fertilizer, and farm supply companies, federal and state governments, and colleges and universities; international organizations and international business and agriculture.

The B.S. degree in agricultural business and economics requires satisfactory completion of at least 120 degree hours at an accumulative grade-point average of not less than 1.80 in a course of study which conforms to the following curriculum:

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Curriculum for Agricultural Business and Economics (Except Rural Sociology)

Required Courses		Credit Hours	Minimum Degree Hours Required
A. ORIENTATION			0
B. BASIC SCIENCES			15
Bc 7 or Ch 1	Fundamentals of Chemistry or General Chemistry	4	
Bt 1	General Botany	4	
Zo 3 or AnP 135	Animal Biology, or Anatomy of Domestic Animals	3 (4)	
Ms 1 & 3 or 5 & 6	Trigonometry and College Algebra or Elements of College Mathematics	4 (6)	
C. COMMUNICATIONS			9
Eh 1	Freshman Composition	3	
Eh 7 or Eh 19	Second-Year Composition or Expository Writing	2 (3)	
Sh 1	Fundamentals of Public Speaking Electives*	2 2	
D. HUMANITIES AND SOCIAL SCIENCES			18
	Electives**	18	
	(Minimum of 2 courses in each—humanities & social sciences.)		
E. LIFE SCIENCES AND AGRICULTURE			12
S 2	Soils	3	
	Electives***	9	
	(Minimum of six (6) hours from each of two fields.)		
F. BUSINESS AND ECONOMICS			18
Ec 1 & 2	Principles of Economics	6	
Ba 9	Principles of Accounting	3	
Ec 153	Money and Banking	3	
	Electives	6	
	(Any Ba or Ec courses)		
G. AGRICULTURAL BUSINESS AND ECONOMICS			26
Ab 24	Sociology of Rural Life	3	
Ab 154	Introduction to Production Economics	3	
Ab 159	Agricultural Business Management	3	
Ab 166	Food and Fiber Marketing	3	
Ab 169	Price Analysis and Forecasting	3	
Ab 171	Land Resource Economics	3	
Ab 193, 194	Seminar	2	
	Electives	6	
	(Any Ab course except Ab 47)		
H. RESEARCH METHODS AND STATISTICS			6
Ms 19	Principles of Statistical Inference	3	
Sy 120	Methods of Social Research	3	
I. FREE ELECTIVES			
	Any course in the University for which the student is qualified		
Minimum Degree Hours Required for Graduation			16
			120

* Any course in English, Journalism, Speech or Foreign Language.

** Choose from the following fields: Art or Music, Literature, Psychology, Philosophy, Political Science, Sociology.

*** Any courses in the College of Life Sciences and Agriculture, except Agricultural Business and Economics courses, approved by adviser.

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Curriculum for Rural Sociology

Students who major in rural sociology take the same program as major students in agricultural business and economics except for the requirements listed under section F (18 hours) and G (26 hours). The following 44 credit hours substitute for section F and G:

Ec 1	Principles of Economics	3
Ab 47	Principles of Agricultural Economics	3
Ab 24	Sociology of Rural Life	3
Ab 42	World Population Resources	3
Ab 129	The Individual and the Community	3
Ab 150	Human Factors in Resource Development	3
Ab 166	Food and Fiber Marketing	3
Ab 193, 194	Seminar	2
Py 1, 2	General Psychology	6
Py 130	Social Psychology	3
Sy 3/4	Introduction to Sociology	6
	or	
	Introduction to Anthropology	
	Electives (Sociology or Anthropology)	6
		<hr/> 44

The student, after consultation with his adviser, should declare to the department head his intention to pursue the rural sociology major. This should be done at the time of preregistration for the fall semester of the sophomore year.

Courses in Agricultural Business and Economics (Ab)

41. World Food Supply and Economic Development—Economic factors affecting supply of and demand for food in various regions of the world. Principles of economic growth and development. Economic development as means to alleviate the food deficit of emerging nations. *Rec 3, Cr 3.*

MR. DELPHENDAHL

47. Principles of Agricultural Economics—A study of economic principles applied to the business firm, with consideration given to production, marketing, use of human and natural resources, and governmental policy. *Rec 3, Cr 3.* Not open to Ab majors.

MR. WING

154. Introduction to Production Economics—The application of economic relationships and principles to problems of resource allocation at the firm level. Prerequisite: Ec 1 & 2 or Ab 47. *Rec 3, Cr 3.*

MR. KROFTA

159. Agricultural Business Management—Study of proprietorships, partnerships, cooperatives, and corporations as forms of agricultural business organization. Discussion of the management principles and procedures applicable to these businesses. Prerequisite: Ab 47 or Ec 1 and Ec 2; and Ba 9. *Rec 3, Cr 3.*

MR. WING

164. Statistical Quality Control—Distribution and sampling theories with application to methods of process control and acceptance inspection. Prerequisite: permission of instructor. *Rec 2, Lab 2, Cr 3.*

166. Food and Fiber Marketing—Economic principles applied to marketing structures, services and agencies; analysis of costs and efficiencies; impact of industry organization and government. Prerequisite: Ec 1 & 2. *Rec 3, Cr 3.*

167. Food Distribution Management—The management approach to marketing. Includes areas of decision making such as marketing organization, prod-

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ucts, distribution policies, pricing, advertising and personal selling. Firm visits. Lab fee \$5. Prerequisite: Ec 1 & 2. *Rec 2, Lab 2, Cr 3.* MR. DUNHAM

‡168. *Price Analysis and Forecasting*—The consideration of supply, demand, and elasticity in affecting food prices; their application to price discrimination, futures markets, and price programs; and the use of quantitative techniques in price forecasting. Prerequisite: Ec 1 & 2 and Ms 19 or permission of instructor. *Rec 3, Cr 3.*

†171. *Land Resource Economics*—Principal economic and institutional factors affecting man in his use of land and resources; supply, demand, and future requirements; input-output relationships, benefit cost analysis; planning for more efficient use of resources. Prerequisite: Ec 1 & 2. *Rec 3, Cr 3.* MR. DELPHENDAHL

‡186. *World Policies for Agriculture*—Analysis of national and international policies affecting food production and distribution. Areas of competition, changes in comparative advantage. Interrelationship of national and international policies. Current programs for international cooperation. Prerequisite: Ec 1 & 2. *Rec 3, Cr 3.* MR. DELPHENDAHL

193. 194. *Seminar*—Discussion of current economic problems. Prerequisite: seniors and graduates. *Rec 1, Cr 1.* MR. METZGER

199. *Problems and Readings*—Analysis of and readings on current problems in agricultural business and economics, and rural sociology. Prerequisite: permission of instructor. *Rec 2, Cr 2.* STAFF

Ab/Ec 230. *Econometrics*—An introduction to economic concepts and relationships expressed in quantitative terms. Major emphasis will be given to economic models related to demand, supply, production and cost functions; input-output analysis and other models will also be considered. Prerequisite: Ms 6 or 12, Ms 19, Ec 173 or permission of instructor. *Rec 3, Cr 3.*

†272. *Resource Use and Economic Growth*—Resource utilization and economic growth in retrospect. Importance of resources. Theories, measurements of economic development. Public policies and planning for resource development. Prerequisite: Ab 171 or permission of instructor. *Rec 3, Cr 3.* MR. DELPHENDAHL

304. *Marketing Theory and Concepts*—Economic theory underlying the policies of marketing firms; the details of current marketing problems and current market practices for selected commodities. Prerequisite: Ab 166. *Rec 3, Cr 3.*

307. *Production Economics*—The principles of optimum resource allocation applied to agricultural businesses under perfect knowledge and with consideration of uncertainties. The use of linear programming as a tool for attaining optimum resource allocation. Prerequisite: Ab 154, Ms 19 or permission. *Rec 3, Cr 3.* MR. KROFTA

359. *Research Methods in Agricultural Business and Economics*—Nature of economic and social analysis; scientific objectivity; individual and public problems; formulation of hypotheses and models; empirical techniques; evaluation of current research procedures. Prerequisite: permission of instructor. *Rec 3, Cr 3.* STAFF

399. *Graduate Thesis*—*Cr Ar.* STAFF

COLLEGE OF LIFE SCIENCES AND AGRICULTURE

Courses in Rural Sociology (Ab/Sy)

24. *Sociology of Rural Life*—Significance of rural society in American culture. The impact of forces of change, including population movement. The significance of changes in the institutions of family, religion, education, and stratification. Course same as Sy 24. *Rec 3, Cr 3.* MR. PLOCH

42. *World Population Resources*—An introductory course with emphasis on size and distribution of the population resource in relation to other resources essential to life. Trends in growth and migration will be analyzed. Possible alleviation of problems through policy formulation will be discussed. *Rec 3, Cr 3.* MR. HYATT

‡129. *The Individual and the Community*—Analysis of the functioning and structure of the community. Emphasis on ways in which individuals and groups are affected by community dynamics. Group process, leadership, program planning and development are stressed. Community project. Prerequisite: Ab/Sy 24 or Sy 126 or permission. *Rec 3, Cr 3.* MR. PLOCH

150. *Human Factors in Resource Development*—Methods of social change. Community and individual resistances to, and acceptance of, development programs. Consequences of development for community social systems. The development as an interactive force in the community. Prerequisite: Ab 24/Sy 4 or permission. *Rec 3, Cr 3.* MR. PLOCH

Graduate Work in Agricultural Business and Economics

The degree of master of science in agricultural business and economics is offered with an opportunity for specialization in food distribution and marketing, agricultural business management, resource development, and rural sociology. Students may select a minor area of study in a related subject matter field. Candidates will be encouraged to enroll in graduate level courses in the College of Business Administration and in the Department of Mathematics and Astronomy.

The degree of master of agricultural business and economics also is offered. Candidates for this degree are not required to write a thesis, but must meet all other requirements of the master of science degree.

AGRICULTURAL ENGINEERING

PROFESSORS SMITH*, RHOADS; ASSOCIATE PROFESSORS KLINGE, ROWE, WILLIAMS;
ASSISTANT PROFESSORS HUFF, SOULE

The Agricultural Engineering Department offers major work leading to the degree of bachelor of science in agricultural engineering and to the degree of bachelor of science in agricultural mechanization.

B.S. in Agricultural Engineering

The curriculum in Agricultural Engineering is a joint responsibility of the College of Technology and the College of Life Sciences and Agriculture, and provides training in the fundamentals of engineering and their application to agriculture.

The work of agricultural engineers falls in four major areas—agricultural power and machinery, electric power and processing, farm structures, and soil and water control. Examples of the many types of positions held by graduates of this curriculum are: design, field testing, sales and service with industrial and

* On leave of absence 1967-68.

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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 or equipment dealerships.

This degree requires satisfactory completion of at least 138 degree hours at an accumulative grade point average of not less than 1.80 in a course of study which conforms to the following curriculum:

Agricultural Engineering Curriculum

Freshman Year. See Page 190.

Sophomore Year

FALL SEMESTER						SPRING SEMESTER					
Subject			Hours			Subject			Hours		
			Rec	Lab	Cr				Rec	Lab	Cr
AE	55	Mats. in Agr. Eng.	2	2	3	AE	82	Introduction to			
Ce	5	Surveying	2	3	3			Agr. Eng.	1	2	2
Eg	3	Descriptive Geometry	0	4	2	Bt	1	General Botany	2	4	4
Gc	7	Computer Programming				Me	33	Thermodynamics	3	0	3
		for engineers	1	2	2	Me	52	Dynamics	3	0	3
Me	50	Statics	3	0	3	Ms	29	Cal. & Diff. Eq.	4	0	4
Ms	28	Anal. Geom. & Cal.	4	0	4			*Elective			2
		*Elective			1						
					18						18

Junior Year

			Rec	Lab	Cr				Rec	Lab	Cr
AE	169	Agr. Processing	2	3	3	AE	167	Agr. Power	2	3	3
Ce	26	Hydraulics	3	3	4	S	2	Soils	3	0	3
Ee	41	Elem. Circuits	3	0	3	Ce	52	Struct. Anal. & Des.	4	0	4
Me	23	Kinematics	3	0	3	Eh	5	Tech. Composition	2	0	2
Me	51	Strength of Mats.	4	0	4	Sh	1	Speech	2	0	2
					1						4
					18						18

Senior Year

			Rec	Lab	Cr				Rec	Lab	Cr
Ab	47	Agr. Economics	3	0	3	AE	163	Farm Structure Des.	2	3	3
AE	160	Agr. Machinery	2	3	3	*Electives			13		
AE	165	Soil Water Eng.	3	3	4				<hr/>		
AE	180	Seminar	1	0	1				16		
AE	183	Spec. Prob. in									
		Agr. Eng.			1						
		*Electives			5						
					<hr/>						
					17						

* 18 hours of elective credit must be in humanity-social science electives as specified for other engineering curricula except that three hours should be in Ab/Sy courses; sufficient additional elective credit must be in College of Life Sciences and Agriculture subjects to make a total of 40 credits.

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LSA Orientation; Gc 5/6 Orientation; AE 79 Seminar; AE 80 Senior Seminar or AE 81 Departmental Seminar are required each semester.

Students transferring to University of Maine from the Universities of Massachusetts, New Hampshire, Rhode Island or Vermont under the Regional Program should check the bulletins of those institutions for the first two years in Agricultural Engineering.

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, agricultural 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.

B.S. in Agricultural Mechanization

The curriculum in Agricultural Mechanization provides training in specific aspects of engineering technology and couples this with training in business, economics, and agricultural subjects. It is designed to prepare graduates for work in the application of equipment and systems to food production, processing and handling businesses either as field representatives of industrial concerns or as management personnel on mechanized production units.

Graduates find employment as technical sales representatives for machinery companies, farm service advisers for electric power companies, field advisers for fuel companies, machinery managers on corporation farms, field managers for food processors, and as agricultural contractors. Positions are also available with equipment companies in the fields of product development and product education.

This degree requires satisfactory completion of at least 120 degree hours at an accumulative grade point average of not less than 1.80 in a course of study which conforms to the following curriculum:

Agricultural Mechanization Curriculum

Freshman Year. See Page 190.

Sophomore Year

FALL SEMESTER				SPRING SEMESTER			
		Subject	Hours			Subject	Hours
AE	20	Prin. of Agr. Mech.	3	AE	36	Farm Power	3
Ba	9	Prin. of Accounting	3	Ms	17	Math. Theory of Invest.	3
Ch	1	General Chemistry	4	Bt	1	General Botany	4
Ms	19	Prin. of Stat. Inf.	3	Sh	1	Public Speaking	2
		*Electives	3			*Electives	3
			16				15

Junior Year

AE	31	Field Machinery Man.	3	AE	32	Farm Struc. & Equip.	3
AE	35	Soil and Water Control	3	S	2	Soils	3
AnP	135	Anat. of Domestic Animal	3			*Electives	9
		*Electives	6				15
			15				15

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Senior Year

AE	34	Instrumentation	3	AE	84	Special Problems in AE	3
AE	83	Special Problems	3			*Electives	12
Fs	101	Food Proc. Industry	3				
		*Electives	6				
			15				15
Minimum credit hours required for graduation							120

* Electives must include

- (a) at least 6 credit hours of biological science courses
- (b) at least 22 credit hours of professional field supporting courses of which 12 credit hours must be in the College of Life Sciences and Agriculture
- (c) at least 15 credit hours of social sciences and humanities courses; not less than two semester courses in each area.

Courses in Agricultural Engineering (AE)

Courses numbered below 50 or 101-150 are intended primarily for the Agricultural Mechanization curriculum or as service courses for students in other departments of the College of Life Sciences and Agriculture.

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 Machinery Management—Development of machinery systems for integrating farm field operations into food and fiber production processes; selection and use of machines and applications of power to these field operations. *Rec 2, Lab 2, Cr 3.* MR. ROWE

32. Farm Buildings and Equipment—Consideration of environmental control; methods and materials of construction; functional requirements and system economics of production, processing and storage buildings. *Rec 2, Lab 2, Cr 3.* MR. WILLIAMS

‡34. Instrumentation—A study of the basic principles and applications of instruments for measuring and controlling such phenomena as temperature, force, pressure, humidity, moisture content and flow rate. Applications to agriculture and biological sciences are stressed. Prerequisite: Ps 6. *Rec 2, Lab 2, Cr 3.* MR. ROWE

35. Soil Water Control—Field surveying, planning, layout and construction 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. KLINGE

36. Farm and Forestry Power—Principles of construction, operation, and maintenance of internal combustion engines, tractors, and related equipment. Selection, application, and management of power equipment in farm and forestry activities. MR. HUFF

Courses numbered 50-99 and 151 or above are intended primarily for the Agricultural Engineering curriculum.

55. Materials in Agricultural Engineering—An introduction to physical and rheological properties of structural and biological materials useful in agricultural design and application. Prerequisite: Ps 3 or permission of instructor. *Rec 2, Lab 2, Cr 3.* MR. SOULE

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79. Seminar—Recent literature, developments and problems in the field of agricultural engineering. *Rec 1, Cr 0.* MR. RHOADS

80. Senior Seminar—Problems associated with professionalism and the first employment of the young agricultural engineer. *Rec 1, Cr 1.* MR. SMITH

81. Departmental Seminar—Presentation and discussion of current developments and problems that affect agricultural engineering and agricultural engineers. *Rec 1 (monthly), Cr 0.* STAFF

82. Introduction to Agricultural Engineering—An introduction to engineering experimentation involving biological material. For sophomores majoring in agricultural engineering. *Rec 1, Lab 2, Cr 2.* MR. SMITH

83. 84. Special Problems in Agricultural Engineering—*Cr Ar.* STAFF

160. Agricultural Machinery—Analysis of functional and power requirements, capacity, and economics of agricultural machines. Principles of design; laboratory and field test. Prerequisite: Me 51. *Rec 2, Lab 3, Cr 3.* MR. SOULE

163. Farm Structures Design—Structural design and environmental control in production, processing and storage buildings; consideration of functional requirements, system economics and methods and materials of construction. Prerequisite: Ce 52. *Rec 2, Lab 3, Cr 3.* MR. WILLIAMS

†**164. Instrumentation and Control Systems**—Analysis of dynamic measurement and control systems. Laboratory problems include temperature, force, moisture content, strain, and fluid flow measurements involving physical and biological systems. Ps 2 and Ms 28. *Rec 2, Lab 2, Cr 3.* MR. ROWE

165. Soil and Water Engineering—Study of rainfall and runoff, flood control, land clearing techniques, and water resources engineering. Design of erosion control structures, small earth dams and farm reservoirs, drainage and irrigation systems. Prerequisite: Ce 5, and Ce 26 or Me 59. *Rec 3, Lab 3, Cr 4.* MR. KLINGE

167. Agricultural Power—Tractor power units, construction, operating principles, testing and rating; vehicle mechanics as applied to tractors and other cross country vehicles; farm electrification; new energy sources and applications for agriculture. Prerequisite: Me 33. *Rec 2, Lab 3, Cr 3.* MR. SMITH

169. Agricultural Process Engineering—Unit operations and their applications as related to agricultural processing and processing equipment. Prerequisite: Me 33 and 59 or Ce 26 (may be taken concurrently). *Rec 2, Lab 3, Cr 3.* MR. RHOADS

380. Graduate Seminar—*Rec 1, Cr 1.* STAFF

383/384. Problems in Agricultural Engineering—*Cr Ar.* STAFF

399. Graduate Thesis—*Cr Ar.* STAFF

ANIMAL PATHOLOGY (AnP)

PROFESSORS WITTER, CHUTE; ASSOCIATE PROFESSORS PAYNE,
O'MEARA, GERSHMAN

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 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.

135. Anatomy of Domestic Animals—Comparative anatomy of domestic mammals and birds emphasizing gross and histological features of the parts in-

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volved in major physiological processes, meat uses and diseases. *Rec 2, Lab 2, Cr 3.*
MR. WITTER, MR. CHUTE, MR. PAYNE

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. Prerequisite: AnP 135 or equivalent. *Rec 3, Cr 3.*
MR. PAYNE

137. *Animal Diseases*—Principles of herd health programs. The pathology, control, and prevention of important diseases and parasites of domestic animals. Juniors and seniors. Prerequisite: AnP 136 or permission. *Rec 3, Cr 3.*

MR. WITTER, MR. PAYNE

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. Prerequisite: permission of instructor. *Rec 3, Cr 3.*
MR. CHUTE

†**142. *Physiology of Reproduction***—The comparative function of the organs of reproduction in domestic animals. Special emphasis on the areas that are commonly associated with infertility and disease. Offered during spring of even years. Prerequisite: AnP 35, AnP 36 or with permission. *Rec 2, Lab 2, Cr 3.*

MR. WITTER

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. Wildlife majors. *Rec 2, Lab 2, Cr 3.*
MR. WITTER

151. 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: AnP 35, 36, Zo 51, Bc 60 or equivalent courses. *Rec 2, Lab 2, Cr 3.*

MR. CHUTE, MR. WITTER, MR. PAYNE

ANIMAL SCIENCES

PROFESSORS POULTON, BIRD, DICKEY, GERRY, LEONARD; ASSOCIATE PROFESSORS BRUGMAN, HARRIS, HOOVER; ASSISTANT PROFESSORS APGAR, BLAMBERG, COCK;
LECTURERS FOX, SAWIN

The Animal Sciences curriculum is designed to provide a broad biological training as well as a thorough understanding of the anatomy behavior, breeding, genetics, management, nutrition and physiology of large animals, poultry and laboratory animals.

Because a basic knowledge in animal sciences is fundamental to successful work in many job situations, the curriculum offers a wide choice of electives in order that students may adapt their courses of study to meet 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 and poultry industries, careers as laboratory animal technicians, or developing animal production enterprises such as dairy, poultry, or livestock farming.

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Superior students should consider continuing their studies at the graduate level. The Department of Animal Sciences offers the master of science degree in animal science for a program of study in animal nutrition, animal physiology, or animal breeding. The doctor of philosophy degree may be earned in animal nutrition.

Curriculum for the B.S. Degree in Animal Sciences

		Credit Hours	Minimum Degree Hours Required
A. ORIENTATION			0
B. BASIC SCIENCES			30
	Ch 1-2 General Chemistry	8	
	Zo 3-4 Animal Biology	8	
		Mathematics	4
	At least 10 additional hours of basic science credits should be elected from the following:		
	Bc 1-2 Organic and Biochemistry	8	
	AnP 135-136 Anatomy and Physiology	6 or 8	
	or		
	Zo 133, Zo 177 Anatomy and Physiology		
	By 21 or By 27 Bacteriology	3 or 5	
	Ps 1a-2a General Physics	8	
C. ANIMAL SCIENCES			28
	An 5 Animal Science	3	
	An 155 and An 156 Nutrition	6	
	An 160 Animal Genetics and Breeding	3	
	An 182 or An 170		
	or An 172 Advanced Physiology	3 or 4	
	Electives in Animal Science	12 or 13	
D. AGRICULTURAL AND LIFE SCIENCES			12
	The student may elect 12 hours in the agricultural and life sciences. At least one course should be selected from each of four subject-matter areas offered in the college.		
E. COMMUNICATION			8
	Eh 1 Freshman Composition	3	
	Eh 5 Technical Composition	2	
	Sh 1 Fundamentals of Public Speaking	2	
F. HUMANITIES AND SOCIAL SCIENCES			15
	Minimum of 2 semester courses in each humanities and social sciences.		
G. FREE ELECTIVES			27
	Any course in the University for which the student is qualified.		
Minimum Degree Hours for Graduation			120

Courses in Animal Sciences (An)

5. Animal Science—Fundamental principles of the animal sciences, including animal genetics, breeding systems, the physiology of reproduction, animal nutrition and the physiology of lactation. *Rec 3, Cr 3.*

MR. POULTON, MR. COCK

6. Dairy Technology—Studies in the composition and properties of milk and milk products, and common dairy processes such as pasteurization, homogenization and quality control methods. Testing dairy products for fat, solids, adulteration and acidity. *Rec 2, Lab 2, Cr 3.*

MR. COCK

19. Livestock and Poultry Feeding—A course designed to acquaint the student with the nutritional value of various feedstuffs, the dietary requirements of animals and poultry, and the ingredients used to fulfill the requirements. *Rec 3, Cr 3.*

MR. LEONARD, MR. GERRY

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46. Dairy Cattle Technology—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. Field trip fee \$4. Prerequisite: An 5. *Rec 2, Lab 2, Cr 3.* MR. LEONARD

48. Livestock Management—The selection, breeding, feeding, care and management of beef cattle, sheep, and swine. Prerequisite: An 5. *Rec 3, Lab 2, Cr 4.* MR. BRUGMAN

65. Meat Technology—The basic science of meat and meat processing, packing house methods and cutting of meat. *Rec 2, Lab 2, Cr 3.* MR. BRUGMAN, MR. GERRY

85. Poultry Technology—The science of the biology, breeding, feeding, incubation, and diseases of the domestic fowl, and the housing, management, and business practices of the table egg, hatching egg, and broiler industries. Field trip fee \$5. *Rec 2, Lab 2, Cr 3.* MR. HARRIS

153. 154. Problems in Dairy Science—Prerequisite: permission. *Cr Ar.* STAFF

155. Animal Nutrition—Principles of nutrition, methods of experimentation and discussion of nutritional balances. Prerequisite: Zo 4, Ch 2. *Cr 3.* MR. DICKEY

156. Applied Animal Nutrition—A study of the nutrient requirements of livestock and avian species. The nutritive value and characteristics of feedstuffs are studied as well as methods of formulating balanced nutrient intakes. Prerequisite: An 155. *Rec 2, Lab 2, Cr 3.* MR. HOOVER, MR. GERRY

157. 158. Problems in the Animal Sciences—Special study of research problems within the animal science field. *Cr Ar.* STAFF

160. Animal Genetics and Breeding—The principles of genetics. The transmission and expression of hereditary factors in animal breeding. Prerequisite: Zo 4. *Rec 3, Cr 3.* MR. DICKEY

161. Advanced Animal Breeding—The inheritance of the commercially valuable characteristics of animals. Mating systems and their effects. Progeny testing, selection indices and other methods to increase intensity and accuracy of selection. Prerequisite: An 160 or equivalent. *Rec 3, Cr 3.* MR. DICKEY

163. 164. Seminar—Preparation and presentation of papers dealing with research in the animal sciences. *Cr 1.* MR. POULTON AND STAFF

170. Physiology of Lactation—A detailed study of the anatomy, development and function of the mammary gland. The biochemistry and physiology of milk secretion and udder evacuation. Prerequisite: Zo 4, Bc 2. *Cr 3.* MR. APGAR

172. Endocrinology—A detailed study of the animal endocrine system and functional relationships of each of the endocrine glands to growth, reproduction and lactation. Prerequisite: Zo 4, AnP 136. *Rec 3, Lab 2, Cr 4.* MR. POULTON

175. Behavior of Domestic Animals—A survey of factors encompassing the fundamentals of behavior in domestic animals, including interrelationships of behavior and domestication. Special attention is given to social, mating, and feeding behavior of several mammalian and avian species. Prerequisite: Zo 3. *Rec 3, Lab 2, Cr 4.* MR. APGAR

182. Avian Physiology—Anatomy and physiology of the fowl with emphasis on the physiology of reproduction; special attention will be given to the

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current literature. Prerequisite: AnP 136 or permission of the instructor. *Rec 2, Lab 2, Cr 3.* MR. HARRIS

186. Bioassay—A study of various bioassay techniques and associated problems illustrated by laboratory exercises. Prerequisite: permission of instructor. *Rec 1, Lab 4, Cr 3.* MR. BIRD

212. Advanced Ruminant Nutrition—The nutrition of ruminants as contrasted to non-ruminants; with special emphasis on rumen physiology, nutrient absorption and the role of rumen microorganisms in feed utilization. Prerequisite: An 155. *Rec 2, Lab 2, Cr 4.* MR. HOOVER

214. Energy Metabolism—Principles of direct and indirect calorimetry and the application of these principles to research methods. Prerequisite: An 155, 212. *Rec 2, Lab 2, Cr 3.* MR. COCK

218. Population Genetics—Application of genetic and biometric principles to the characteristics of populations. Prerequisite: An 161. *Rec 3, Cr 3.* MR. DICKEY

220. Gastrointestinal Physiology—A study of the anatomy and physiology of the gastrointestinal tract and the accessory organs of digestion in monogastric animals. Prerequisite: permission of instructor. *Cr 3.* MR. BIRD

310. Research Methods in Animal Science—A comprehensive study of statistical techniques applied to animal research. Includes principles of setting up experiments, analysis and interpretation of data and methods of reporting results. Prerequisite: Ms 167 or permission of instructor. MR. APGAR

316. Advanced Animal Nutrition—Studies in the metabolism and interrelationships of proteins, fats, carbohydrates, minerals and vitamins as they pertain to monogastric findings in this area. Prerequisite: An 155. *Cr 3.* MR. BLAMBERG

363. 364. Graduate Seminar in Animal Science—*Cr 1.*

MR. POULTON AND STAFF

390. Graduate Research in Animal Science—*Cr Ar.*

STAFF

399. Graduate Thesis—*Cr Ar.*

STAFF

POULTRY SCIENCE

Students desiring training in poultry science will major in animal sciences and will select courses with the sequence described on page 201. Students interested in this specialty will receive training in nutrition, physiology, and genetics and will have ample opportunity to select elective courses to prepare for a wide variety of career opportunities.

BACTERIOLOGY

PROFESSORS PRATT AND WHITEHILL; ASSOCIATE PROFESSORS BAIN, BUCK;
LECTURER WAYMOUTH

The Bacteriology curriculum is designed to give students a thorough knowledge of biological principles while providing skills needed to study microorganisms and tissue culture.

Students with interests in bacteriology are prepared for a wide variety of positions in industry, government, and public health laboratories. With proper selection of electives a student can satisfy requirements to all medical and dental schools.

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Students who are well qualified and interested are encouraged to pursue graduate work for further specialization. The Department of Bacteriology offers a master of science degree; a doctor of philosophy degree can be earned in the plant science field.

Requirements for a B.S. degree are satisfactory completion of at least 120 degree hours at an accumulated grade-point average of not less than 1.80 in a course of study that conforms to the following curriculum:

Curriculum Leading to a Bachelor of Science Degree in Bacteriology

Freshman Year. See Page 201.

Sophomore Year

FALL SEMESTER						SPRING SEMESTER					
Subject			Hours			Subject			Hours		
			Rec	Lab	Cr				Rec	Lab	Cr
By	127	General Bacteriology	3	0	3	By	136	Determinative Bact.	2	4	4
By	128	General Bacteriology				Ch	140	Quant. Analysis	2	6	4
		Lab	0	4	2	Ch	152	Organic Chemistry	3	0	3
Ch	151	Organic Chemistry	3	0	3	Ch	162	Organic Chemistry Lab	0	4	2
Ch	161	Organic Chemistry	0	4	2			Elective			2
Sh	1	Public Speaking	2	0	2						
		Elective			3						

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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

46. Clinical Bacteriology—A course designed for individuals engaged in clinical bacteriology. Techniques for the isolation and identification of bacterial pathogens of significance to man and animals utilizing morphological, biochemical, serological and phage typing procedures. Where possible clinical specimens will be used. CED offering only. Prerequisite: Permission of instructor. *Rec 2, Lab 2, Cr 3.*

127. General Bacteriology—A study of microorganisms with emphasis on their phylogenetic relationships to other forms of life. The physiological reactions associated with the metabolic activities of the single cells are discussed. Certain beneficial and harmful activities of microorganisms are presented and how these activities affect man. Prerequisites: Ch 2. *Rec 2, Cr 3.* MR. BUCK

128. Laboratory for General Bacteriology—A laboratory study of microorganisms to teach the basic procedures for staining, isolation and study of microscopic forms. Specific experiments are presented pertaining to the ability of microorganisms to grow in various substrates and the end-products of metabolism are studied. The applied phases of water, food, milk and sewage microbiology also are presented. Prerequisite By 127. *Lab 4, Cr 2.* MR. BUCK AND MR. WHITEHILL

30. Fundamentals of Public Health—General consideration of the relationship between the health of the individual and environment. Prerequisite: By 21 or 127. *Lab 4, Cr 4.* MR. WHITEHILL

136. Determinative Bacteriology—A study of morphological, cultural and physiological characteristics of important bacterial groups with special emphasis placed on isolation and classification of organisms in our environment. Prerequisite: By 128. *Rec 2, Lab 4, Cr 4.* MR. BAIN

152. Pathogenic Bacteriology and Serology—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: By 128. *Rec 2, Lab 4, Cr 4.* MR. BUCK AND MR. WHITEHILL

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: By 128, Ch 152. *Rec 2, Lab 2, Cr 4.* MR. BAIN

176. Virology and Tissue Culture—An introductory course in the study of viruses, emphasizing their nature, methods of cultivation, mode of transmission, and classification. Prerequisite: By 152 or taken in conjunction. *Rec 2, Lab 4, Cr 4.* MR. BUCK

187. 188. Seminar—Preparation and presentation of papers dealing with current research and development in the field of bacteriology. *Cr 1.* STAFF

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

399. Graduate Thesis—*Cr Ar.* MR. BAIN, MR. BUCK, MR. WHITEHILL

BIOCHEMISTRY

PROFESSOR RADKE; ASSOCIATE PROFESSORS DEHAAS, SMITH; ASSISTANT PROFESSOR WRATTEN; LECTURER HANCOCK

Biochemistry deals with the study of (1) the nature of the chemical constituents of living matter and of chemical substances produced by living things, (2) the functions and transformations of these chemical entities in biological systems, and (3) the chemical and energetic changes associated with these transformations in the course of activity of living matter. The ultimate good of biochemistry is to describe the phenomena that distinguish the "living" from the "non-living" in the language of chemistry and physics.

The biochemist does research and development in pharmaceutical houses, medical schools and research centers on all aspects of human health. He studies all phases of foods and nutrition, including such areas as composition, utilization, preservation, additives, and contaminants.

There are many opportunities for the B.S. biochemist, and many more for those who continue for graduate degrees. The prescribed program in this catalog is a good preparation for both stopping points. A foreign language, or even two, is recommended for those definitely planning graduate study.

Courses of study can be developed to fulfill admission requirements for medical and dental schools. At least 120 degree hours at an accumulative grade-point average of 1.80 are required for graduation.

Curriculum Leading to a Bachelor of Science Degree in Biochemistry

Freshman Year. See Page 201.

Sophomore Year

FALL SEMESTER						SPRING SEMESTER					
Subject			Hours			Subject			Hours		
			Rec	Lab	Cr				Rec	Lab	Cr
Ch	151	Organic Chemistry	3	0	3	Ch	140	Quant. Analysis	2	6	4
Ch	161	Organic Chem. Lab.	0	4	2	Ch	152	Organic Chemistry	3	0	3
Ms	27	Calculus	4	0	4	Ch	162	Org. Chem. Lab.	0	4	2
		Elective			6	Sh	1	Public Speaking	2	0	2
								Elective			4
					15						15

Junior Year

				Rec	Lab	Cr					Rec	Lab	Cr
Bc	161	Physiol.	Chemistry	3	3	4	Bc	162	Adv. Biochem.		3	0	3
By	127	General	Bacteriology	3	0	3	Bc	164	Biochem. Lab. Meth.		0	8	4
By	128	General	Bacteriology	0	4	2	Ps	2	General Physics		4	2	5
Ps	1	General	Physics	4	2	5			Elective				3
		Elective				1							
				<hr/>							<hr/>		
				15							15		

Senior Year

				Rec	Lab	Cr					Rec	Lab	Cr
Be 171	Seminar			1	0	1	Bc 158	Physical	Biochem.		3	3	4
Bc 191	Biochem. Research			0	6	3	Bc 172	Seminar			1	0	1
	Elective					11	Bc 192	Biochem. Research			0	6	3
								Elective					7
						15							15

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Courses in Biochemistry (Bc)

1. Organic Chemistry—Hydrocarbons, alcohols, acids ketones, aldehydes, esters, amines, and amides. Prerequisite Ch 1 and 2. *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, hormones. Prerequisite: Bc 1. *Rec 3, Lab 2, Cr 4.*

MR. RADKE

5. Chemistry for Nurses (3-year)—An introduction to the principles of inorganic, organic and biochemistry as needed for the three-year nursing curriculum. *Rec 2, Lab 2, Cr 3.*

MISS SMITH

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. DEHAAS

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. DEHAAS

158. Physical Biochemistry—A study of the fundamental laws, theories, and concepts of physical chemistry as they apply to biochemical problems. Prerequisite: Ch 140 and 152, Ps 2 or equivalent, Ms 12 or equivalent. *Rec 3, Lab 3, Cr 4.*

MR. DEHAAS

161. Physiological Chemistry—The physiological utilization of the carbohydrates, fats, and proteins and the role of enzymes, hormones, and vitamins. Prerequisite: Ch 151 and 152. *Rec 3, Lab 3, Cr 4.*

STAFF

162. Advanced Biochemistry—Enzyme kinetics, metabolism, energy relationships, porphyrins, nucleic acids and other topics. Prerequisite: Bc 161. *Rec 3.*

MR. WRATTEN

164. Biochemical Laboratory Methods—Chromatography, electrophoresis, tracer techniques, manometry, and other procedures employed in biological research. Prerequisite: Bc 161 or instructor's permission. *Lab 8, Cr 4.*

MISS SMITH AND MR. WRATTEN

171. 172. Seminar—Preparation and presentation of papers dealing with current research in the field of biochemistry. *Cr 1.*

STAFF

191. 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: Bc 162 or permission. *Rec 3, Cr 3.*

MR. DEHAAS AND MRS. SMITH

†**225. Proteins and Enzymes**—A comprehensive study of the structure and properties of proteins with special emphasis on their catalytic activity. Prerequisite: Bc 162 or permission. *Rec 3, Cr 3.*

MR. RADKE AND MR. WRATTEN

†**231. Vitamins and Hormones**—The chemistry and biological activity of the regulators of living systems. Prerequisite: Bc 162 or permission. *Rec 3, Cr 3.*

MR. DEHAAS

†**Bc 234. Plant Biochemistry**—The biochemistry of photosynthesis, respiration and other metabolic processes in plants including growth regulators and essential elements. Prerequisite: Bc 162 or permission. *Rec 3, Cr 3.*

MISS SMITH

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399. Graduate Thesis—Cr Ar.

MR. DEHAAS, MR. RADKE, MISS SMITH, MR. WRATTEN

BIOLOGY

The Biology curriculum is designed to permit a student to gain a broad background in all of the natural sciences. He will at the same time receive some training in chemistry, physics and mathematics. In addition, the unusual extent of elective opportunities in this curriculum permits students to exercise considerable freedom in choosing courses. This enables capable students to transfer at a later date into any one of the specialized fields of biology.

Students preparing to teach high school biology will find this program appropriate. So will persons preparing for careers in medicine, marine biology, or for work with U.S. fisheries. This curriculum is equally appropriate for students wishing to have a broad basic training in the sciences related to biology and expecting to go on to graduate school for more specialized training leading to careers in college teaching, research at the university level, in government or in biology based industries.

The curriculum in Biology is an interdepartmental offering in the College of Life Sciences and Agriculture administered by a committee representing the Departments of Bacteriology, Biochemistry, Botany and Entomology.

Curriculum Leading to the B.S. Degree in Biology

Freshman Year. See Page 190.

		Credit Hours	Minimum Required
A. BIOLOGICAL AND PHYSICAL SCIENCES			
1. Required			52
Ch 1-2	General Chemistry	8	
Ms 1,3,12	Trigonometry, College Algebra	8	
Ps 1a-2a	General Physics	8	
Bt 1-2	General Botany	8	
Zo 3-4	Animal Biology	8	
En 26	General Entomology	4	
By 127	General Bacteriology	3	
By 128	Gen. Bacteriology Lab.	2	
Zo 162	Genetics	3	
2. Electives			20
Bc 1-2	Organic and Biochemistry or	8 (10)	
Ch 151-152	Organic Chemistry Lec.		
Ch 161-162	Organic Chemistry Lab.		
By 136, Bt 154 En 140, Bt 159 Zo 132, Zo 139, Zo 160	} Taxonomy	4 (3)	
Bc 161, Bt 153 By 153, Zo 177			
Bt 135, En 151 Zo 133	} Anatomy	4	

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B. COMMUNICATIONS		8
Eh 1	Freshman Composition	3
Eh 5, 7, 8, or 19	Composition	2 (3)
Sh 1, Sh 31	Speech	
or		2 (3)
Senior Seminar		
C. HUMANITIES AND SOCIAL SCIENCES		15
minimum of 2 courses		
in each—humanities and social sciences		
D. FRESHMAN ORIENTATION		0
E. PHYSICAL EDUCATION (2 semesters)		0
F. FREE ELECTIVES*		25
Minimum Degree Hours for Graduation		120

* Recommended is a course in Ecology—Bt 130, En 143 or Fy 19.

BOTANY AND PLANT PATHOLOGY

PROFESSORS CAMPANA, COOPER, RICHARDS; ASSISTANT PROFESSORS MCINTYRE, NEUBAUER, HOMOLA, VADAS

The Botany curriculum leading to a bachelor of science degree 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. Botany majors successfully completing the undergraduate requirements herein stated will be well qualified to enter graduate programs in botany and other biological disciplines at this and other institutions for advanced study.

Curriculum for Botany Majors

Required Courses		Credit Hours	Minimum Degree Hours Required
A. BOTANY			27
Bt 1	General Botany	4	
Bt 2	Plant Kingdom	4	
Bt 135	Plant Anatomy	4	
Bt 153	Plant Physiology	4	
Bt 154	Taxonomy of Vascular Plants	4	
	Electives	7	
B. OTHER BIOLOGICAL SCIENCES			8
By 127, 128	General Bacteriology	5	
Zo 162	Principles of Genetics	3	
or Bt 145			
C. PHYSICAL SCIENCES			20
Ch 1-2	General Chemistry	8	
Ch 151	Organic Chemistry Lec.	3	
Ch 161	Organic Chemistry Lab.	2	
or Bc 1	Organic Chemistry	(4)	
Ps 1a, 2a	General Physics	8	
D. MATHEMATICS			8
Ms 1	Trigonometry	2	
Ms 3	College Algebra	2	
Ms 12	Analytic Geometry & Calculus	4	
E. COMMUNICATIONS			11
Eh 1	Freshman Composition	3	
Eh 7	Second-year Composition	3	
Eh 8	Second-year Composition	3	
Bt 161, 162	Seminar	2	

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F. HUMANITIES AND SOCIAL SCIENCES		15
Not less than two semester courses in each—humanities and social sciences; recommend not less than 8 hours in one of the following foreign languages: French, German, or Russian, which may meet the humanity requirement.		
G. FRESHMAN ORIENTATION		0
H. PHYSICAL EDUCATION		0
I. ELECTIVES	28	31
Minimum Degree Hours Required for Graduation		120

Courses in Botany (Bt)

1. General Botany—An introduction to the structure, function, and reduction of seed plants. Open to students of all colleges. *Rec 3, Lab 2, Cr 4.* STAFF

2. The Plant Kingdom—The morphology, reproduction, ecology and phylogenetic significance of the major classes of the plant kingdom. Open to students of all colleges. Prerequisite: Bt 1. *Rec 2, Lab 4, Cr 4.* MR. RICHARDS

33. Dendrology—Classroom and field work on identification and classification of trees and native shrubs of North America. Prerequisite: Bt 1. *Lec 2, Rec 1, Lab 2, Cr 4.* MR. RICHARDS

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

110* The Plant World—A course in botany designed for teachers instructing at the elementary and secondary school levels. The role of plants in the economy of man; basic study of plants including origin, classification, structure and development, function, modification, environment and distribution. Laboratory work in plant collection, identification and preservation. Techniques in methods of preparation of material for study, exhibits and displays. Additional requirements will be stipulated for graduate credit. *Rec 3, Cr 3.* STAFF

115.* Our Common Trees and Shrubs—A field course designed primarily to familiarize elementary and secondary school teachers with our native woody plants. Emphasis is placed on identification, classification and economic importance. Labelled collections will be made by students and kept as reference material. Additional requirements will be stipulated for graduate credit. *Rec 3, Cr 3.* STAFF

120.* Structure of Plants Used by Man—A course designed to familiarize elementary and secondary school teachers with the structure of our common economic plants. Emphasis will be placed on the specific part of the plant used (i.e., stem, root, leaf, fruit, seed) and the nature of the tissues, cells or cell contents useful to man. Enrollment will be limited to 24. Prerequisite: Bt 1 or the basic general botany course required in any college or university of approved standing. Additional requirements will be stipulated for graduate credit. *Rec 3, Cr 3.* STAFF

124. Local Flora—Identification and classification of the common herbaceous flowering plants and ferns of Maine. Field trips will be taken to collect and study plants in various habitats. Additional requirements will be stipulated for graduate credit. *Rec 3, Cr 3.* MR. RICHARDS

125.* Non-Vascular Plants of Maine—Identification and classification of common algae, fungi, lichens and mosses of Maine. Field trips will be taken to

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collect and study plants in various habitats. Additional requirements will be stipulated for graduate credit. *Rec 3, Cr 3.* MR. RICHARDS

130. Plant Ecology—Principles of autecology, synecology, and vegetative analysis. Major emphasis on population biology and interactions at the population, community, and ecosystem level. Prerequisite: one year of biology or permission. *Rec 2, Lab 2, Cr 3.* MR. VADAS

131.* Plants and Environment—The dynamic aspects of the environmental relationships of plants. *Rec 3, Cr 3.* MR. COOPER

132.* Life Processes in Plants—A study of the fundamental life processes involved in the growth and reproduction of flowering plants. *Rec 3, Cr 3.* MR. COOPER

135. Plant Anatomy—The origin, development, and structure of tissue systems of vegetative and reproductive organs of vascular plants. Prerequisite: Bt 1. *Rec 3, Lab 2, Cr 4.* MR. NEUBAUER

145. Genetics—Principles of genetics. Prerequisite: one year of biology. Open to juniors and seniors. *Rec 3, Cr 3.*

149.* Structure and Identification of Wood—A study in wood structure and the relation of wood anatomy to structural endurance, decay resistance, and utility. Enrollment will be limited to 24. Additional assignments, involving a detailed microscopic study of some phase of wood anatomy, will be required for graduate credit. *Rec 2, Lab 2, Cr 3.* MR. HYLAND

150. Botanical Microtechnique—Methods of killing, embedding, sectioning, and staining plant material. Methods of studying and recording microscopic preparation. Prerequisite: Bt 135 and permission. *Rec 2, Lab 4, Cr 4.* MR. NEUBAUER

151. Plant Biology—A field course in botany designed to be of value in both elementary and secondary schools. The classwork will be given primarily in the field. All the major groups of plants will be covered with special attention to their type of habitat and plant relations. Student projects for use in their own classrooms will be encouraged. *Rec 3, Cr 3.* MR. COOPER

153. Plant Physiology—Classroom and laboratory work on the physiology of plants. Prerequisite: Bt 1 and one year of chemistry. *Rec 2, Lab 4, Cr 4.* MR. COOPER

153. Plant Physiology (Forestry)—Classroom and laboratory work on the physiology of plants. Prerequisite: Bt 1 and one year of chemistry. *Lec 2, Rec 1, Lab 2, Cr 4.* MR. COOPER

154. Taxonomy of Vascular Plants—Identification and classification of flowering plants. Prerequisite: Bt 1. *Rec 2, Lab 4, Cr 4.* MR. RICHARDS

156. Plant Pathology—Principles of plant disease. Open to juniors and seniors. Prerequisite: Bt 1. *Rec 2, Lab 4, Cr 4.* MR. CAMPANA, MR. MCINTYRE

156. Plant Pathology (Forestry)—Principles of plant disease. Open to juniors and seniors. Prerequisite: Bt 1. *Lec 2, Rec 1, Lab 2, Cr 4.* MR. CAMPANA

†**159. General Mycology**—Comparative morphology, classification and identification of fungi, plus investigation of unusual hereditary and physiological characteristics. Prerequisite: Bt 1. *Rec 2, Lab 4, Cr 4.* MR. HOMOLA

161. 162. Seminar—Literature reviews. Techniques, procedures and results in botanical research. *Rec 1, Cr 1.* STAFF

163. Introductory Phycology—Morphology, identification, and classification of algae with minor emphasis on culturing, sexuality, physiology, and ecology.

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Prerequisite: Bt 1 and 2, one year of chemistry or permission. *Lec 2, Rec 1, Lab 2, Cr 4.* MR. VADAS

256. Advanced Plant Pathology—Advanced study of plant disease with emphasis on the physiology of parasitism and microbial interaction. Prerequisite: Bt 53 and Bt 56. *Rec 2, Lab 4, Cr 4.* MR. MCINTYRE, MR. CAMPANA

258. Advanced Plant Physiology—Advanced study of the physiology of plants, including photosynthesis, mineral nutrition, growth regulators, water relations, and respiration. Prerequisite: Bt 153. *Rec 2, Lab 4, Cr 4.* MR. COOPER

‡260. Comparative Morphology of Vascular Plants—Basic concepts on the origin and development of vascular plants, their morphology, anatomy, homologies and interrelationships. Prerequisite: Bt 135 or equivalent and permission. *Rec 2, Lab 4, Cr 4.* MR. NEUBAUER

‡262. Plant Geography—The distribution of plants on the earth with emphasis on the causes of distributional phenomena. Field trips will be arranged. Prerequisite: Bt 154. *Rec 3, Cr 3.* MR. RICHARDS

301. Research Methods in Plant Science—Laboratory, greenhouse, and field techniques involved in botanical research. Prerequisite: Bt 153 or Bt 156 and permission of instructor. *Cr Ar.* STAFF

307. 308. Problems in Botany—*Cr Ar.* STAFF

399. Graduate Thesis—*Cr Ar.* STAFF

* Permission of instructor required; offered through CED.

ENTOMOLOGY

PROFESSORS SIMPSON, BOULANGER, DIMOND; ASSOCIATE PROFESSOR OSGOOD;
ASSISTANT PROFESSOR STORCH

The Entomology curriculum is designed to provide training for various positions in government and industry or to lay a firm basis for further training at the graduate level, leading to teaching or extension positions in colleges or to research positions in experiment stations or in industry.

Students with sufficient background and interest will be encouraged to enter graduate school for further specialization. Such students are encouraged to elect foreign languages as undergraduates.

The Department of Entomology offers a master of science degree. A doctor of philosophy degree may be taken in the plant science field or through the Department of Zoology.

Curriculum Leading to a Bachelor of Science Degree in Entomology

Freshman Year. See Page 190.

Sophomore Year

FALL SEMESTER						SPRING SEMESTER					
Subject			Hours			Subject			Hours		
			Rec	Lab	Cr				Rec	Lab	Cr
Bc	1	Organic Chemistry	3	2	4	Bc	2	Biochemistry	3	2	4
		or						or			
Ch	31	Qual. Anal.	2	6		Ch	140	Quant. Analysis	2	6	
		Inorgan. Chem.				Bt	154	Taxonomy of Vasc.			
Bt	1	General Botany	2	4	4			Plants	2	4	4
En	26	Introd. Entomology	2	4	4	En	140	El. Tax. of Insects	2	4	4
		Elective			3			Elective			3
					<hr/>						<hr/>
					15						15

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Junior Year

En 153	Adv. Taxon. of Insects	2	4	4	Sh 1	Public Seaking	2	0	2
Ps 1a	General Physics	2	4	4	Ps 2a	General Physics	2	4	4
Zo 153	Invertebrate Zoology	2	4	4	Zo 158	Parasitology	2	4	4
	Elective		3		Zo 162	Genetics	3	0	3
						Elective			2
									<hr/>
									15

Senior Year

By 127	General Bacteriology	3	0	3	Bt 156	Plant Pathology	2	4	4
By 128	Gen. Bacteriology Lab	0	4	2	En 162	Seminar	1	0	1
En 149	Economic Entom.	2	2	3		Elective			10
En 161	Seminar	1	0	1					
	Elective			6					
									<hr/>
									15

Minimum credit hours required for graduation

120

Courses in Entomology (En)

26. Introductory Entomology—Fundamental principles of insect life and the relations of insects to plants, animals, and man. A study of structure, metamorphosis, ecology, and classification. An insect collection is required in the spring semester. Students may wish to start their collections before taking the course. Prerequisite: Bt 1 or Zo 3. *Rec 2, Lab 4, Cr 4.* MR. STORCH

26a. Introductory Entomology for Foresters—Principles of insect life, with emphasis in lectures on technical aspects of interest to professional foresters. Laboratories are identical with and combined with En 26. Offered in the spring semester only. Prerequisite: Bt 1 or Zo 3. *Rec 2, Lab 4, Cr 4.* MR. OSGOOD

47. 48. Problems in Entomology—Open to juniors and seniors in any college who have special interest and qualifications in entomology. The approval of the head of the department is required. *Cr Ar.* STAFF

61. 62. Seminar—A study of the literature and techniques of entomology. *Rec 1, Cr 1.* STAFF

140. Elementary Taxonomy of Insects—Study of insects with emphasis on classification of lower orders and the Coleoptera. Methods of collecting, and identification. Prerequisite: En 26. *Rec 2, Lab 4, Cr 4.* MR. OSGOOD

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: En 26. *Rec 2, Lab 2, Cr 3.* MR. OSGOOD

‡149. Economic Entomology—Introduction to the basic principles involved in applied control of insects other than those found in the forest environment. Emphasis on factors comprising biological, cultural, and chemical control methods and their ecological implications. Survey of legislation bearing on applied entomology. Prerequisite: En 26. *Rec 2, Lab 2, Cr 3.* MR. BOULANGER

‡151. Morphology of Insects—External and internal anatomy of insects. Laboratory includes gross dissections of internal organs of representative insects. Prerequisite: En 26. *Rec 2, Lab 4, Cr 4.* MR. STORCH

‡153. Advanced Taxonomy of Insects—Study of wing venation; classification of Diptera, Lepidoptera and Hymenoptera. Prerequisite: En 26. *Rec 2, Lab 4, Cr 4.* MR. OSGOOD

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205. 206. Problems in Entomology—Cr Ar.

STAFF

†**210. Taxonomy of Immature Insects**—General morphology of immature insects. Identification of larvae in the orders Coleoptera, Lepidoptera, Diptera, and Hymenoptera. Prerequisite: En 151 and 153 or permission. *Rec 1, Lab 4, Cr 3.*

MR. BOULANGER

211. Insect Ecology—A study of factors governing distribution and abundance of insect populations in nature. Life-table approach to ecological studies using insects as examples. Outside readings. Prerequisite: En 151 and 153 or permission. *Rec 1, Lab 2, Cr 2.*

MR. DIMOND

213. Entomological Literature and Rules of Nomenclature—Use of indices to the entomological literature and the major research journals. Each student will be required to prepare a hypothetical revision or monograph of a genus or some other small group of insects. Prerequisite: En 151 and 153. *Rec 1, Cr 1.*

STAFF

312. Biological Control of Insects—Reading of significant original contributions. May be repeated with permission by covering different areas, e.g., viruses, fungi, parasites and predators, radiation sterility, etc. Prerequisite: En 149. *Rec 1, Cr 1.*

MR. SIMPSON

314. Physiology and Behavior of Insects—Assigned readings from text and from current research publications. Classroom demonstrations and individual laboratory problems illustrating phases of insect physiology or behavior. Prerequisite: En 151 and Bc 2. *Rec 2, Lab 2, Cr 3.*

STAFF

315. Insect Toxicology—Lectures and reading assignments. Fundamentals of insect toxicology, recent advances in the field, nature, and mechanism of insect resistance to insecticides. Laboratory problems to be arranged. Prerequisite: En 151 and Bc 1 or Bc 2. *Rec 2, Lab 2, Cr 3.*

STAFF

399. Graduate Thesis—Cr Ar.

MR. SIMPSON

FOOD SCIENCE

PROFESSOR HIGHLANDS AND ASSOCIATE PROFESSOR HOGAN

101. Food Processing Industry Principles and Problems—Scope of the food manufacturing industry, processing principles and practices discussed in relation to product quality and problems involved. *Rec 3, Cr 3.*

MR. HIGHLANDS, MR. HOGAN

281. 282. Problems in Food Science—Enrollment by permission. *Cr Ar.*

MR. HIGHLANDS AND STAFF

THE SCHOOL OF FORESTRY

DIRECTOR NUTTING; ASSISTANT DIRECTOR CORCORAN; PROFESSORS BAKER, COULTER, MENDALL, YOUNG; ASSOCIATE PROFESSORS BEYER, GRIFFIN, PLUMMER, RANDALL, SCHEMNITZ, SHOTTAFFER; ASSISTANT PROFESSORS BEHREND, HALE, SCHOMAKER; INSTRUCTOR ROBBINS

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.

COLLEGE OF LIFE SCIENCES AND AGRICULTURE

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 (hour) or alternatives as required in the sequence selected; (3) an accumulative average of not less than 1.80.

FORESTRY

The sequence in Forestry offers 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 industry 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 1,750 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 management of Indian Township in eastern Maine. This tract of 17,000 acres is close to the location of Camp Robert I. Ashman where the summer camp courses required of forestry and wildlife majors are given. A large variety of wood-producing wood-using firms are located near the school and the summer camp area.

Field or work experience is essential to foresters. Students are urged to obtain summer woods or other appropriate 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, eight weeks at camp near Princeton, Maine (Indian Township), is required. Possible alternatives to these requirements are available to students in the Wood Science and Technology program.

Students are accepted for graduate work in the fields of forest economics, management, recreation, silviculture, utilization, and wood science and technology 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, game habitat management, and, with high grades, for graduate work. The science sequence is designed for students with high grades who are most interested in biology 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 near Princeton.

Field experience is important to wildlife managers. Students are urged to obtain summer field employment.

Seniors and graduates are eligible for Civil Service examinations for positions with federal and state agencies that administer natural resources.

A graduate program in wildlife is offered by the University and a number of graduate courses are available to qualified students.

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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 conduct and promote research, student training and public education in the wildlife field. The graduate program in Wildlife Management is conducted through this unit.

SCHOOL OF FORESTRY

Curricula and Sequences

Students in forestry and wildlife have seven sequences from which to choose their program.

Forest Management	Wildlife Science
Forest Utilization	Wildlife Management
Forest Science (Tree Growing)	
Wood Science and Technology	
General Forestry	

Freshman Year

A common freshman year program is recommended for all students in the School of Forestry (See page 191). Selection of an upperclass specialization sequence is made near the end of the second semester.

Basic Core: All students are required to take the following 62 credit hours of core courses:

	Hours Required	Fresh.	Soph.	Jr.	Senior
Ch 1 & 2 Chemistry	8	8			
Bt 1 Botany	4	4			
Bt 33 Dendrology or					
Bt 154 Taxonomy	4		4		
Ps 6 Physics	5		5		
Ms 1 & 3 Math	4	4			
Zo 3 Zoology	4	4			
Eh 1 Freshman Composition	6	3			
Eh 5 Technical Composition	2			2	
Sh 1 Sreech	2		2		
Literature or Fine Arts	2		2		
History or Government	2		2		
Ec 1 & 2 Economics	6		6		
Eg 1 Engineering Graphics	2	2			
Ce 5 Surveying	3		3		
Fy 1 & 2 Introduction to Forestry	4	4			
Fy 4 & 5 Mensuration	6		6		
Fy 60 Seminar	1				1
Total	62	29	30	2	1

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Additional Required Courses

All Forestry Sequences (Except Wood Science)

	Credit Hours
En 26 Entomology	4
Fy 7 Silvics	3
Fy 8 Silviculture	3
Fy 112A Wood Technology I	2
Fy 134 Timber Management	3
Fy 144 Forest Economics	3
Spring Trip	1
Summer Camp	8
	<hr/>
	27

All Wildlife Sequences

	Credit Hours
S 3 Forest Soils	3
Bt 154 Vascular Plants	4
Fy 7 Silvics	3
Fy 19 Wildlife Ecology	2
Fv 127 & 128 Game Management	6
Zo 153 Invertebrate Zoology	4
	<hr/>
	22

Forestry Management Sequence

	Credit Hours
S 3 Forest Soils	3
Bt 153 Plant Physiology	4
Bt 156 Forest Pathology	4
Eg 12 Forestry Drawing	2
Ba 9 Accounting	3
Fy 6 Forestry Photogrammetry	3
Fv 10 Forest Planting	2
Fy 11 Forest Fire Control	2
Fy 13 Harvesting Forest Crops	2
Fy 20 Forest Administration	2
Fy 142 Forest Policy	2
Fy 143 Forest Valuation	2
Gy 6 Geology for Engineers	3
Fy 85 Silviculture Trip	1

Forest Utilization Sequence

	Credit Hours
Bt 135 Plant Anatomy	4
Eg 12 Forestry Drawing	2
Ba 9 Accounting	3
Fy 11 Forest Fire Control	2
Fy 13 Harvesting Forest Crops	2
Fy 14 Forest Products	3
Fy 15 Lumber Mfg.	2
Fy 16 Wood Identification	1
Fy 20 Forest Administration	2
Fy 142 Forest Policy	2
Fy 143 Forest Valuation	2
Fy 112 Wood Tech. I (with Lab.)	3
Fy 125 Wood Tech. II	3
Fy 135 Utilization Trip	1

Forest Science—Forest Growth Sequence

	Credit Hours
S 3 Forest Soils	3
Bt 153 Plant Physiology	4
Fy 10 Forest Planting	2
Fy 13 Harvesting Forest Crops	2
Fy 14 Forest Products	3
Fy 20 Forest Administration	3
Fy 142 Forest Policy	3
Gy 6 Geology for Engineers	3
Ms 12 Anal. Geom. & Calculus	4
Ps 1 & 2 Physics	10

Wood Science and Technology Sequence

	Credit Hours
Bt 135 Plant Anatomy	4
Bt 156 Forest Pathology	4
Fy 14 Forest Products	3
Fy 16 Wood Identification	1
M 12 & 27 Anal. Geom & Calculus	4
Ps 1 & 2 Physics	10
Fy 15 Lumber Manufacture	2
Fy 125 Wood Tech. II	3

General Forestry Sequence

	Credit Hours
Botany, Geology, Soils	6
Forestry	15

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Wildlife Management Sequence			Wildlife Science Sequence		
		Credit Hours			Hours Credit
AnP	144 Disease & Parasite Cont.	3	En	26 General Entomology	4
En	26 General Entomology	4	Zo	160 Ornithology	4
Fy	6 Photogrammetry	3	Zo	139 Mammalogy	3
Fy	134 Timber Management	3	Zo	153 Invertebrate Zoology	4
Fy	41s Summer Camp	8	Fy	7 or 8 Silvics	3
Fy	144 Forest Economics	2	Ps	1a General Physics	4
Zo	132 Ichthyology	4	Ps	2a General Physics	4
Zo	139 Mammalogy	3			
Zo	160 Ornithology	4			
Zo	171 Fish Management	4			

Courses in the School of Forestry (Fy)

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

2. Introduction to Forestry—A survey of the fields of forestry and wildlife conservation. Required of freshmen in the School of Forestry. *Rec 2, Cr 2.*

MR. BEYER AND MR. SCHEMNITZ

4. Forest Sampling Methods—Elementary statistical background and sampling procedures based on statistics in forestry and wildlife. Use of desk calculators and introduction to electronic computers. Prerequisite: Ms 1 and 3. *Rec 2, Lab 3, Cr 3.* MR. ROBBINS

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. ROBBINS

6. Forest Photogrammetry—Construction of planimetric and topographic maps by photogrammetric methods. Determination of forest types and stand composition by interpretation and measurements of air photos. *Rec 2, Lab 3, Cr 3.*

MR. ROBBINS

7. Silvics—Biological principles and environmental factors governing the natural establishment and development of forest trees and stands. Prerequisite: Bt 33. *Rec 2, Lab 3, Cr 3.* MR. GRIFFIN

8. Silviculture—Technical methods of controlling the composition, growth, quality, and regeneration of forest stands. Prerequisite: Fy 7. *Rec 2, Lab 3, Cr 3.*

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

10. Forest Planting—The planting, care, and selection of stock in nursery and field plantings. Seed collecting and processing. Mechanical planting and field techniques. One-day field trip required. *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

13. Harvesting of Forest Crops—Harvesting methods in the various regions of the United States and Canada, with special emphasis on the Northeast. Discussion of organization, costs, equipment, and trends. *Rec 2, Cr 2.*

MR. PLUMMER

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13s. Utilization Trip—One-week field trip to northern New England and adjacent Canadian provinces to visit woods operations and forest management projects. *Cr 1.*

MR. PLUMMER AND STAFF

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 characteristics. *Lab 2, Cr 1.*

MR. BAKER

17. Wood Preservation—Causes of deterioration of wood in service; preservatives, preparation of material; wood preserving process. *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. COULTER

19s. Wildlife Ecology—Field problems in forest-wildlife ecology. Recognition, measurement analysis and interpretation of problems in forest-wildlife relationships. Two weeks at camp. *Cr 2.*

MR. SCHEMNITZ

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

‡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. SCHEMNITZ

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

48. Natural Resources—The characteristics, status, utilization, and management of natural resources. The social aspects of resources management. Open to juniors and seniors. *Rec 2, Cr 2.*

MR. BEYER AND STAFF

53. Forest Recreation Management—Methods of evaluation, planning, and development of wildlands for recreation. Importance, problems, and trends. Public and private programs and policies. School of Forestry students or by permission of instructor. Two Saturday field trips required. *Rec 2, Cr 2.*

MR. BEYER AND STAFF

60. Seminar—Reviews of literature. Current problems in forestry and conservation. *Rec 1, Cr 1.*

MR. NUTTING, MR. COULTER

112. Wood Technology I—The structural and physio-chemical nature of wood and its response to environmental, physical, and chemical influences. Study of growth-material relationships and basic laboratory techniques. Prerequisites Bt 33 and 35 (may take concurrently). Without lab: *Rec 2, Cr 2*; with lab, *Rec*

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2, *Lab 2, Cr 3*. (Lab required of forest utilization majors).

MR. BAKER

125. *Wood Technology II*—Advanced wood physics and mechanics. The mechanical properties of wood and wood composites and their use in structural applications. The relationship of mechanical and physical properties to basic processing techniques. Prerequisite: *Fy 112 with lab. Rec 2, Lab 2, Cr 3*.

MR. SHOTTAFAER

126. *Analysis in Forest Utilization*—Study of processing, research and development problems and review of current methods of analysis and solution. Application of process design, systems analysis and materials technology in the investigative situation. Prerequisite: permission of instructor. *Rec 2, Lab 2, Cr 3*.

MR. SHOTTAFAER AND STAFF

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. SCHEMNITZ

128. *Game Management*—The practice of game management. Study of the biological, economic and human relations factors influencing management programs.

129. *Research Methods in Forest Utilization*—Laboratory methods of evaluating wood, wood based, and related materials. Introduction to standard evaluation techniques and concepts of evaluation design. Review of pertinent laboratory equipment and its applications. Prerequisite: *Fy 4, Fy 112, Fy 125. Rec 1, Lab 4, Cr 3*.

MR. SHOTTAFAER AND STAFF

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

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

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

144. *Forestry 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: *Ec 1 & 2. Lab 2, Cr 3*.

MR. CORCORAN

171. *Production Analysis in Forestry*—Introduction to concepts and procedures used in the evaluation of timber production and forest product manufacturing with emphasis on study organization, work measurement, job evaluation, cost control, and schematic models. Forestry seniors, graduate students, or consent of instructor. *Rec 2, Cr 2*.

MR. CORCORAN

172. *Planning and Control of Forestry Operations*—Applications of scientific methods to management decision problems of forestry operations. Emphasis on inventory control, allocation methods, replacement models, waiting-line analysis sequencing, simulation, and competitive strategies. Forestry seniors, graduate students, or consent of instructor. *Rec 2, Cr 2*.

MR. CORCORAN

200. *Forest Hydrology and Watershed Management*—The study of hydrologic cycle as it applies to forest lands and forest land management. Methods of

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water-yield control through silvicultural practices. The effect of logging and other land-use practices on water quality, erosion, and the silting of water courses. Prerequisites: Fy 7, Fy 232, or consent of instructor. *Rec 2, Cr 2.* MR. SCHOMAKER

209. Regional Silviculture—Applied silvicultural practices and results of current silvicultural research in important forest types of the United States. Prerequisite: Fy 8. *Rec 2, Cr 2.* MR. GRIFFIN

232. Forest Influences—Effects of forest vegetation upon climatic factors, soil water, stream flow, floods, erosion, and soil productivity. Prerequisite: Fy 7 and Ag 3. *Rec 2, Cr 2.* MR. GRIFFIN

247. Advanced Forest Mensuration—Advanced sampling methods and the principles of regression analysis as applied to forestry and wildlife in management and research. Applications with computers. Prerequisite: Fy 4, Ms 19 or Ag 70 and consent of instructor. *Rec 3, Cr 3.* MR. YOUNG

276. Forest Inventory and Growth—Principles and exploration in detail of approaches to inventory and growth. Field trips will be required. Forestry juniors, seniors, graduate students, and consent of instructor. Prerequisite: Fy 4 and 5. *Rec 2, Cr 2.* MR. YOUNG

301. 302. Forest Mensuration Problems—*Cr Ar.* MR. YOUNG

303. 304. Forest Management Problems—*Cr Ar.* MR. RANDALL

305. 306. Game Management Problems—*Cr Ar.* WILDLIFE STAFF

307. 308. Silviculture Problems—*Cr Ar.* MR. GRIFFIN

311. 312. Research Problems in Forest Economics—*Cr Ar.* MR. CORCORAN

313. 314. Forest Recreation Problems—*Cr Ar.* STAFF

315. 316. Problems in Wood Technology—*Cr Ar.* SHOTTAFAER

399. Graduate Thesis—*Cr Ar.* STAFF

Forestry Summer Camp

41s. Practice of Forestry—Field practice in methods and problems involved in the management of a large forest property. Timber estimating and marketing, surveying, fire control, logging, preparation of a management plan. Visits to woods operations and utilization plants. Prerequisite: Fy 5, 8. Forty-four hours a week. Forestry, eight weeks. *Cr 8*; Wildlife, seven weeks. *Cr 7.*

MR. RANDALL AND STAFF

School of Home Economics

DIRECTOR THORNBURY; PROFESSORS MILES, RICE; ASSISTANT PROFESSORS BOURQUE, CAMPBELL, JONES, SCHOMAKER, WATTS; INSTRUCTORS DALTON, HOUGHTON HUTCHINSON, YOUNG; LECTURER OLIVER

Home economics encompasses physical, social, economic, and aesthetic aspects of living in complex, technologically advancing societies. Emphasis is given to the unique combination of needs of family units at a given time for food, housing, clothing, management of resources, human development, and interpersonal relationships with training designed to prepare the student for employment or family life. This involves coordinating knowledge from fields of learning that contribute to understanding needs and helping people to use this information to solve human problems.

The undergraduate curriculum leads to a bachelor of science degree in home economics. About half of the student's program includes courses in the arts, humanities, social and biological sciences, and specialized subjects offered within the school in child development, family relationships, clothing, design, food, nutrition, home economics education, home management and housing. The other half of the student's program is designed to meet demands of preprofessional or professional employment as follows:

Food and Nutrition Programs—Dietetic intern in programs approved by the American Dietetic Association: food service administrator in commercial, industrial, publicly owned, or private food establishments; research assistant in food and nutrition; product development supervisor.

Education Programs—Teacher in childhood education in nursery and elementary schools; consultant in child development for a social service agency; teacher of home economics in public schools; teacher of youth and adults through extension activities; educational director for consumer services; family relationships specialist.

Individual sequences of courses may be developed for students from other countries and persons not attempting to qualify for any of the recognized home economics professions covered in other sequences. These sequences will consist of selected advanced home economics courses and related subjects in other divisions of the University.

A minimum of 120 semester hours is required for graduation at an accumulative grade point average of 1.80.

CURRICULUM FOR B.S. IN HOME ECONOMICS

All students are required to take the following 33 hours:

Communications

5 hours

Eh 1 —Freshman English

Sp 1 —Fundamentals of Public Speaking or

Sp 31 —Voice and Diction

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Physical Sciences 8 hours

To be selected from botany, geology, chemistry, entomology physics, bacteriology or zoology. One year of this work must be basic courses in laboratory science.

Social Sciences 12 hours

Py 1 and 2 are required and others to be selected from sociology, psychology, history, government, economics or modern society.

Humanities 8 hours

Philosophy, art, literature and music.

(Must represent two fields)

Requirements in pre-professional and professional sequences, and electives to make a total of the required 120 hours.

Additional Required Courses in Professional Sequences:

I. FOOD AND NUTRITION SEQUENCES:

(Science requirements depend on option)

Option A—Dietetic Intern*

Ba	9	Principles of Accounting	3
By	21	Intro. to Bacteriology	3
Fn	41	Intro. to Foods & Nutrition	3
Fn	42	Family Food Management	3
Fn	43	Experimental Foods	4
Fn	152	Human Nutrition	3
Fn	155	Abnormal Nutrition	3
Fn	61/62	Quantity Food & Food Service Management	6
Fn	63	Food Service Administration & Cost Control	3
Hm	93	Equipment	3
Py	111	Business & Industrial Psychology	2
Py	117	Educational Psychology	3
Zo	8	Anatomy & Physiology	4

Total 43

* Approved by American Dietetic Association and recommended for all dietitians.

Option B—Food Service Administrators

Same as Option A, except that additional courses in business, economics, food and nutrition may be substituted for Fn 155, Py 111, and Py 117.

Option C—Nutritionists, research assistants in food and nutrition and supervisors in product development

Same as Option A, except courses in chemistry, math and physics may be substituted for Fn 61, Fn 62, Fn 63, Hm 93, Ba 9, Py 111, and Py 117.

II. EDUCATION SEQUENCES:

A limited number of students may arrange to spend one semester at the Merrill-Palmer Institute in Detroit, Michigan.

A. Child Development

Basic Core

Cf	2	Patterns of Interpersonal Behavior (nursery school lab experiences)	3
Cf	3	The Preschool Child	3
Cf	4	The Young School Child	3
Cf	111	Family Relationships	3
Fn	41	Intro. to Food & Nutrition	3
Hm	185	The Family's Financial Problems	3

Total 18

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Option A—Elementary School Teachers (for certification to teach kindergarten through grade 6)

At	69	The Teaching of Art	3
Cf	153	The Younger Child in Home & in School	3
Cf	260	Seminar in Child Development	3
Ed	B2	The American School	3
Ed	B4	The Teaching Process	3
Ed	M13	Teaching of Reading	2
Ed	M18	Teaching of Language Arts	2
Ed	M114	Teaching Arithmetic	2
Ed	M115	Teaching Social Studies	2
Ed	M116	Teaching Science	2
Ed	M190	Student Teaching	8
Py	117	Educational Psychology	3
Subject concentration (if psychology, only 8) of 24			
Total			44

Option B—Nursery School Teachers

Cf	153	The Younger Child in Home & in School	3
Cf	155	The Adolescent & His Family	3
Cf	260	Seminar in Child Development	3
Cd	38	Special Problems in Design	3
Ed	B2	The American School	3
Py	117	Educational Psychology	3
		Psychology Electives	9
Total			27

(Students preparing for this profession are encouraged to spend one semester at the Eliot-Pearson School, an affiliate of Tufts University in Boston)

Option C—Social Service Work in Child Development and Family Life

Cf	155	The Adolescent & His Family	3
Cf	211 or	Seminar in Family Relationships	3
Cf	260	Seminar in Child Development	3
Hm	81	Home Management Principles & Theories	3
Hm	82	Management in Homes	2
Hm	191	Housing	3
Py	130	Social Psychology	3
Py	133	Abnormal Psychology	3
Sy	3/4	Intro. to Sociology	6
Sy	24 or	Sociology of Rural Life	3
Sy	126	Sociology of Urban Life	3
Sw	150/151	Social Welfare	6
Sw	152	Social Work as a Profession	3
Sw	154	Field Experience in Social Work	2
Total			40

Option D—Kindergarten Teachers

Cf	119	Supervised Student Teaching	8
Cf	120	Creative Activities for the Young Child	3
Cf	121	Foundations for Academic Learning	3
Cf	122	Program Planning in the Kindergarten	3
Ed	B2	The American School	3
Total			20

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B. *Family Relationships Specialist*

Cf	2	Patterns of Interpersonal Behavior	3
Cf	3	The Preschool Child	3
Cf	4	The Young School Child	3
Cf	109	Special Problems in Child Development	3
Cf	111	Family Relationships	3
Cf	155	The Adolescent and His Family	3
Cf	211	Seminar in Family Relationships	3
Cf	260	Seminar in Child Development	3
Cf	285	New Findings in Child Development and Family Relationships	3
Fn	41	Introduction to Foods and Nutrition	3
Cd	31	Design	3
or			
Hm	191	Housing	3
Hm	185	The Family's Financial Problems	3

Total 36

Those interested in teaching at the secondary level or social service work should check with the School of Home Economics for additional requirements.

C. *Home Economics Education*

To meet certification requirements for home economics teacher in the secondary school.

General education (36 hours from basic core)	50 hours
Professional	18 hours

He	71	Tech. in Teaching Home Ec.	2
He	72	Curr. Dev. in Home Ec.	3
Ed	B2	The American School	3
He	176	Adult Education	2

or

He	180	Evaluation	3
He	73	Supervised Student Teaching	8

Home Economics	40 hours
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Child Development & Family Relationships	8
Clothing & Textiles	8
Foods & Nutrition	8
Housing, Home Furnishings & Equipment	8
Family Economics & Management	8

D. *General Home Economics*

40 hours

The 40 hours of home economics courses as required under Home Economics Education

It is recommended that additional hours be elected in either Clothing and Textiles or Foods and Nutrition.

COURSES IN THE SCHOOL OF HOME ECONOMICS

Child Development and Family Relationships (Cf)

2. *Patterns of Interpersonal Behavior*—Observations and study of inter-personal 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. STAFF

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3. *The Preschool Child*—Development of children from infancy through the preschool years and factors affecting it. 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, MRS. OLIVER

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

109. *Special Problems in Child Development*—Prerequisite or parallel: a Cf course or Py 67. *Cr 1-3.* STAFF

111. *Family Relationships*—Interpersonal relationships in marriage preparation, courtship, choosing a mate, engagement. Husband-wife relationships in fulfilling physical, emotional, social, intellectual, spiritual needs. Parent-child relationships. Prerequisite: Sophomore. *Cr 3.* MR. RICE

119. *Supervised Student Teaching in a Selected School*—Prerequisite: Cf 120, 121. *Cr 8.*

120. *Creative Activities for The Young Child*—Contributions of the areas of play, art and music to the development of creativity in children 3 to 8 years of age. Experience with children in all three areas. Prerequisite: junior standing. Cf 2, 3 or equivalent. *Cr 3.*

121. *Foundations for Academic Learning*—Readiness programs for the kindergarten and primary child in four academic areas: reading, number, science and social science. Prerequisite: junior standing. Cf 4, 120. *Cr 3.*

122. *Program Planning in the Kindergarten*—Consideration of basic teacher responsibilities and skills necessary for effective teaching of kindergarten children. Prerequisite: senior standing. Cf 121, Ms 107, 108, Edm 13 or 18. *Cr 3.*

153. *The Younger Child in Home and School*—Developmental aspects of psychological, physiological, and social growth of children through the elementary school years. Integrative use of home, school, and community resources for guiding the development of the child. Prerequisite: courses in psychology or permission. *Cr 3.* STAFF

155. *The Adolescent and His Family*—The problems of youth and the role of parents, teachers and leaders in guiding him toward physical, intellectual, social, emotional, and spiritual maturity in the family, school, church, and community. Undergraduate or graduate credit. *Cr 3.* MR. RICE

Clothing and Design (Cd)

22. *Principles of Clothing Construction*—Principles involved in clothing construction with application to garments; practice in communication of principles for teaching. *Rec 1, Lab 4, Cr 3.* MISS CAMPBELL

25. *Textiles*—Fibers, yarns, fabrications, finishes, labels; end-uses in home and clothing. Consumer education and protection. *Rec 3, Cr 3.* MISS CAMPBELL

31. *Design*—Experiments with line, form, color, texture, and light as media of daily living in clothing and home furnishings. Components of quality in commercial products. Practice in criticism. Composition in natural and commercial materials. *Rec 2, Lab 2, Cr 3.* MR. WATTS

32. *Creative Design*—Organization of elements of design in two and three dimensions in various media for uses such as decorative arrangements, merchandise display, and educational visuals. *Lab 4, Cr 2.* MR. WATTS

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33. Applied Textile Design—Application of design principles to such textile problems as block printing, batik, decorative needlework, and hand weaving. Prerequisite: Cd 31 or 32, or permission. *Lab 4, Cr 2.*

38. Special Problems in Design—Cr 1-3.

MR. WATTS

39. Special Problems in Interiors—Cr 1-3.

MR. WATTS

†124. Creativity in Clothing Construction—Development of three dimensional form in constructing tailored garments, in manipulating basic patterns for garment design, and in draping. Prerequisite: Cd 22 or permission of instructor. *Rec 1, Lab 4, Cr 3.*

MISS CAMPBELL

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. *Rec 3, Cr 3.*

MISS CAMPBELL

129. Special Problems in Clothing and Textiles—Cr 1 to 3.

MISS CAMPBELL

192. Interior Design and Home Furnishings—Focus on individuality and family situations in relation to functional and esthetic qualities of the home. Selection, arrangement, and evaluation of settings and furnishings. *Rec 2, Lab 2, Cr 3.*

MR. WATTS

Food and Nutrition (Fn)

41. Introduction to Food and Nutrition—Study of human nutritional needs. Emphasis on the selection of food to meet these needs, considering economy of time and money. *Rec 3, Cr 3.*

MISS BOURQUE

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. *Rec 2, Lab 2, Cr 3.*

STAFF

43. Experimental Foods—An experimental approach to the preparation of foods. Emphasis on the scientific interpretation of results. Prerequisite: Fn 42 and Bc 8 or equivalent. *Rec 2, Lab 4, Cr 4.*

STAFF

51. Nutrition for Nurses—An elementary consideration of the principles of nutrition as applied to the feeding of normal individuals of all ages. For three-year nursing students. *Rec 2, Cr 2.*

MISS BOURQUE

61/62. Quantity Food and Food Service Management—Principles of food production and management that underlie service of high quality, nutritious food in quantity; sanitation; menu planning; recipe standardization and preparation; use of institution equipment. Objectives of varied types of food services. Prerequisite: F 43, *Rec 2 Lab 2 Cr 3.*

MISS YOUNG

63. Food Service Administration and Cost Control—Supervised administration of selected food services. Theory of cost control; pricing; techniques for controlling costs through standardized procedures, purchasing practices, efficient management, and training of personnel. Prerequisite: Fn 62. *Rec 2, Lab 2, Cr 3.*

MISS YOUNG

149. Special Problems in Foods—Cr 1-3.

STAFF

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

‡155. Nutrition in Abnormal Conditions—Principles involved in adjusting diets for diseases and abnormal conditions that may be benefited by variations from normal diets. Prerequisite: Fn 52. *Rec 3, Cr 3.*

MISS THORNBURY

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258. Seminar in Nutrition—Reports and discussions of recent developments in nutrition and related fields. Special attention to critical analysis. Prerequisite: Fn 52 or equivalent. *Rec 1-2, Cr 1-2.* MISS THORNBURY

259. Special Problems in Nutrition—*Cr 1-3.* STAFF

300. Readings in Nutrition—Critical review of the literature on energy metabolism, proteins, lipids, minerals, and vitamins. Attention to historical basis of present knowledge and to interpretation and 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)

70. Senior Seminar in Home Economics—History, philosophy, present organization, and future development of professional home economics. *Rec 1, Cr 1.* STAFF

71. Techniques in Teaching Home Economics—Selection and use of teaching methods, techniques, and materials to promote development of concepts and thinking processes in the classroom. Observation of home economics classes in junior and senior high schools. Prerequisite: junior standing. *Lab 4, Cr 2.*

MRS. HOUGHTON

72. Curriculum Development in Home Economics Education—Current educational philosophies, principles, and practices; their application to home economics education through program planning and curriculum development. Prerequisite: He 71 concurrently, or permission. *Rec 3, Cr 3.* MRS. HOUGHTON

73. Supervised Student Teaching—Concept development in selected subject areas with attendant unit development. Problems pertinent to teaching home economics. Observation, participation, and teaching in a selected junior or senior high school in the state, under immediate direction of the local teacher with supervision from University staff. Evaluation of this experience. Students live in the school communities for six weeks. Prerequisite: He 72. *Cr 8.* MRS. HOUGHTON

‡176. Adult Education—Need for and purpose of adult education programs. Consideration of learning program development, organization, and administration of programs. Emphasis on adult education through the public schools. Cooperative Extension Service, and community agencies. *Rec 2, Cr 2.* MRS. HOUGHTON

‡180. Evaluation—Theory and basic principles of evaluation. Methods of evaluating progress towards goals; development of evaluative devices and the use of findings. Prerequisite: senior standing. *Rec 3, Cr 3.* MRS. HOUGHTON

279. Special Problems in Home Economics Education—*Cr 1-3.*

399. Graduate Thesis—*Cr Ar.* STAFF

Home Management and Housing (Hm)

81. Home Management Principles and Theory—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 3, Cr 3.*

MRS. SCHOMAKER

82. Management in Homes—Experience with families in observing different ways they manage resources to achieve goals. Work with families of various socio-economic levels toward solving management problems. Field trips included. *Rec 1, Lab 2, Cr 2.*

MRS. HUTCHINSON

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89. *Special Problems in Home Management*—Cr 1-3.

191. *Housing*—Physical, social and emotional aspects of the housing environment. Floor plan principles in relation to family life cycle. Local government controls; national problems in housing. Prerequisite: junior standing. *Rec 2, Lab 2, Cr 3.*

STAFF

93. *Equipment*—Elementary principles of physics applied to the performance of equipment. The equipment's function and the operator's responsibility in the performance of a task. Prerequisite: junior standing. *Rec. 2, Lab 2, Cr 3.*

STAFF

185. *The Family's Financial Problems*—Influence of outside economic conditions and personal circumstances on family financial problems. The management process applied to family problems involving finances—economic position, meeting current living costs, protection against financial contingencies, credit, developing a savings and investment program, legal aspects of transactions. Prerequisite: junior standing or by permission. *Rec 3, Cr 3.*

MRS. DALTON

COURSES GIVEN ON DEMAND

The following courses are given when there is sufficient demand during the academic year, through the Continuing Education Division, or in Summer Sessions.

Child Development and Family Relationships (Cf)

285. *New Findings in Child Development and Family Relationships*—Recent findings in child development and family relationships selected to help teachers interpret children's interaction and adjustment to peers, to family, to school and to society. *Cr 2.*

211. *Seminar in Family Relationships*—Reports and discussions of current literature in family relationships and related social sciences with special attention to critical analysis. *Cr 3.*

260. *Seminar in Child Development*—Reports and discussions of research findings in child development. *Cr 3.*

Clothing and Design (Cd)

26. *History, Market, and Analysis of Clothing*—Styles of dress across space and time. Influences of mass market and end-use on garment design. Levels of quality, components of satisfaction, research developments. Prerequisite; junior standings. *Rec 3, Cr 3.*

123. *Clothing Construction Analysis*—Consumer analysis and alteration of manufactured garments. Survey of unfamiliar fabrics and construction processes. Problems based on background and professional needs of students. Prerequisite: Cd 22 or permission. *Lab 4, Cr 2.*

141. *Seminar on Consumer Problems in Textiles and Clothing*—Needs and satisfactions of individuals and families as to clothing and textiles in a variety of managerial, technological, personal, and social situations. Informative labeling and consumer protection. Properties and care of new fibers, fabrications, finishes. Prerequisite: undergraduate courses in textiles and clothing or permission. *Rec 3, Cr 3.*

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Food and Nutrition (Fn)

69. *Special Problems in Food Service Management*—Individual investigation of aspects of institutional management. Emphasis on advanced problems in standardization, marketing, quality base for food cost, and/or personal management. Prerequisite: Fn 62 or permission. *Cr 1-3.*

145. *Recent Advances in Food and Nutrition*—Results of recent research and trends in food and nutrition. Emphasis on their significance for professional home economists. Prerequisite: a nutrition course or permission. *Rec 3, Cr 3.*

148. *New Developments in Foods*—Developments in food processing and marketing; overview of world food situation. Social and economic influence of trends on meal patterns, human satisfactions, and food management. *Rec 3, Cr 3.*

156. *The Nutrition of Children*—Relationship between nutrition and growth. Study of newer findings on nutritional requirements of children from infancy through adolescence. Prerequisite: a course in nutrition or chemistry and physiology, acceptable to instructor. *Cr 2.*

257. *Modern Concepts in Food and Nutrition*—Selected basic knowledge, principles, and concepts in the area of food and nutrition; adaptation for use at various age levels in diverse educational situations. Prerequisite: permission. *Cr 3.*

Home Economics Education (He)

75. *Advanced Home Economics Education*—Current philosophy of teaching home economics; concept development in selected areas of the field with attendant unit development. Study of department management, selection and use of space and equipment, and other pertinent problems related to teaching home economics in secondary schools. *Cr 3.*

90. *Methods of Teaching Home Economics*—Study of methodology effective in teaching at different development levels, in several subject areas, according to objectives of programs. Experimentation in methods and teaching aids, considering class size and time schedule. Emphasis on creative teaching. Review of research in methodology. *Rec 3, Cr 3.*

111. *Supervision of Student Teaching in Home Economics*—Theory and principles of supervision for improved educational programs; procedures for improved communication between supervisor and other personnel; evaluation of growth within individuals and programs. *Cr 3.*

Note: Designed for supervisory teachers, city/county/state supervisors, extension agents, and others in a supervisory capacity. Supervising teachers participating in student teaching programs do so on an invitational basis. They must participate in a workshop or institute on the application of supervision theory to student teachers following a course which includes supervision principles and theory. These workshops will be sponsored by the institution with which the teacher will work.

320. *Seminar in Home Economics Education*—*Cr 3.*

Home Management (Hm)

186. *Management of Household Resources*—Current philosophy and literature in the field with respect to use and interaction of time, energy, money, and other resources. *Rec 3, Cr 3.*

187. *The Consumer in the Present Economy*—Distribution of consumer goods through the marketing system, change of marketing institutions; consumer

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information available, and consumer protection in the market. Emphasis on joint interest of those in marketing, the consumer, and the government in an efficient marketing system. *Rec 3, Cr 3.*

199. *Special Problems in Housing*—*Cr 1-3.*

HONORS PROGRAM

PROFESSORS BOULANGER, HOGAN, SIMPSON; ASSOCIATE PROFESSOR GERSHMAN

Students enrolled in the College of Life Sciences and Agriculture are eligible to participate in the University Honors Program. Freshmen and sophomores participate in the interdisciplinary University program; the work of the junior and senior years is conducted by the various departments of the college. For general information concerning the Honors Program, refer to the Honors Section in this catalog or contact the Secretary of the College Honors Committee, Associate Professor W.M. Bain.

41. *Distinguished Freshman Seminar*—Limited to Distinguished Maine Students and to a limited number of other students, by invitation. Discussions and demonstrations displaying the range and nature of the liberal arts and the sciences. *Cr 3.* MR. SIMPSON, Chairman

45. *Honors Colloquium*—Readings and discussions on the basic concepts of Western civilization. *Cr 3.*

47. 48. *Honors Group Tutorial*—Oral and written reports, under tutorial direction, upon a planned sequence of books representative of the various fields of liberal education. Hr 47.48. fulfills the sophomore humanities requirement for those students registered in the Honors Program. *Cr 3.* MR. THOMSON, Chairman

51. 52. *Honors: Specialized Studies*—A tutorially conducted survey of the student's major field, issuing in the choice of an approved thesis topic. *Cr 3.*

53. 54. *Honors Thesis*—The planning and completion of an honors thesis or research project. *Cr 3.*

Further information concerning the availability of other Honors courses may be obtained from the Secretary of the College Honors Committee.

PLANT AND SOIL SCIENCES

PROFESSORS STRUCHTEMAYER, BROWN, HUTCHINSON, TREVETT; ASSOCIATE PROFESSORS CARPENTER, CLAPP, HEPLER, KENDER, H. MURPHY; MR. LITTLEFIELD;
EXTENSION SPECIALISTS ABDALLA, HOLYOKE; COLLABORATOR EPSTEIN

The curriculum in Plant and Soil Sciences has been organized to provide a well-balanced educational program for students interested in the study of plants and soils. The program will provide students with a fundamental knowledge of the basic sciences, in addition to a training in the fundamental principles of soils, plants and ornamental horticulture and landscaping.

Students with a primary interest in soils can get specialized training in soil management, conservation, chemistry, physics, and classification. Those with a primary interest in plants can obtain training in forages, vegetables, fruits, potatoes, floriculture, ornamental horticulture, and landscaping.

Proper selection of course work will qualify B.S. graduates for careers in teaching at the college and secondary school levels, extension work, commercial production activities in the various commodity areas listed, service activities for

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industry, Soil Conservation Service and other government agencies, landscape planning, and many other related fields.

Students who are well qualified and interested in advanced study should plan for this early in their college course. Advanced work at the master's or Ph.D. level is available and is encouraged for qualified individuals.

Curriculum for Plant and Soil Sciences

Required Courses	Credit Hours	Minimum Degree Hours Required
A. Orientation		0
B. Basic Sciences		35
Ch 1 & Ch 2	General Chemistry	8
Bc 1 & Bc 2	Organic and Biochemistry	8
Bt 1	General Botany	4
Bt 153	Plant Physiology	4
	Mathematics	4
	Electives	7
C. Plants and Soils		29
S 2	Soils	4
S 51	Soil Fertility	3
S 154	Soil-Plant Relations	3
P 166	Plant Propagation	3
or		
P 202	Plant Breeding	4
P 163	Pomology	
or		12
P 169	Vegetable Production	
	Electives	
D. Life Science and Agricultural Electives		14
E. Communications		7
Eh 1	Freshman Composition	3
Eh 5	Technical Composition	2
Sh 1	Fundamentals of Public Speaking	2
F. Humanities and Social Sciences		15
Not less than two semester courses from each:		
G. Free Electives		20
Any course in the University for which the student is qualified.		

Minimum Degree Hours for Graduation **120**

Soils Courses (S)

2. Soils—A study of the chemical, physical and biological properties of soil. Also considers origin, management, and the inter-relationships of soils to plant growth. Prerequisite: Ch 1 or Bc 7. *Rec 3, Cr 3, or Rec 3, Lab 2, Cr 4.*

MR. HUTCHINSON

3. Forest Soils—Fundamentals of soil science including the study of development, properties, and management of soils and the inter-relationships of soils to forest growth. Prerequisite: Ch 1, *Rec 2, Lab 2, Cr 3.*

MR. STRUCHTEMEYER

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21. Earth Science—Comprehensive study of the effects of natural forces on soil, atmosphere, climate, oceans, and land forms. *Rec 3, Cr 3.* MR. MURPHY
Offered in CED only

†**50. Soil and Water Conservation**—Management of our soil and water resources in accordance with need and capabilities of the land. Prerequisite: S 2 or S 3. *Rec 2, Cr 2.* MR. STRUCHTEMEYER

51. Soil Fertility—A study of soil as a source of the essential nutrients needed for plant growth and the properties and use of fertilizers, liming materials, and manures. Prerequisite: S 2 or S 3. *Rec 3, Cr 3.* MR. HUTCHINSON

122 Earth Science II (for secondary school teachers.)—An introduction to astronomy and the earth sciences of meteorology and soils, with emphasis on basic principles. *Cr 3.* MR. HARPER, MR. TODD AND MR. MURPHY

†**152. Soil Development and Classification**—Genesis, morphology, classification, and mapping of soils. Interpretation of soil survey reports. Prerequisite: S 2 or S 3 and Gy 1a. *Rec 2, Lab 3, Cr 3.* MR. STRUCHTEMEYER

†**154. Soil and Plant Relationships**—Chemical properties of soils and plants with principles and methods of analyses. Prerequisite: S 2 or S 3 and S 51. *Rec 2, Lab 3, Cr 3.*

†**156. Soil Physics**—An intensive consideration of the physical properties of the soil and their effect on plant growth. Prerequisite: S 2 or S 3 and Ps 1, 3 or 6. *Rec 2, Lab 3, Cr 3.* MR. EPSTEIN

157. 158. Problems in Soils—Opportunity is provided for specialization in specific areas of soil science. *Cr Ar.* STAFF

203. Radiobiology—Principles for using radioisotopes in biological research. Permission of instructor. *Rec 2, Lab 4, Cr 4.*

252. Spectrochemical Analysis—The theory and practice of colorimetry, flame photometry, spectroscopy and other allied instruments in quantitative chemical analysis. Permission of instructor. *Rec 2, Lab 4, Cr 4.* MR. CARPENTER

†**254. Chemistry of Soils**—Colloquia and laboratories on chemical transformations in soils, chemical relationships of soils and plants, and effects on organic and inorganic plant nutrition. Prerequisite: S 2, S 51, S 54, and Ch 40. *Rec 2, Lab 4, Cr 4.*

271. Experimental Design—Principles of research in biological sciences, design of experiments, statistical analyses and interpretation of data. Permission of instructor. *Rec 3, Lab 2, Cr 4.*

399. Graduate Thesis—*Cr Ar.*

Plant Courses (P)

1. Horticulture—A course on general horticultural practices pertaining to: home landscaping; the flower, vegetables, and fruit gardens; the hobby greenhouse, plant propagation; and the various cultural aspects related to the home grounds. *Rec 3, Cr 3.* MR. LITTLEFIELD

163. Pomology—Principles and practices in pomology as related to the basic sciences. The culture of all fruits with particular emphasis given to those of commercial importance in Maine. Prerequisite: S 2 and Bt 153. *Rec 3, Lab 3, Cr 4.*

MR. KENDER

164. Principles of Forage Management—Soil and climatic factors in the selection and use of forage crops. Physiological effects of defoliation, fertilization

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and other management practices. Biochemical aspects of forage harvesting and preservation. Prerequisite: S 2. *Rec 3, Cr 3.* MR. BROWN

‡165. *Post Harvest Physiology and Storage*—Discussion of biochemical and physiological processes associated with ripening and keeping quality of harvested plant products. Includes temperature, humidity, types or storage, handling and physiological disorders. Prerequisite: Bt 153 or permission. *Rec 2, Lab 2, Cr 3.*

MR. KENDER

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: Bt 153 and either P 30, P 163, P 164, or P 169. *Rec 2, Lab 2, Cr 3.*

MR. KENDER

167. 168. *Problems in Plant Science*—Persons wishing to specialize in potatoes, vegetable crops, forage crops and pomology can do so by developing problems in their areas of interest. *Cr Ar.*

STAFF

169. *Principles of Vegetable Production*—Principles and practices in the production of potatoes and other important vegetable crops. Cultural procedures will be related to basic information on growth and development. Prerequisite: S 2 and Bt 153. *Rec 3, Lab 2, Cr 4.*

MR. MURPHY

173/174. *Seminar*—Review of literature, problems, and research as related to the areas of plants and soils. *Rec 1, Cr 1.*

STAFF

†201. *Plant Growth Regulators*—Concepts and techniques in the study of plant growth and development with emphasis on phytohormones and synthetic growth substances in relation to economic plants. Prerequisite: Bt 153. *Rec 3, Lab 3, Cr 3.*

MR. KENDER

202. *Plant Breeding*—Improvement of plants through hybridization and selection. Genetic principles as related to breeding methods will be discussed. Prerequisite: Bt 145. *Rec 3, Cr 3.*

MR. HEPLER

399. *Graduate Thesis*—*Cr Ar.*

STAFF

Ornamental Horticulture and Landscaping Courses

30. *Ornamental Horticulture*—Principles of growing ornamental plants in the home, small greenhouse, and on the home grounds. *Rec 2, Lab 2, Cr 3.*

MR. CLAPP

†31. *Landscape Plant Material*—Study of the woody plants suitable for landscape design in New England including their selection, arrangement, planting, and care. Prerequisite: junior or senior standing. *Rec 2, Lab 2, Cr 3.*

MR. CLAPP

33. *Greenhouse Management*—The application of plant growing science to commercial production under glass, placing special emphasis on plant growing, marketing, and care of the commercial range. Field trips. *Rec 3, Lab 2, Cr 4.*

MR. LITTLEFIELD

†34. *Agrostology*—The identification, fertilization, mowing, pest control, and soil requirements of grasses suitable for use on lawns, golf courses, athletic areas, cemeteries and parks. Prerequisite: S 2. *Rec 3, Cr 3.*

MR. HOLYOKE

35. *Landscape Designing*—Principles of landscape design as applied to the home and institutional grounds; experience provided in preparing landscape plans. Prerequisite: Eg 1 or its equivalent or permission of instructor. *Rec 2, Lab 2, Cr 3.*

MR. CLAPP

COLLEGE OF LIFE SCIENCES AND AGRICULTURE

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

A. Agricultural Education

The University offers the first two years of a four-year professional curriculum to prepare for teaching high school vocational agriculture. The last two years of the curriculum may be secured at the University of New Hampshire under provisions of a cooperative agreement whereby Maine students may enroll at the New Hampshire resident tuition rate.

The following is a recommended two-year course of study to be taken at the University of Maine by students contemplating a major in Agricultural Education. The last two years of the four-year sequence must be taken at the University of New Hampshire.

Two-Year Pre-Agricultural Education Curriculum

First Year

FALL SEMESTER			SPRING SEMESTER		
Course		Credit Hours	Course		Credit Hours
LSA	1 Orientation	0	Ch	2 Gen. Chemistry	4
An	5 Animal Science	3	Pe	1 Physical Education	0
Bt	1 Gen. Botany	4	P	1 Horticulture	3
Ch	1 Gen. Chemistry	4	S	2 Soils	4
Eh	1 Freshman Comp.	3	Zo	3 Animal Biology	4
Pe	1 Physical Education	0			
		14			15

Second Year

AE	36 Farm Power	3	AE	32 Farm Struct. & Equip.	3
An	19 Livestock Feeding	3	#Ms	1 Trigonometry	2
Ec	1 Prin. of Economics	3	Py	2 Gen. Psychology	3
#Ms	3 College Algebra	2	P	4 Crop Science	3
Py	1 Gen. Psychology	3	Elective (En 26 or Ps 6 or humanities)		4 (5)
Sh	1 Public Speaking	2			
		16			15 (16)

Ms 1 and Ms 3 are not required if the student completed two years of high school algebra, one year of plane geometry, and one half year of trigonometry.

B. Pre-Veterinary

The University of Maine does not offer a degree in veterinary medicine. Most students interested in this field attend four years as candidates for the B.S. degree. A few students gain admittance to a veterinary college after three years of pre-veterinary studies and the occasional student qualifies for admittance after two years of pre-veterinary study. This pattern is not peculiar to Maine alone, but is the trend nationally.

To help guide the prospective student interested in veterinary medicine, the following curricula is suggested for the first two years. Adjustments in the selection of courses can be made to fit special requirements of particular veterinary

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colleges. In addition to those courses listed below, the student should consider adding the following courses to their program: botany, calculus, German, comparative anatomy, and embryology.

Two-Year Pre-Veterinary Curriculum

Freshman Year

	Subject	Credit Hours		Subject	Credit Hours
LSA	1 Orientation	0	Ch	2 General Chemistry	4
An	5 Animal Science	3	Eh	1 Freshman Composition	3
Ch	1 General Chemistry	4	Ay	2 Anthropology	
Ay	1 Anthropology			or	3
	or	3	My	2 Modern Society	
My	1 Modern Society		Ms	1 Trigonometry	2
Ms	3 College Algebra	2	Pe	2 Phys. Education	0
Pe	1 Phys. Education	0	Zo	4 General Zoology	
Zo	3 General Zoology	4		or	4
			Bt	1 General Botany	
		16			16

Sophomore Year

Bc	1 Organic Chemistry	4	Bc	2 Biochemistry	4
Eh	3 English Literature		Hy	4 U.S. History	3
	or	3	Pe	4 Phys. Education	0
Eh	7 Advanced Composition		Ps	2a General Physics	4
An	160 An. Genetics & Breeding		Sh	1 Public Speaking	2
	or	3	Sh	9 Parliamentary Procedure	1
Zo	162 Principles of Genetics			Elective from Humanities	2
Pe	3 Phys. Education	0			
Ps	1a General Physics	4			
	Humanities Elective	2			
		16			16

C. Dairy Manufacture

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 Sciences.

D. 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 the 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 first two years of the program at Maine are supervised by the Department of Bacteriology.

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GENERAL COURSES

INTERDISCIPLINARY COURSES OFFERED BY THE COLLEGE OF LIFE SCIENCES AND AGRICULTURE

LSA 1. General Lectures—A series of lectures and discussions on the history and traditions, rules and regulations of the University; study aids and procedures; advising and counseling services; and professional fields of training. Guest speakers are selected to broaden student understanding and perspective of human affairs. *Lec 1, Cr 0.*

Mhe. 50. Man and His Environment—Effect of the biological and physical environment on life and man. Restricted to seniors in practice teaching, taken concurrently with Pl 70 and Sy 5ed for one-half semester. *Rec 6, Cr 3.*

MR. COOPER, MR. BUCK, MR. DIMOND, MR. HUTCHINSON

TWO-YEAR TECHNICAL DIVISION

COLLEGE OF LIFE SCIENCES AND AGRICULTURE

ASSOCIATE DEAN WINSTON E. PULLEN

The basic objectives of educational programs in the Two-Year Technical Division are: 1) to provide a practical working knowledge of fundamental principles in specific technical fields which will develop competence for gainful employment; 2) to develop competence in written and oral communication; 3) to contribute to the development of the student's intellectual capacity and personal growth; and 4) to prepare graduates for roles as citizens and effective community leaders. The program is not intended as a preparatory course for four-year professional curricula and students are discouraged from entering the program with this objective. However, a transfer procedure is maintained for students whose educational objectives change and who demonstrate superior academic abilities.

Course offerings in the technical program are distinct and separate from those offered for baccalaureate degree students. Technical courses are of a practical nature and place emphasis upon the development of skills for immediate application. Instruction is provided by regular University staff who are specialists in their fields. Laboratory instruction and field experience represent an essential part of the technical training program.

An associate in applied science degree is awarded to graduates of the program. Requirements for this degree include the satisfactory completion of a prescribed technical curriculum with a minimum of 64 credit hours earned at an accumulative grade average of at least 1.80.

Five curricula are offered covering a variety of fields of study.

All students are required to take the basic core curriculum of general education subjects along with the technical subjects in a particular program of study.

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BASIC CORE CURRICULUM

All students enrolled in Two-Year Technical Division are expected to complete the following group of courses representing a basic core requirement:

	Subject	Hours
1 LSA	Orientation	0
13 AE*	Applied Mathematics	3
1 Eh-2 Eh	English Composition	6
2 Pol	State & Local Government	3
3 Pol	Current World Affairs	2
Pe 1-Pe 2	Physical Education	0
1 Sh	Oral Communication	3
		<hr/> 17

* Students failing to passing a preliminary examination will be required to take a remedial course in mathematics (7AE) without credit.

I. Business Management Curricula

These curricula provide concentrated and practical training in preparation for business management careers in food and fiber industries and associated businesses. Students will be prepared for managerial positions in food stores and other types of retail establishments, for plant foremen, and other supervisory roles in food processing, wholesaling and distributing business, and for a variety of other types of employment in sales, service, and management work.

Tradespeople and business executives are utilized in many classes as guest discussion leaders to provide a more meaningful learning experience. Case studies are used to provide problem-solving situations for practical experience in common management problems.

Students will have an opportunity to participate in a supervised "on-the-job" training program for practical business experience during the summer between the first and second year.

1) *Agricultural Business Management*—provides technical training in farm technology and in business management for employment opportunities with farm-related business enterprises.

2) *Food Industry Management*—training includes the basic principles of business management plus the essentials of food technology and prepares for employment opportunities with firms engaged in food processing, packaging, wholesaling, and retailing.

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AGRICULTURAL BUSINESS MANAGEMENT

			Required Hours
A. Basic Core Curriculum			17
B. Department Core Curriculum			33
1. Sociology			5
6 Ab	Dynamics of Human Behavior	3	
7 Ab	Sociology and The Individual	2	
2. Business and Economics			18
2 Ab	Introduction to Economics	3	
3 Ab	Farm Management	3	
4 Ab	Principles of Marketing	3	
8 Ab	Principles of Accounting	3	
12 Ab	Introduction to Statistics	3	
28 Ab	Interpretation of Financial Records	3	
3. Agricultural Technology			10
16 Ae	Work Simplification	3	
1 En	Applied Entomology	3	
2 P	Soils and Fertilizers	4	
C. Free Electives			14
Total			64

FOOD INDUSTRY MANAGEMENT

			Required Hours
A. Basic Core Curriculum			17
B. Department Core Curriculum			38
1. Sociology			5
6 Ab	Dynamics of Human Behavior	3	
7 Ab	Sociology and the Individual	2	
2. Business and Economics			22
2 Ab	Introduction to Economics	3	
4 Ab	Principles of Marketing	3	
8 Ab	Principles of Accounting	3	
12 Ab	Introduction to Statistics	3	
20 Ab	Managing the Business Firm	3	
24 Ab	Food Distribution Management	4	
28 Ab	Interpretation of Financial Records	3	
3. Food Technology and Handling			11
16 Ae	Work Simplification	3	
2 Bc	Food Chemistry	4	
2 By	Food Bacteriology and Sanitation	4	
C. Free Electives			9
Total			64

II. Animal Technology Curriculum

This program of study provides technical training and experience for careers in animal production in dairy cattle, poultry, beef cattle, pleasure horses, sheep, swine, and the related sales and service industries. Previous farm experience is considered helpful for enrollees. Graduates frequently return to the home farm or are employed as herdsman or foreman on other farms. An increasing number of graduates are employed in the integrated broiler or market egg industries or in sales and service in the feed, fertilizer, and machinery industries. Other employment opportunities include soil conservation service, breeding technicians, D.H.I.A. field men, and the Peace Corps.

ANIMAL TECHNOLOGY

First Year

FALL SEMESTER					SPRING SEMESTER				
Subject		Hours			Subject		Hours		
		Rec	Lab	Cr			Rec	Lab	Cr
1 LSA	Orientation	1	0	0	3 Ab	Farm Management	2	2	3
1 An	Dairy Cattle	2	2	3	13 AE	Applied Math	3	0	3
3 An	Animal Selection	1	3	2	2 An	Animal Production	2	2	3
5 An	Milk Composition and Testing	2	2	3	2 Eh	English Composition	3	0	3
1 En	English Composition	3	0	3	2 P	Soils & Fertilizers	3	2	4
Pe 1	Physical Education	2	0	0	Pe 2	Physical Education	2	0	0
Electives				5					
				16					

Second Year

		Rec Lab Cr					Rec Lab Cr		
12 An	Repr. & Breeding Mgt.	2	2	3	4 An	Animal Breeding	2	2	3
5 AnP	Livestock Diseases	3	0	3	6 An	Animal Feeding	2	2	3
5 Bc	Animal Biochemistry	2	2	4	2 Pol	State & Local Gov't.	3	0	3
3 Pol	Curr. World Affairs	2	0	2	3 P	Forage Management	2	2	3
Electives				4	1 Sh	Oral Communication	3	0	3
				16	Electives				1
				16					16

III. Laboratory Animal Technology Curriculum

This course of animal study provides technical training and experience for careers as laboratory animal technicians in biological and medical research laboratories, small animal hospitals, commercial testing laboratories for pharmaceutical and feed industries and veterinary aides. The curriculum provides specialized courses in animal care, handling, breeding, feeding, health, anatomy, and physiology, and in laboratory clinical work.

LABORATORY ANIMAL TECHNOLOGY

First Year

Subject		Hours			Subject		Hours		
		Rec	Lab	Cr			Rec	Lab	Cr
1 LSA	Orientation	1	0	0	13 AE	Applied Mathematics	3	0	3
1 Eh	English Composition	3	0	3	10 An	Anatomy & Physiology	3	0	3
9 An	Anat. & Physiology	3	0	3	16 An	Lab. Animal Handling	2	2	3
14 An	Lab. Animal Care	3	0	3	2 By	Bacteriology	3	2	4
16 Ae	Work Simplification	2	2	3	2 Eh	English Composition	3	0	3
Pe 1	Physical Education	2	0	0	Pe 2	Physical Education	2	0	0
Electives				4					
				16					

Second Year

		Rec Lab Cr					Rec Lab Cr		
5 Bc	Animal Biochemistry	3	2	4	4 An	Animal Breeding	2	2	3
12 An	Reprod. and Breeding	2	2	3	6 An	Animal Feeding	2	2	3
9 AnP	Animal Diseases	3	0	3	20 AnP	Clinical Lab. Prac.	2	4	4
3 Pol	Curr. World Affairs	2	0	2	2 Pol	Government	3	0	3
Electives				4	1 Sh	Oral Communication	3	0	3
				16					16

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IV. Food Service Management Curriculum

The two-year technical program in Food Service Management is designed to prepare individuals for supervisory or managerial positions in commercial and inplant feeding establishments, school lunch programs, and public and private institutions. The curriculum provides technical courses in food purchasing, quantity food production, food handling and food technology.

		Req'd Hrs.
A. Basic Core Curriculum		17
B. Technical Food Service Management		17
1 Fn	Nutrition in Human Development	3
2 Fn	Principles of Food Preparation	3
3 Fn	Quantity Food Production	3
4 Fn	Menu Planning & Analysis	2
5 Fn	Food Service Equipment	3
6 Fn	Food & Beverages Purchasing & Control	3
C. Business and Economics		11
2 Ab	Intro. to Economics	3
8 Ab	Principles of Accounting	3
16 Ae	Work Simplification	3
20 Ab	Managing the Business Firm	2
D. Sociology		3
6 Ab	Dynamics of Human Behavior	3
E. Food Technology & Handling		7
2 Bc	Food Chemistry	4
2 By	Food Bacteriology & Sanitation	3
F. Electives		9
Total		64

V. Merchandising (Home Furnishings and Clothing) Curriculum

In recent years the rapid technological development of new textiles, new finishing processes for existing textiles, and new materials for home furnishings, has created a need for personnel in the retail field at the supervisory and managerial level who have an understanding of these materials. The curriculum will provide specialized courses in textiles, clothing, home furnishings, commercial and advertising design and fashion merchandising.

		Req'd Hrs.
A. Basic Core Curriculum		17
B. Technical Home Furnishings and Clothing		18
1 Cd	Introduction to Design	3
3 Cd	Textiles in Home and Clothing	3
4 Cd	Furnishing and Decorating the Home	4
6 Cd	Clothing the Family	3
7 Cd	Commercial and Advertising Design	2
8 Cd	Fashion Merchandising	3
C. Business and Economics		13
2 Ab	Introduction to Economics	3
4 Ab	Principles of Marketing	4
8 Ab	Principles of Accounting	3
10 Ab	Sales Promotion	3
D. Sociology		5
6 Ab	Dynamics of Human Behavior	3
7 Ab	Sociology and the Individual	2
E. Electives		11
Total		64

TWO-YEAR TECHNICAL COURSE DESCRIPTIONS

AGRICULTURAL BUSINESS AND ECONOMICS

2 Ab. Introduction to Economics—A study of economic principles applied to the economy as a whole and to the business firm. Consideration will be given to money and banking, government, finance, credit and pricing. *Rec 3, Cr 3.*

MR. ROBINSON

3 Ab. Farm Management—Managing the farm business or optimum returns; economic guides to decision making; management tools and their application; organizing resources for production; adjustments to change. *Rec 2, Lab 2, Cr 3.*

MR. KROFTA

4 Ab. Principles of Marketing—A study of marketing and the basic activities involved in this function of modern business. Covers theoretical principles, consumer and product characteristics, trade practices, market channels, and the improvement of markets and marketing. *Rec 3, Cr 3.*

MR. WING

‡5 Ab. Potato Marketing—Varieties, market grades, maintenance of quality, containers, storage, transportation, consumer preferences, wholesale and retail sales of potatoes. *Rec 3, Cr 3.*

MR. ROBINSON

6 Ab. Dynamics of Human Behavior—An introductory course which explores the applications of social psychology. Five major areas will be covered: social basis of personality, status-roles, socialization, development of meanings, and the individual and the group. Attention will be given to work situations involving human relationships, leadership, and supervision. *Rec 3, Cr 3.*

MR. HYATT

†7 Ab. Sociology and the Individual—Emphasis is placed upon the relationship of the individual to the various social systems of which society is composed. An action approach is taken. The social systems of community, family, religion, education, and economics are especially emphasized. In addition, leadership, power structure, and social stratification are analyzed. *Rec 2, Cr 2.*

MR. HYATT

8 Ab. Accounting Principles—The principles and procedures used in the preparation of balance sheets and income statements. Deals with the systematic recording, classifying, and analyzing of business transactions. Emphasis is on the preparation and presentation of accounting information. *Rec 2, Lab 2, Cr 3.*

MR. WING

10 Ab. Sales Promotion—The use of advertising, sales techniques and merchandising in food marketing. Consideration also given to training of sales and service personnel. Case studies are used to develop an interdisciplinary approach to promotion. *Rec 3, Cr 3.*

MR. ROBINSON

12 Ab. Introduction to Statistics—The nature and effective uses of statistics, including the methods of organizing and interpreting data for business management decisions. Topics such as charts, graphs, distribution, sampling variability, indexes and time series will be studied. *Rec 2, Lab 2, Cr 3.*

MR. ROBINSON

15 Ab. Seminar—Special reports and discussions by students, faculty, and representatives from various industry interests will be included on subjects not covered in other courses. *Rec 1, Cr 1.*

MR. ROBINSON

18 Ab. Placement Training—Provides "on-the-job" training in production, manufacturing, distribution or retailing. Experience will be gained in merchandis-

COLLEGE OF LIFE SCIENCES AND AGRICULTURE

ing, record keeping, warehousing, managing, etc. Work is to be under supervision of employer and University of Maine. Prerequisite: fall semester average of 2.0 or better. *Cr 4.* MR. DUNHAM

20 Ab. *Managing the Business Firm*—Forms of business organization, economic framework, the managerial functions, techniques of financial and credit management, the application of business records in managerial decision making and concepts of managerial economics are presented in light of the needs of a firm. *Rec 3, Cr 3.* MR. ROBINSON

24 Ab. *Food Distribution Management*—The management approach to food marketing. Study of food distribution channels, including supermarkets, warehouse distribution centers, and other types of outlets. Case studies in management policies, facility layout procedures, merchandising, price policies, sales promotion, and advertising will be used. Firm visits. (Lab fee \$5.00) Prerequisite: 4 Ab. *Rec 2, Lab 4, Cr 4.* MR. DUNHAM

28 Ab. *Interpretation of Financial Records*—Emphasis is on the analysis of financial statements for use by management. Stress is placed on financial relationships, the limitations of financial data, and the ways in which data can be combined or broken down in order to use financial information intelligently. Prerequisite: 8 Ab. *Rec 2, Lab 2, Cr 3.* MR. DUNHAM

AGRICULTURAL ENGINEERING

5 AE. *Engines and Tractors*—The construction, principles, and maintenance of spark ignition and diesel engines for farm tractors and related equipment. Use of repair tools. Choice and use of tractors for optimum field performance. *Rec 2, Lab 2, Cr 3.* STAFF

7 AE. *Remedial Mathematics*—Basic mathematical operations and algebra. Solutions of problems associated with business and production. No credit. STAFF

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*—Functional planning and economic considerations, materials, methods of construction and environmental control for production, processing and storage buildings. *Rec 2, Lab 2, Cr 3.* MR. WILLIAMS

10 AE. *Electrification*—Electrical terms and circuits. Electrical equipment for heat and power. Basic wiring techniques, including planning of wiring systems. *Rec 2, Lab 2, Cr 3.* MR. SMITH

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. KLINGE

12 AE. *Utilities*—Selection, care and use of water and sewage disposal systems. *Rec 2, Lab 2, Cr 3.* MR. RHOADS

13 AE. *Applied Mathematics*—Use of graphical and statistical methods, slide rules and other mechanical aids in the solution of problems in business, mechanics, agricultural production and institutional management. *Rec 3, Cr 3.* STAFF

15 AE. *Refrigeration Technology*—The principles, selection, and operation of refrigeration units and materials handling equipment associated with refrigerated storages and transportation. *Rec 2, Lab 2, Cr 3.* MR. RHOADS

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16 AE. Work Simplification—A study of the principles and methods for accomplishing work. Procedures cover: (1) measuring and improving efficiency of labor, and (2) comparing alternative methods of performing an operation. Problems furnish practice in planning improved work methods and managerial procedures. *Rec 2, Lab 2, Cr 3.* MR. RHOADS

ANIMAL PATHOLOGY

5 AnP. Livestock Diseases—Principles of hygiene and sanitation applied to the prevention and control of the common diseases of dairy cattle. *Rec 3, Cr 3.* MR. PAYNE

9 AnP. Laboratory Animal Diseases—Principles of disease prevention and control as they apply to common laboratory rodents, carnivores, primates, and birds. *Rec 3, Cr 3.* MR. PAYNE

20 AnP. Clinical Laboratory Practices—A descriptive and laboratory course in clinical and necropsy procedures, including microscopic techniques, parasitologic, urine, hematologic, bacterial, viral, fungal, fertility, and organ function examinations. *Rec 2, Lab 4, Cr 4.*

MR. PAYNE, MR. O'MEARA AND MR. GERSHMAN

ANIMAL SCIENCES

1 An. Dairy Cattle—The practical application to herd management of lactation, environment, reproduction, sanitation, housing, and breed association programs. The laboratory is devoted to practical problems in the management of a herd of dairy cattle. Field trip fee \$3. *Rec 2, Lab 2, Cr 3.* MR. LEONARD

2 An. Animal Production—Breeds and types of beef cattle, sheep, swine and pleasure horses; their care, feed, and management. *Rec 2, Lab 2, Cr 3.* MR. BRUGMAN

3 An. Animal Selection—A study of the principles of animal selection. *Rec 1, Lab 2, Cr 2.* MR. LEONARD

4 An. Animal Breeding—Animal genetics, systems of breeding and principles of selecting farm and laboratory animals. *Rec 3, Cr 3.* MR. DICKEY

5 An. Milk Composition and Testing—A study of milk constituents and properties. Emphasis on testing milk and milk products for fat and solids; methods of milk processing. *Rec 2, Lab 2, Cr 3.* MR. HOOVER

6 An. Animal Feeding—A study of the principles of nutrition, feeds and their values, and the nutritive requirements of animals. The laboratory is devoted to the principles of nutrition and ration formulation; one section for farm animals and one section for laboratory animals. Field trip fee \$3. *Rec 2, Lab 2, Cr 3.*

MR. LEONARD, MR. GERRY

7 An. Poultry Production—A general survey course designed to introduce the students to the many aspects of the poultry industry. Professional personnel serving the industry at the University are featured as guest speakers. *Rec 3, Cr 3.* MR. HARRIS

COLLEGE OF LIFE SCIENCES AND AGRICULTURE

8 An. Meat and Meat Products—Methods of handling and preparing livestock for market, packing house methods, cutting and curing of meats with special emphasis on retailing of meat and poultry products. Laboratory fee of \$5. *Rec 1, Lab 4, Cr 3.* MR. BRUGMAN, MR. GERRY

9/10 An. Anatomy and Physiology of Animals—A descriptive course covering the structure and function of the various tissues, organs, and systems of common laboratory and domestic animals. *Rec 3, Cr 3.* MR. HARRIS

12 An. Reproduction and Breeding—A practical course in breeding of cattle, sheep, hogs, and laboratory animals, with emphasis on the reproductive cycle, handling of semen, and management of the breeding programs. *Rec 2, Lab 2, Cr 3.* MR. BRUGMAN

14 An. Laboratory Animal Care—The principles and practices of laboratory animal care in clinics, hospitals, and research laboratories; animal house design, equipment, management, and legal regulations. *Rec 3, Cr 3.* MR. BIRD

16 An. Laboratory Animal Techniques—Principles and practices of animal handling and restraint. Includes methods of breeding, injecting, preparation for surgery, anesthesiology, and minor surgery. *Rec 2, Lab 2, Cr 3.* MR. POULTON

†19 An. Advanced Poultry Production—The principles of incubation and embryo development; the housing, management, and business practices of the table egg, hatching egg, and broiler industry. Field trip fee \$5. *Rec 2, Lab 2, Cr 3.*

21. 22 An. Problems in Animal and Poultry Production—*Cr Ar.* STAFF

HOME ECONOMICS

1 Fn. Nutrition in Human Development—Basic nutrition knowledge interpreted in light of the contribution good nutritional practices can make to the welfare of the individual and the community. *Rec 3, Cr 3.* MISS YOUNG

2 Fn. Principles of Food Preparation—Influence of kind and proportion of ingredients, methods of manipulation, and cookery on food products. Standards for acceptable products. Experience with a wide variety of foods under varied conditions. Prerequisite: 1 Fn. *Rec 1, Lab 4, Cr 3.* MISS YOUNG

3 Fn. Quantity Food Production—Recipe standardization, portion and quality control; the sanitary, safe and economical use of food and equipment. Emphasis on principles and practices of food preparation that underlie the service of high quality, nutritious food in quantity. Prerequisite: 1, 2 Fn. *Rec 1, Lab 4, Cr 3.* MISS YOUNG

4 Fn. Menu Planning and Analysis—Principles of menu planning, types and uses, format, organization and pricing. Prerequisite: 1, 2 Fn. *Rec 2, Cr 2.* MISS YOUNG

5 Fn. Food Service Equipment: Layout and Design—The use, care, maintenance, and selection of small wares and heavy duty equipment. Study of general and itemized specifications; bid analysis and awarding of contracts. Consideration of sanitary codes that affect layouts; blueprint analysis through studies of schematic drawings of equipment, departmental and overall food service layouts. *Rec 2, Lab 2, Cr 3.* STAFF

6 Fn. Food and Beverage Purchasing and Control—A discussion of sources, grades, methods of purchase, care, and storage of foods; principles of food control, cost analysis and inventory procedures. *Rec 3, Cr 3.* STAFF

UNIVERSITY OF MAINE

1 Cd. Introduction to Design—Study of line form, light, color, and texture in merchandise for home furnishings and clothing to obtain beauty, expressiveness, and functionalism in daily living. *Rec 2, Lab 2, Cr 3.* MR. WATTS

3 Cd. Textiles in Home and Clothing—Learning to recognize quality features of fabrics and to understand labels for fiber content, functional finish, and care. Fiber properties and performance data. Fair claim policy. Names and consumer uses of fabrics. *Rec 3, Cr 3.* STAFF

4 Cd. Furnishing and Decorating the Home—Planning functional and aesthetic qualities of the home for individual and family situations. Focus on organization, selectivity, and quality features of merchandise. Overall plan, setting, furniture. Wall and window treatments, lighting, table appointments, and accessories. Prerequisite: 1 Cd. *Rec 2, Lab 4, Cr 4.* STAFF

6 Cd. Clothing the Family—Clothing and accessories for physical, social, and economic needs of various age groups. Size, cut, fit, construction, and price level. Hanger appeal and combining value in the wardrobe. Studies of consumers' satisfaction. *Rec 3, Cr 3.* STAFF

7 Cd. Commercial and Advertising Design—Problems in display and visual communication emphasizing design, lighting, space, materials and color for two- and three-dimensional areas such as show cases in merchandising, two-dimensional advertising, educational displays and basic packaging design. *Rec 1, Lab 2, Cr 2.* MR. WATTS

8 Cd. Fashion Merchandising—Sources of fashion with charting of trends. Promotion of fashion in home furnishings and clothing. Comparative shopping and evaluation of perishability. Prerequisite: 1-7 Cd. *Rec 3, Cr 3.* STAFF

PLANT AND SOIL SCIENCES

1 P. Potato Production—Production of potatoes for seed, tablestock and processing. *Rec 2, Lab 2, Cr 3.* MR. MURPHY

2 P. Soils and Fertilizers—Soil properties and their relation to crop production, with special emphasis on management and use of commercial fertilizers. *Rec 3, Lab 2, Cr 4.* MR. MURPHY

3 P. Forage Management—Production of hay, silage, and pasture crops. Selection of seeding mixtures, establishment of forage seedings; use of lime and fertilizers to maintain forage productivity. Pasture management; harvesting and preservation of hay and silage. *Rec 2, Lab 2, Cr 3.* MR. BROWN

‡4 P. Fruit Production—A cultural study of tree fruits and small fruits including apples, blueberries, raspberries and strawberries; also methods of harvest, post harvest handling, marketing, and utilization. *Rec 2, Lab 2, Cr 3.* MR. ABDALLA

‡5 P. Vegetable Growing—Cultural practices for the major vegetable crops of both the home garden and the market garden. *Rec 2, Lab 2, Cr 3.* MR. HEPLER

7 P. 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

‡8 P. 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. HOLYOKE

9 P. Post Harvest Physiology of Fruits and Vegetables—A study of

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storage conditions and their effects on the physiological processes that occur in storage. *Rec 2, Lab 2, Cr 3.* MR. ABDALLA

10 P. Storage and Handling of Potatoes—A study of the principles of potato storage and post harvest handling of potatoes into and out of storage areas and to market. *Rec 3, Cr 3.* MR. MURPHY

SERVICE COURSES IN THE COLLEGE OF LIFE SCIENCES AND AGRICULTURE

1 LSA. Orientation and Social Usage—Understanding the University; adjusting to an academic environment; providing guidelines for accepting responsibilities in business and social situations. Pass or fail—no credit.

MR. PULLEN AND MRS. HUTCHINSON

2 By. Food Bacteriology and Sanitation—Basic principles of food microbiology together with illustrations of these principles to serve as an aid to workers in the fields related to food industries. *Rec 2, Lab 2, Cr 3.* MR. WHITEHILL

2 Bc. Food Chemistry—Chemical composition and reactions of materials encountered in the processing and preservation of foods. *Rec 3, Lab 2, Cr 4.*

MR. RADKE

5 Bc. Animal Biochemistry—An introduction to the principles of inorganic, organic, and biochemistry. *Rec 3, Lab 2, Cr 4.* MISS SMITH

1 En. Applied Entomology—Consideration of insect benefits and detriments to man. General structure, classification, habits, and life histories of representative pest species. Study of all phases of control with emphasis on development, use, and implication of pesticides to production and marketing. *Rec 2, Lab 2, Cr 3.* MR. BOULANGER

1 Fy. Forestry—Establishment and care of 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.* MR. HOBBS

2 Eh. English Composition—A continuation of 1 Eh with particular emphasis given to expository writing. *Rec 3, Cr 3.* MR. HOBBS

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.*

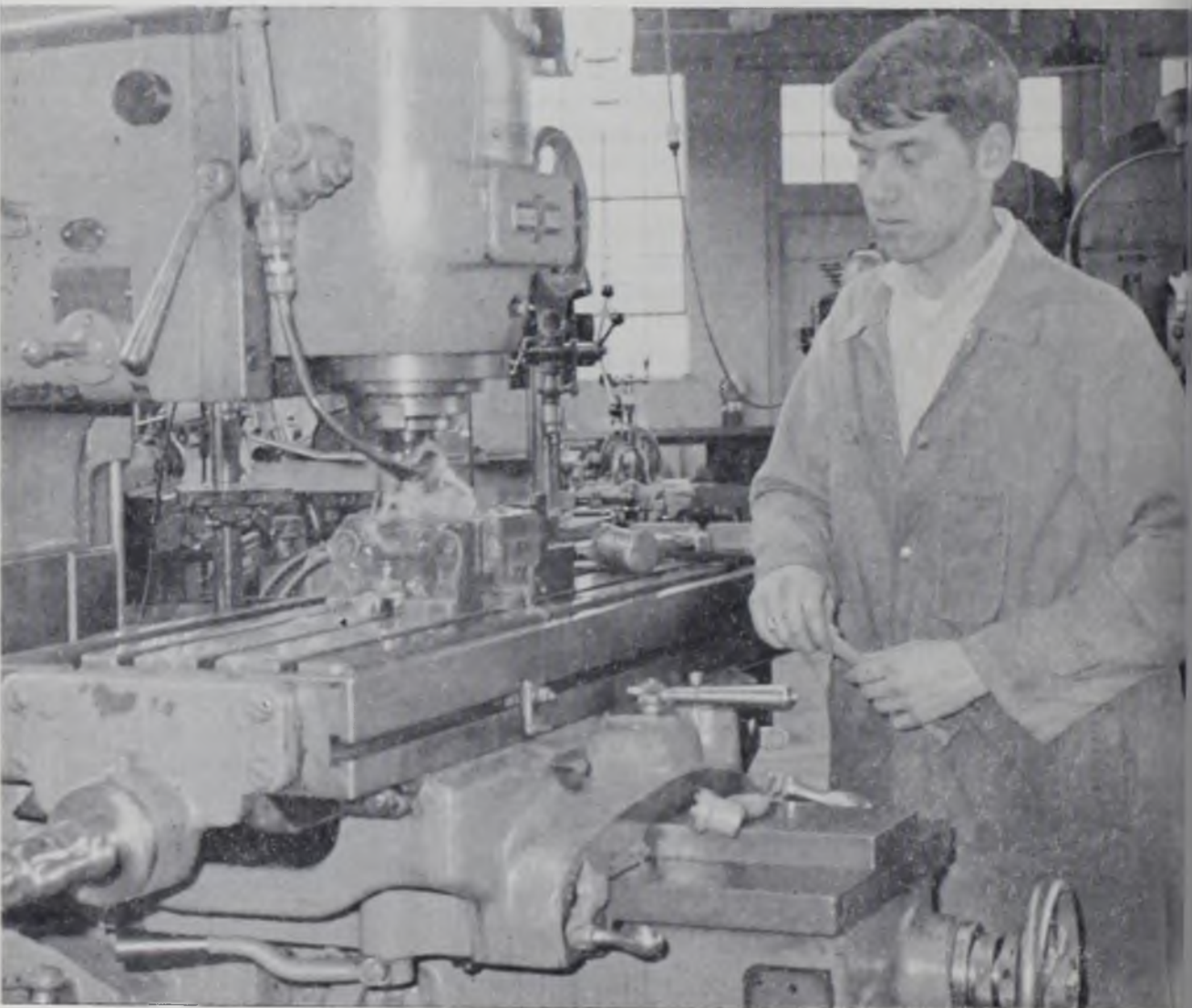
MR. DOW

3 Gt. Current World Affairs—A survey of current national and international affairs with particular attention to American foreign policies. *Rec 2, Cr 2.* MR. SCHOENBERGER

1 Sh. Oral Communication—Principles of effective oral communication. Emphasis on selection of subject, organization of material and effective preparation. Experience in the preparation and delivery of short extemporaneous speeches. *Rec 3, Cr 3.* MR. COOK



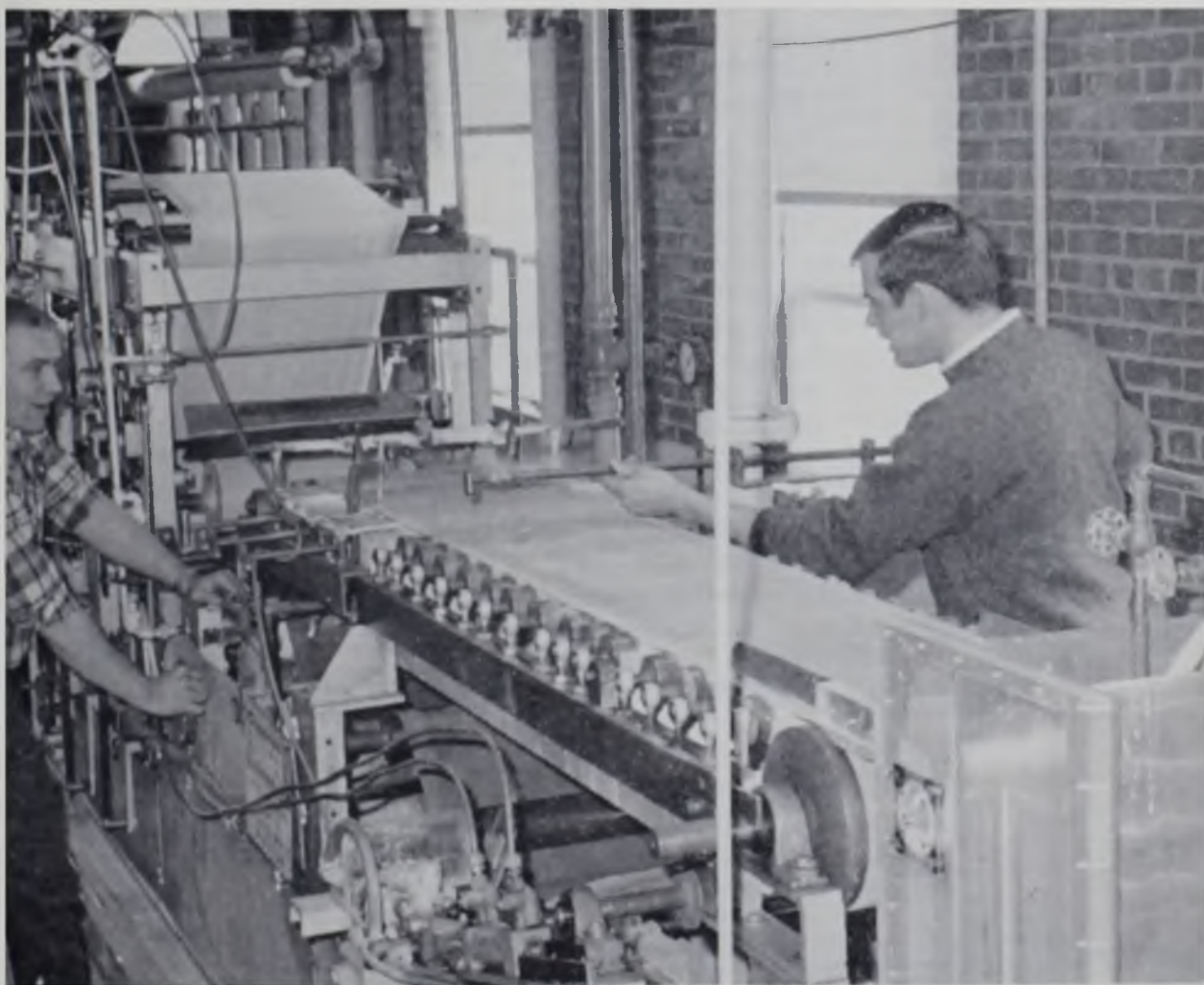
Forestry student tests wood strength



Mechanical engineering student operates vertical milling machine in Crosby Lab

COLLEGE OF TECHNOLOGY

THOMAS H. CURRY, DEAN



*Students adjust paper-making machine
in Lord Hall*

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 Life Sciences and Agriculture)
- Chemical Engineering
- Chemistry
- Civil Engineering
 - Highway Engineering
 - Sanitary Engineering
 - Structural Engineering
 - Public Management
- Electrical Engineering
- Engineering Physics
- Mechanical Engineering
 - Fluid and Solid Mechanics
 - Thermal Science and Heat Power
 - Mechanical Design
 - Environmental Design and Control
- Pulp and Paper Technology

By special arrangement, a five-year Pulp and Paper Program is available with options in management or computer applications in conjunction with any of the above curricula or the Forestry curriculum.

For Agricultural Engineering see page 190.

For information on the two-year programs in Engineering Technology see page 282.

The freshman year is common to all engineering curricula and chemistry.

Freshman Year

FALL SEMESTER				SPRING SEMESTER			
Subject		Hours		Subject		Hours	
Ch	1	Gen. Chemistry	3 3 4	Ch	2	Gen. Chemistry	3 3 4
Eg	1	Engineering Drawing	0 4 2	Eh	1	Freshman Comp.	3 0 3
Ms	12	Anal. Geom. & Cal.	4 0 4	Eg	2	Engineering Drawing	0 4 2
Pe	1	Physical Education	0 2 0	Ms	27	Calculus	4 0 4
Ps	1	General Physics	4 2 5	Pe	2	Physical Education	0 2 0
Gc	5	Orientation	1 0 0	Ps	2	General Physics	4 2 5
				Gc	6	Orientation	1 0 0

For information on advanced placement, see page 38.

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 138 degree hours. Degree hours shall not be granted for basic Military Science, Mt 1, 2, 3, and 4, or 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) Graphics: Eg 1 and 2, or equivalent
b) Languages: Eh 1, or equivalent, Sh 1, Eh 5, or equivalent.
c) Mathematics: Ms 12, 27, 28, and 29 or equivalent.
d) Science: Ch 1 and 2, Ps 1 and 2, or equivalent.
e) Physical Education, two semesters. Veterans may be excused.
3. Passing grades is a minimum of six credit hours in each of the two categories listed, and a minimum of 18 credit hours total.

I. Social Sciences

Any course for which the student can qualify may be taken from those listed in the catalog under Business and Economics, Modern Society, Psychology, and Sociology and Anthropology, excepting courses in accounting, industrial management, finance and personnel administration.

II. Humanities

Any course for which the student can qualify may be taken from those listed in the catalog under Art, English, Foreign Languages and Classics, History and Political Science, Music, and Philosophy. Humanities credit may not be given for Gm 13 & 14, (Scientific German) or English Composition. No more than three credits will be accepted in applied music (band, chorus, instrumental or voice music lessons). Courses of a cultural and nontechnical nature offered in the Speech Department, namely, American Public Address, Theatre History, and Theatre Today, and a maximum of three additional credits in Theatre will be accepted.

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 per year, of which approximately \$100 will be required the first semester
Sophomores	\$100—140 per year
Juniors	\$100—160 per year
Seniors	\$100—160 per year

In chemistry and chemical engineering courses, students may be required to pay for apparatus broken or lost and for certain non-returnable supplies.

Graduate Study

Graduates from accredited undergraduate programs are eligible for graduate study in the College of Technology, provided their undergraduate records meet

UNIVERSITY OF MAINE

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 6 to 10 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.

Honors Program

Honors courses listed on page 92 are available to students in the College of Technology. The University Honors Program is described on page 30. The successful completion of Hr 41 or Hr 45 will exempt a student from Eh 1. Hr 41, Hr 45 (if not used to replace Eh 1), Hr 47, and Hr 48 may be applied to the social sciences or humanities requirement. Subsequent honors work will replace portions of the standard curriculum as specified by the student's department head. The area of honors work will be shown on the student's transcript.

DEPARTMENTS OF INSTRUCTION

Courses numbered 1-99 are for undergraduates. Courses numbered 300-399 are for graduates. Courses numbered 100-199 are for undergraduates but may be taken for graduate credit with approval of the student's committee. Courses numbered 200-299 are for graduate students, but advanced undergraduate and fifth-year students may take courses in this series if they are qualified in the opinion of the department offering the instruction.

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

When a slant is used between the two numbers (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; when a dash is used (e.g., 1-2), both semesters must be taken to obtain credit.

AGRICULTURAL ENGINEERING

PROFESSORS SMITH, RHOADS; ASSOCIATE PROFESSORS KLINGE, ROWE,
WILLIAMS; ASSISTANT PROFESSORS HUFF AND SOULE

The curriculum in Agricultural Engineering is a joint responsibility of the College of Technology and the College of Life Sciences and Agriculture. It provides training to the fundamentals of engineering and their application to agriculture.

The work of agricultural engineers falls in four major areas: agricultural power and machinery, electric power and processing, farm structures, and soil and water control. Examples of the many types of positions held by graduates of this curriculum are: 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 counseling practice or equipment dealerships.

COLLEGE OF TECHNOLOGY

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, agricultural 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.

Agricultural Engineering Curriculum

Freshman Year. See Page 190.

Sophomore Year

FALL SEMESTER

SPRING SEMESTER

Subject	Hours			Subject	Hours		
	Rec	Lab	Cr		Rec	Lab	Cr
AE 55 Mats. in Agr. Eng.	2	2	3	AE 82 Introd. to A.E.	1	2	2
Ce 5 Surveying	2	3	3	Bt 1 General Botany	2	4	4
Eg 3 Descriptive Geometry	0	4	2	Me 33 Thermodynamics	3	0	3
Gc 7 Computer Programming 1	2	2	Me	52 Dynamics	3	0	3
Me 50 Statics	3	0	3	Ms 29 Cal. & Diff. Eq.	4	0	4
Ms 28 Anal. Geom. & Calc.	4	0	4	*Elective			2
*Elective			1				
			18				18

Junior Year

Subject	Hours			Subject	Hours		
	Rec	Lab	Cr		Rec	Lab	Cr
AE 169 Agr. Processing	2	3	3	AE 167 Agric. Power	2	3	3
Ce 26 Hydraulics	2	3	3	S 2 Soils	3	0	3
Ee 41 Elem. Circuits	3	0	3	Ce 52 Struct. Anal. & Des.	4	0	4
Me 23 Kinematics	3	0	3	Eh 5 Tech. Composition	2	0	2
Me 51 Strength of Mats.	4	0	4	Sh 1 Speech	2	0	2
*Elective			2	*Elective			4
			18				18

Senior Year

Subject	Hours			Subject	Hours		
	Rec	Lab	Cr		Rec	Lab	Cr
Ab 47 Agr. Economics	3	0	3	AE 163 Farm Structure Des.	2	3	3
AE 160 Agr. Machinery	2	3	3	*Electives			13
AE 165 Soil Water Eng.	3	3	4				16
AE 180 Seminar	1	0	1				
AE 183 Spec. Prob. in A.E.			5				
*Electives			5				
			17				

* 18 hours of elective credit must be in humanity-social science electives as specified for other engineering curricula except that three hours should be in Ab/Sy courses; sufficient additional elective credit must be in College of Life Sciences and Agricultural subjects to make a total of 40 credits.

LSA Orientation; Gc 5, 6 Orientation; AE 79 Seminar; AE 80 Senior Seminar or AE 81 Departmental Seminar is required each semester.

Students transferring to University of Maine under the Regional Program from the Universities of Massachusetts, New Hampshire, Rhode Island or Vermont should check the bulletins for those institutions for the first two years in Agricultural Engineering.

Courses in Agricultural Engineering. See Page 198

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CHEMICAL ENGINEERING

(Including Pulp and Paper Technology)

PROFESSORS BOBALEK, CHASE, DURST, ZIEMINSKI; ASSOCIATE PROFESSORS ZABEL, SIMARD, THOMPSON, GORHAM, ELTON; IBM LECTURER MUMME;
INSTRUCTOR FOLSTER

The Chemical Engineering curriculum is designed to provide the education necessary to prepare for successful living in the modern world for students 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. So 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 or computer applications 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 or courses in computer technology and instrumentation. 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 20 hours of professional courses and 10 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.

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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 20 hours of suitable courses taken in the fifth year.

Graduate programs are also available that lead to the doctor of philosophy degree in chemical engineering.

CURRICULUM IN CHEMICAL ENGINEERING

Freshman Year. See page 250.

Sophomore Year

FALL SEMESTER				SPRING SEMESTER			
Subject		Hours Lab Rec or Cr Comp		Subject		Hours Lab Rec or Cr Comp	
Ch	41	Quantitative Anal.	2 3 3	Ch	152	Organic Chemistry	3 0 3
Ch	151	Organic Chemistry	3 0 3	*Ch	162	Organic Lab.	0 4 2
*Ch	161	Organic Lab.	0 4 2	ChE	2	Fund. of Chem. Eng.	2 4 4
ChE	1	Fund. of Chem. Eng.	2 4 4	*Ge	7	Comp. Prog. for Eng.	1 2 2
Ms	28	Calculus	4 0 4	Ms	29	Calculus	4 0 4
						Hum. Elective	— — —

* Recommended elective.

Junior Year

		Lab Rec or Cr Comp				Lab Rec or Cr Comp	
Ch	171	Physical Chemistry	2 6 5	Ch	172	Physical Chemistry	2 6 5
ChE	37	Intro. to Thermo- dynamics	3 0 3	ChE	165	Elem. of Chem. Eng.	3 0 3
ChE	164	Elem. of Chem. Eng.	3 0 3	ChE	181	Chem. Eng. Lab.	1 4 3
Me	55	Statics and Strength of Mat.	3 0 3	Me	52	Applied Mechanics	3 0 3
		Hum. Elective	— — —	Sh	1	Public Speaking	2 0 2
						Hum. Elective	— — —

Senior Year

		Lab Rec or Cr Comp				Lab Rec or Cr Comp	
ChE	177	Chem. Process Industries	3 0 3	*ChE	178	Chem. Process Industries	3 0 3
ChE	182	Chem. Eng. Lab.	1 4 3	ChE	194	Chem. Eng. Thermodynamics	3 0 3
ChE	196	Process Control and Instrumentation	3 0 3	*ChE	199	Thesis	0 4 2
*ChE	199	Thesis	0 2 1	*ChE	168	Kinetics	3 0 3
Ee	41	Electric Circuits	3 0 3	Ee	42	Electric Mach; or	1½ 1½ 2
		Hum. Elective	— — —	Ee	43	Electronics	1½ 1½ 2
Eh	5	Technical Comp.	2 0 2			Hum. Elective	— — —

* Recommended elective.

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CURRICULUM IN PULP AND PAPER TECHNOLOGY

Sophomore and Junior Years: Identical with Chemical Engineering with the exception of Ch 171 and Ch 172 which are recommended electives.

Senior Year

FALL SEMESTER					SPRING SEMESTER				
Subject		Hours Lab Rec or Cr Comp			Subject		Hours Lab Rec or Cr Comp		
Ee	41	Electric Circuits	3	0 3	ChE	181	Chem. Eng. Lab.	1	4 3
Eh	5	Technical Comp	2	0 2	Ee	42	Electric Mach; or	1½	1½ 2
Pa	165	Pulp Technology	3	0 3	Ee	43	Electronics	1½	1½ 2
Pa	173	Pulp Manufacture and Testing	0	8 4	Pa	166	Paper Technology	3	0 3
Pa	189	Pulp & Paper Mill Inspections	0	4 2	Pa	172	Pulp & Paper Equipment	3	0 3
*Pa	199	Thesis	0	2 1	Pa	174	Paper Manufacture and Testing	0	8 4
		Hum. Elective	—	— —	*Pa	199	Thesis	0	4 2

* Recommended elective.

CURRICULUM IN FIVE-YEAR PULP AND PAPER OPTIONS

Freshman Year. See page 250.

Sophomore and Junior Years: Identical with Chemical Engineering

COMPUTER

Senior Year

		Lab Rec or Cr Comp					Lab Rec or Cr Comp		
ChE	177	Chem. Process Industries	3	0 3	*ChE	178	Chem. Process Industries	3	0 3
ChE	182	Chem. Eng. Lab.	1	4 3	ChE	194	Chem. Eng. Thermodynamics	3	0 3
Ee	41	Electric Circuits	3	0 3	Ee	42/43	Electric Mach; or Electronics	1½	1½ 2
Pa	165	Pulp Technology	3	0 3	ChE	150	Analog Computer Programming	2	2 3
ChE	151	Digital Computer & Data Processing Technology	2	2 3	Pa	166	Paper Technology	3	0 3
ChE	196	Process Control & Instrumentation	3	0 3	ChE	242	Process Dynamics	3	0 3
Eh	5	Technical Composition	2	0 2					

* Recommended elective.

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Fifth Year

FALL SEMESTER				SPRING SEMESTER			
Subject		Hours Lab Rec or Cr Comp		Subject		Hours Lab Rec or Cr Comp	
Pa 173	Pulp Manufacture and Testing	0	8 4	Pa 174	Pulp Manufacture and Testing	0	8 4
*Pa 189	Pulp and Paper Mill Inspection	0	4 2	*Pa 172	Pulp and Paper Mill Equipment	3	0 3
ChE 168	Chem. Eng. Kinetics	3	0 3	Ms 19 or 31	Statistics	3	0 3
ChE 152	Special Problems in Computer Programming	2	2 3	Pa 295	Seminar	1	0 ½
Pa 295	Seminar	1	0 ½	Pa 199	Thesis	4	0 2
Pa 199	Thesis	0	2 1	ChE 153	Special Topics in Systems Analysis	3	0 3
	Hum. Elective	—	— —				

* Either one of these courses meets the requirements.

MANAGEMENT

Senior Year

		Lab Rec or Cr Comp				Lab Rec or Cr Comp	
Ba 9	Prin. of Accounting I	3	0 3	ChE 178	Chem. Process Industries	3	0 3
ChE 177	Chem. Process Industries	3	0 3	ChE 194	Chem. Eng. Thermodynamics	3	0 3
ChE 182	Chem. Eng. Lab.	1	4 3	Ee 42	Electric Mach. or Electronics	1½ 1½ 2	
Ee 41	Electric Circuits	3	0 3	Ee 43	Electronics	1½ 1½ 2	
Ec 33	Labor Economics	3	0 3	Eh 5	Technical Comp.	2	0 2
Pa 165	Pulp Technology	3	0 3	Pa 166	Paper Technology	3	0 3
	Hum. Elective	—	— —		Hum. Elective	—	— —

Fifth Year

		Lab Rec or Cr Comp				Lab Rec or Cr Comp	
Ba 151	Business Finance I	3	0 3	Ba 30	The Legal Env. Bus.	3	0 3
ChE 196	Process Control and Instrumentation	3	0 3	Ms 19	Statistics or	3	0 3
Pa 184	Paper Mill Mgt.	3	0 3	Ms 31	Math. Statistics	3	0 3
Pa 173	Pulp Manufacture and Testing	0	8 4	Pa 172	Pulp & Paper Mill Equipment	3	0 3
Pa 189	Pulp and Paper Mill Inspection	0	4 2	Pa 174	Paper Manufacture and Testing	0	8 4
Pa 295	Seminar	1	0 ½	Pa 295	Seminar	1	0 ½
Pa 199	Thesis	0	2 1	Pa 199	Thesis	1	0 ½
	Hum. Elective	—	— —		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

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the analysis of problems in chemical engineering operations and processes. Prerequisite: Ch 2. *Rec 2, Lab, 4, Cr 4.* MR. FOLSTER, MR. GORHAM, MR. THOMPSON

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 29. *Rec 3, Cr 3.* MR. ELTON, MR. SIMARD

150. Analog Computer Programming—Fundamentals of linear and non-linear analog computer programming. Solutions of ordinary and partial linear and non-linear equations. Simulation of physical systems representing various engineering and scientific disciplines. Simulation of process control systems. Prerequisite: Ms 150 (or concurrent registration) or permission of the instructor. *Rec 2, Lab 2, Cr 3.* MR. MUMMÉ

151. Digital Computation—Fundamentals of IBM 1620/171 machine language. Symbolic Programming System (S.P.S.) for the 1620/1710. Emphasis on student use of equipment via laboratory exercises. Examples and applications in engineering and science. Prerequisites: None (Gc 7 is recommended, but not required). *Lec 2, Lab 2, Cr 3.* MR. MUMMÉ

152-153. Special Problems in Computer Programming and Systems Analysis—Programming of the digital-analog hybrid computer system. Lecture and laboratory use of hybrid computation in simulation and system development. Fundamentals of modelling theory; search techniques; and optimization methods. Relationship of process instrumentation to automatic optimal control. Simulation of real processes, linear and non-linear. Prerequisite: ChE 150, 151, Ch E 196 (or EE 71) or permission of the instructor. *Rec 3, Cr 3.* MR. MUMMÉ, MR. ZABEL

164/165. Elements of Chemical Engineering—Basic principles of the unit operations and their application to engineering problems. Prerequisite: Ms 29, and either ChE 2 or ChE 33. *Rec 3, Cr 3.* MR. CHASE

168. Chemical Engineering Kinetics—Kinetics of homogeneous reactions and solid catalytic reactions. Heat and mass transfer in, and design of, reactors. Prerequisite: ChE 165. *Rec 3, Cr 3.* MR. ELTON

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 172; ChE 165. *Rec 3, Cr 3.* STAFF

177/178. 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

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 164 for 181, ChE 165 fo 182. *Rec 1, Lab 4, Cr 3.* MR. DURST

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187. 188. Chemical Engineering 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

194. 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, 165. *Rec 3, Cr 3.* MR. ELTON, MR. THOMPSON

196. 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, MR. ZABEL

199. Undergraduate Thesis—Original investigation of a chemical engineering problem, and reporting of the results. Open only to seniors. *Cr Ar.*

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Graduate Courses

220. Colloid Technology—*Rec 3, Cr 3.*

221. Fuel and Combustion—*Rec 3, Cr 3.*

222. Chemical Engineering Plant Design—*Rec 3, Cr 3.*

223. Economic Balance—*Rec 3, Cr 3.*

230. Introduction to Polymer Science—*Rec 3, Cr 3.*

242. Process Dynamics and Control—*Rec 3, Cr 3.*

330. Advanced Chemical Engineering Thermodynamics—*Rec 3, Cr 3.*

331. Kinetics and Catalysis—*Rec 3, Cr 3.*

350. Transport Phenomena—Energy Transport—*Rec 3, Cr 3.*

351. Transport Phenomena—Mass Transport—*Rec 3, Cr 3.*

352. Transport Phenomena—Momentum Transport—*Rec 3, Cr 3.*

360-365. Advanced Unit Operations—*Rec 1, Lab 4, Cr 3.*

395. Graduate Seminar—*Rec 1, Cr ½.*

399. 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.* STAFF

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. SIMARD, MR. ZABEL

166. Paper Technology—A course in the processes of manufacturing paper. Prerequisite: Pa 165. *Rec 3, Cr 3.* MR. SIMARD, MR. ZABEL

172. Pulp and Paper Equipment—A lecture and recitation course involving the description, and production calculations, of pulping, stock preparation, stock flow, paper information, power plant, and auxiliary equipment. Prerequisite: Pa 165. *Rec 3, Cr 3.* MR. ZABEL, MR. GORHAM

173. Pulp Manufacture and Testing—A laboratory course involving the production and testing of chemical and semi-chemical wood pulps. Prerequisite: Ch 140, Pa 165 (can be taken simultaneously). *Lab 8, Cr 4.*

MR. SIMARD, MR. ZABEL

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174. Paper Manufacture and Testing—A laboratory course in the manufacture of paper, including beating, jordaning, sizing, etc., and physical, chemical, and microscopic testing. Prerequisite: Ch 140, Pa 166 (can be taken simultaneously). *Lab 8, Cr 4.* MR. SIMARD, MR. ZABEL

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. BOBALEK

189. Pulp and Paper Mill Inspection—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. MR. SIMARD

199. Undergraduate Thesis—Original investigation of a pulp and paper problem and reporting of the results. Open only to seniors. *Cr Ar.*

Graduate Courses

295. Graduate Seminar—Rec 1, Cr ½.

399. Graduate Thesis—*Cr Ar.*

CHEMISTRY

PROFESSORS WOLFHAGEN, BEAMESDERFER, BOGAN, DOUGLASS, DUNLAP, MARTIN;
ASSOCIATE PROFESSORS GEORGITIS, GOODFRIEND; ASSISTANT PROFESSORS
FURROW, GREEN, RUSS; MR. HILL, MR. HILTON, MRS. WOLFHAGEN

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, 140, 151, 152, 154, 161, 162, 171, 172, 185, 190. 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 physical sciences, exclusive of German and freshman English.

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Superior students should seriously consider 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 Graduate School Catalog. 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 catalog.

CHEMISTRY CURRICULUM

Freshman Year. See page 250.

Sophomore Year

FALL SEMESTER					SPRING SEMESTER				
Subject		Hours			Subject		Hours		
		Rec	Lab	Cr			Rec	Lab	Cr
Ch 151	Organic Chemistry Lecture	3	0	3	Ch 140	Quantitative Anal.	2	6	4
Ch 161	Organic Chemistry Laboratory	0	4	2	Ch 152	Organic Chemistry Lecture	3	0	3
Ms 28	Anal. Geometry and Calculus	4	0	4	Ch 162	Organic Chemistry Laboratory	0	4	2
	Elective			3	Ms 29	Calculus and Differential Equations	4	0	4
	Economics, Sociology or Psychology				Sh 1	Public Speaking	2	0	2
	Other Elective(s)			3-4		Elective			3
						Economics, Sociology or Psychology			

Junior Year

		Lab					Lab		
		Rec	or Cr	Comp			Rec	or Cr	Comp
Ch 171	Physical Chemistry	3	5	5	Ch 172	Physical Chemistry	3	5	5
Gm 11	Scientific German (Elementary)	3	0	3	*Ch 190	Intermediate Organic Chemistry Lab.	1	4	3
	Hum. Elective			3	Gm 12	Scientific German (Elementary)	3	0	3
	Other Electives			7-8		Hum Elective			3
						Other Electives			3-4

Senior Year

*Ch 164	Int. Quant. Anal.	2	6	4	*Ch 154	Adv. Inorganic Chemistry	3	0	3
*Ch 185	Chem. Literature	2	0	2					
Gm 13	Scientific German Intermediate)	3	0	3	Eh 5	Technical Comp.	2	0	2
	*Hum. Elective			3		Other Electives			12-13
	Other Electives			5-6					

* For American Chemical Society certification.

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CHEMISTRY CURRICULUM

Courses in Chemistry (Ch)

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

41. Quantitative Analysis—Same course as Ch 140 except that fewer laboratory determinations are made. Prerequisite: Ch 2. *Rec 2, Lab 3, Cr 3.* MR. HILL

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

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

140*. Quantitative Analysis—An introductory course illustrating the fundamental principles of gravimetric and volumetric analysis. Prerequisite: Ch 2. *Rec 2, Lab 6, Cr 4.* MR. BOGAN

151*/152*. Organic Chemistry Lecture—An introduction to the chemistry of carbon compounds. Prerequisite: Ch 2. *Rec 3, Cr 3.* MR. DOUGLASS

154. Advanced Inorganic Chemistry—Advanced theoretical and descriptive inorganic chemistry emphasizing periodic relationships. Prerequisite: Ch 2 and 140. Corequisite: Ch 172. *Rec 3, Cr 3.* MR. RUSS

155. Advanced Inorganic Chemistry—A systematic study of the preparation and physical and chemical properties of nonorganic materials emphasizing periodic trends. Prerequisite: Ch 154. Corequisite: 172. *Rec 3, Lab 3, Cr 4.*

161*/162*. Organic Chemistry Laboratory—An introduction to the synthesis and study of organic compounds in the laboratory. Prerequisite: credit or concurrent registration in Ch 151; 152. *Lab 4, Cr 2.* MR. DOUGLASS

164. Intermediate Quantitative Analysis—A continuation of Ch 140, involving some of the more difficult volumetric and gravimetric methods, with considerable emphasis upon instrumental methods of analysis. Prerequisite: Ch 140 and 172. *Rec 2, Lab 6, Cr 4.* MR. BOGAN

171*/172*. Physical Chemistry—A detailed study of fundamental principles of chemistry and their applications. Prerequisite: Ch 140 or 41, Ps 2, and Ms 29. *Rec 3, Comp 1, Lab 4, Cr 5.* MR. DUNLAP

179. Advanced Physical Chemistry Laboratory—An advanced laboratory course with emphasis on the use of physico-chemical methods. Prerequisite: Ch 172. *Lab 6 or 8, Cr 3 or 4.* STAFF

185. Chemical Literature—A study of methods for searching the chemical literature. Prerequisite: Ch 152 and Elementary German. *Rec 2, Cr 2.* MR. MARTIN

190. Intermediate Organic Chemistry Laboratory—An introduction to the isolation, identification and semi-micro scale preparation of organic compounds. Prerequisite: Ch 152; Ch 162. *Rec 1, Lab 4, Cr 3.* STAFF

* Not for graduate students in chemistry and chemical engineering. For others, graduate credit with approval of the student's adviser.

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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.
- 256. *Theoretical Organic Chemistry*—Rec 3, Cr 3.
- 271. *Topics in Advanced Physical Chemistry*—Rec 2, Cr 2.
- 276. *Physico-Chemical Methods*—Rec 2, Cr 2.
- 277. *Intermediate Physical Chemistry*—Rec 3, Cr 3.
- 278. *Intermediate Physical Chemistry*—Rec 3, Cr 3.
- 289. *Advanced Organic Chemistry Laboratory*—Lab 6 or 8, Cr 3 or 4.
- 290. *Organic Qualitative Analysis*—Lab 8, Cr 4.
- 291. *Intermediate Organic Chemistry*—Rec 3, Cr 3.
- 295. *Chemical Thermodynamics*—Rec 3, Cr 3.
- 351. *Topics in Advanced Organic Chemistry*—Rec 2, Cr 2.
- 353. *The Chemistry of Organic Sulfur Compounds*—Rec 2, Cr 2.
- 354. *The Chemistry of Heterocyclic Compounds*—Rec 2, Cr 2.
- 361. *Topics in Advanced Inorganic Chemistry*—Rec 2, Cr 2.
- 371. *Topics in Advanced Physical Chemistry*—Rec 2, Cr 2.
- 373. *Statistical Thermodynamics*—Rec 3, Cr 3.
- 374. *Colloid and Surface Chemistry*—Rec 2, Cr 2.
- 395. *Graduate Seminar*—Rec 1, Cr 1.
- 398. *Graduate Research*—Cr Ar.
- 399. *Graduate Thesis*—Cr Ar.

CIVIL ENGINEERING

PROFESSORS WADLIN*, GORRILL, SPROUL, VIESSMAN; ASSOCIATE PROFESSORS GREENWOOD, HAMILTON, TAYLOR; ASSISTANT PROFESSORS FURBER, NIGHTINGALE; MR. FENTON

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. Arrangements for this program are made with the head of the Department of Political Science.

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.

* On leave of absence 1967-68.

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Graduate Work in Civil Engineering

Graduate programs are well established in the fields of public management, sanitary engineering, highway engineering and structural engineering. 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 to three-quarters of his requirements. The remainder 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.

CIVIL ENGINEERING CURRICULUM

Freshman Year. See page 250.

Sophomore Year

FALL SEMESTER						SPRING SEMESTER					
Subject			Hours			Subject			Hours		
			Rec	Lab	Cr				Rec	Lab	Cr
Ce	5	Surveying	2	3	3	Ce	10	Curves & Earthwork	2	0	2
Gc	7	Computer Program	1	2	2	Eg	3	Descriptive Geometry	0	4	2
Ee	41	Elec. Circuits	3	0	3	Gy	6	Geology for Engineers	2	3	3
Ms	28	Calculus	4	0	4	Ms	29	Calculus	4	0	4
		Hum. Elective	—	—	3	Ms	50	Mechanics (Statics)	3	0	3
						Sh	1	Public Speaking	2	0	2
								Hum. Elective	—	—	3

Junior Year

		Rec Lab Cr					Rec Lab Cr				
Ce	26	Hydraulics	3	3	4	Ce	20	Materials	3	3	4
Ce	29	Intro. Highway Eng.	3	0	3	Ce	30	Transportation			
Ce	31	Intro. San. Eng.	3	0	3			Engineering	2	0	2
Me	51	Strength of Materials	4	0	4	Ce	32	Sanitary Eng.			
Ms	150	Diff. Equations	3	0	3			Design	2	3	3
						Ce	52	Struct. Analysis			
								& Design	4	0	4
						Me	52	Dynamics	3	0	3
								Hum. Elective	—	—	3

Senior Year

		Rec Lab Cr					Rec Lab Cr		
Ce	58	Theory of Structures	3	0	3	Ce	57	Reinf. Concrete	3 0 3
Ce	65	Soil Mechanics	2	3	3	Ce	61	Engr. Relations	2 0 2
Eh	5	Tech. Comp.	2	0	2	Co	101	Planning Eng. Proj.	2 0 2
Me	33	Thermodynamics	3	0	3	Ce	176	Soils Engineering	2 0 2
		Hum. Elective	—	—	3			Hum. Elective	— — 3
		C.E. Elective		3				C.E. Elective	3

Highway Engineering Electives

Ce	68	Hwy. Engr.	2	3	3	Ce	172	Hwy. Engr.	2 3 3
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Structural Engineering Electives

Ce	59	Struct. Design	0	9	3	Ce	60	Struct. Design	0 9 3
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Sanitary Engineering Electives

Ce	171	San. Engr.	2	3	3	Ce	174	San. Engr.	2 3 3
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Public Management Option

The Public Management option is designed to give the civil engineering student some of the basic tools of governmental administration at the local level, in preparation for administration of public works departments, city or town managerships, etc. It is strongly recommended that students interested in careers in local government follow the option with a fifth year leading to a master's degree in public management in the College of Arts and Sciences. The following courses are recommended:

			Hours
Ec	1/2	Principles of Economics	6
Gt	1/2	Introduction to Government	6
Gt	7.8	Maine Government	2
Gt	33	The American City	3
Gt	34	Municipal Administration	3
Gt	40	Community Planning	2
Gt	51	Public Administration	3
Gt	52	Administrative Law	3
Gt	195	Municipal Internship*	3
		* (Summer at end of junior year)	

Courses in Civil Engineering (Ce)

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.*

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.*

20. Materials—The properties of materials which are significant in building and highway construction and how they are determined. The selection of materials to fulfill given requirements. Prerequisite: Me 51. *Rec 3, Lab 3, Cr 4.*

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.*

29. Introduction to Highway Engineering—The principles, current practice and research involved in the planning, design, construction, and operation of various types of highway systems, including traffic engineering, drainage systems, subgrade structures and design of base courses. Prerequisite: Ce 10. *Rec 3, Cr 3.*

30. Transportation Engineering—The history and development of transportation systems, their components, means of propulsion, limitations, operating characteristics, terminal requirements and the economic comparison and planning of the various systems. Prerequisite: Ce 29 or consent of instructor. *Rec 2, Cr 2.*

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.*

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.*

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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 4, Cr 4.*

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.*

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.*

59/60. Structural Design—The designing and detailing of steel and reinforced concrete structures. Prerequisite: Ce 52. *Lab 9, Cr 3.*

61. 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 2, Cr 2.*

65. 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.*

68. Highway Engineering—Highway location and relocation, including plans of proposed improvement; subgrade structure; base courses and low type pavements. Prerequisite: Ce 29. *Rec 2, Lab 3, Cr 3.*

99. Thesis—The study of and report upon some original investigation or design. Time to be arranged. *Cr 2 or 3.*

101. Planning Engineering Projects—CPM, PERT, resource leveling, work study, linear programming, and related operations research techniques applied to the planning and scheduling of engineering projects. Prerequisite: Gc 7 and senior standing or consent of instructor. *Rec 2, Cr 2.*

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 26 or the equivalent. *Rec 3, Cr 3.*

171. Sanitary Engineering—Sewerage and the theory and design of sewage disposal works, followed by brief studies of municipal and rural sanitation. Prerequisite: Ce 32. *Rec 2, Lab 3, Cr 3.*

172. Highway Engineering—Various highway problems; rights of way; traffic engineering; drainage; high type pavements and maintenance. Prerequisite: Ce 68. *Rec 2, Lab 2, Cr 3.*

174. Sanitary Engineering—Continuation of study begun in Ce 171 of rural and municipal sanitation, followed by study of water purification and design of water treatment plants. Prerequisite: Ce 171. *Rec 2, Lab 3, Cr 3.*

176. Soils Engineering—The methods of treating certain foundation problems to which soil mechanics provides a solution. Prerequisite: Ce 65. *Rec 2, Cr 2.*

178. Chemistry in Sanitary Engineering—Elementary principles of organic, physical and colloidal chemistry and their use and significance in sanitary engineering practice. Analytical chemistry and tests as related to water. Prerequisite: Ch 2 or equivalent and Ce 31. *Rec 2, Lab 3, Cr 3.*

179. Microbiology in Sanitary Engineering—Basic principles of biochemistry and microbiology, disinfection, enteric organisms, biology of wastewater treat-

ment, natural purification of streams and disease producing organisms. Prerequisite: Ce 178 or equivalent; may be taken concurrently. *Rec 2, Lab 6, Cr 4.*

181. Seminar—Written and oral reports with discussions on assigned topics in any special branch of civil engineering. *Rec 1-3, Cr 1-3.*

192. Indeterminate Structures—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.*

Graduate Courses

- 200. City and Regional Planning**—*Rec 2, Lab 2, Cr 3.*
- 205. Traffic Operations and Geometric Design**—*Rec 3, Lab 3, Cr 4.*
- 206. Traffic Flow Theory**—*Rec 2, Lab 2, Cr 3.*
- 230. Water Resources Engineering**—*Rec 3, Cr 3.*
- 240. Radiological Health**—*Rec, Lab 3, Cr 3.*
- 300. Traffic Planning I**—*Rec 3, Cr 3.*
- 301. Traffic Planning II**—*Rec 3, Cr 3.*
- 303. Urban Transportation Planning**—*Rec 3, Lab 3, Cr 4.*
- 310. Transportation Systems and Terminal Design**—*Rec 3, Cr 3.*
- 320. Water Treatment Theory**—*Rec 3, Cr 3.*
- 322. Sewage Treatment Theory**—*Rec 3, Cr 3.*
- 323. Industrial Wastes**—*Rec 2, Lab 6, Cr 4.*
- 324. Public Health Engineering**—*Rec 3, Cr 3.*
- 330. Sanitary Eng. Design I**—*Rec 2, Lab 4, Cr 3.*
- 331. Sanitary Eng. Design II**—*Rec 2, Lab 4, Cr 3.*
- 350. 351. Sanitary Eng. Seminar**—*Rec 1, Cr 1.*
- 364. Engineering Properties of Soils**—*Rec 2, Lab 6, Cr 4.*
- 365. Advanced Soil Mechanics**—*Rec 3, Cr 3.*
- 366. Highway Soils Engineering**—*Rec 3, Lab 3, Cr 4.*
- 370. Advanced Soils Laboratory**—*Lab 6, Cr 2.*
- 376. Foundations and Underground Structures**—*Rec 3, Cr 3.*
- 390. Vibrations of Structures**—*Rec 3, Cr 3.*
- 391. Numerical Analysis of Structures**—*Rec 3, Cr 3.*
- 392. Rigid Frames and Arches**—*Rec 3, Cr 3.*
- 393. Folded Plates, Domes and Shells**—*Rec 3, Cr 3.*
- 394. Structural Members**—*Rec 3, Cr 3.*
- 395. Advanced Indeterminate Structures**—*Rec 3, Cr 3.*
- 396. Advanced Reinforced Concrete Structural Design**—*Rec 3, Cr 3.*
- 397. Plastic Design in Steel**—*Rec 3, Cr 3.*
- 399. Graduate Thesis**

ELECTRICAL ENGINEERING

PROFESSORS LIBBEY*, PARSONS, SHIELDS, TURNER; ASSOCIATE PROFESSORS BROWN, CROSBY, SHEPPARD*, YOUNG; ASSISTANT PROFESSORS EDE*, HAMILTON, WHITNEY; MR. MAKINEN, MR. BRYANT, MR. MARSHALL

The Electrical Engineering undergraduate curriculum consists of a logical sequence of courses firmly rooted in basic science and mathematics, progressing

* On leave of absence 1967-68.

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upward through engineering sciences, and culminating in a wide variety of courses in the specific subject of electrical engineering.

Central to the curriculum are integrated course sequences in circuit and network analysis, solid-state and vacuum electronics, fundamentals of electrical machinery, electromagnetic fields, and communication theory. Opportunity is provided in the senior year for each student to elect courses in electro-acoustics, communication theory and systems, digital and analog computer systems and applications, feedback control systems, illuminating engineering, electric power transmission and systems, engineering management, and advanced mathematics.

Through this solid foundation in electrical engineering, which is accompanied by introductory studies in chemistry, classical and modern physics, thermodynamics and heat transfer, and properties of materials, the curriculum provides a sound educational base for graduate study as well as for employment in any of the broad spectrum of job opportunities in the electrical and related industries.

Special Program in Electrical Engineering

A special five-year program in Pulp and Paper Technology is available to electrical engineering students with options in management and computer engineering. This program superimposes certain requirements in the senior year, and provides for the awarding of the bachelor of science in electrical engineering degree at the end of the senior year and a certificate in pulp and paper management or pulp and paper computer engineering at the end of the fifth year.

Graduate Work in Electrical Engineering

A program of graduate study leading to the degree of master of science in electrical engineering provides course offerings in feedback control systems, system transients, electrical power systems, statistical communication theory, electroacoustics, electro-magnetic waves, microwave circuits, analog and digital computer systems, pulse and digital circuits, and network synthesis. As a condition for acceptance as a candidate for the degree, the student must have obtained honor grades in a large portion of his major undergraduate work.

Freshman Year. See page 250.

Sophomore Year

FALL SEMESTER					SPRING SEMESTER				
Subject		Hours			Subject		Hours		
		Lab					Lab		
		Rec or Cr					Rec or Cr		
		Comp					Comp		
Ee	1	Basic Cct. Anal. I	4	3 5	Ee	2	Basic Cct. Anal. II	2	2 3
Eh	15	Masterpcs. of Lit.*	3	0 3	Ee	12	Basic Elec. Lab.	1	3 2
Gc	7	Computer Program	1	2 2	Ms	29	Calculus	4	0 4
Ms	28	Analyt. & Calculus	4	0 4	Me	52	Applied Mechanics	3	0 3
Me	55	Statics & Strength	3	0 3	Ps	36	Mod. Phys. for Eng.	3	0 3
Sh	1	Public Speaking	2	0 2			Hum. Elective		3

* Any other literature course which is offered by the Department of English and for which the student can qualify may be substituted.

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Junior Year

			Lab Rec or Cr Comp						Lab Rec or Cr Comp		
Ee	3	Inter. Cct. Anal. I	2	2	3	Ee	4	Inter. Cct. Anal. II	2	2	3
Ee	13	Electronics I	3	3	4	Ee	14	Electronics II	3	3	4
Ee	23	Electric Machines	3	3	4	Ee	25	AC Machinery	3	3	4
Ee	31	Elem. of Commun.	3	0	3	Eh	5	Technical Comp.	2	0	2
Ms	150	Ordinary Diff. Eq.	3	0	3	Me	33	Thermodynamics I	3	0	3
		Hum. Elective			3			Hum. Elective			3

Senior Year

			Lab Rec or Cr Comp						Lab Rec or Cr Comp		
Ee	150	E-M Fields	3	0	3	Me	62	Heat & Fluid Flow	3	0	3
Ee	161	Electronics III	3	3	4			Hum. Elective			3
		Hum. Elective**			3			Tech. Electives			9
		Tech. Elective***			6						

**This humanities elective may be moved to the spring semester to allow two two-course technical elective sequences.

***Technical electives include upper-level Electrical Engineering courses, Ms 152, and Ms 153. Certain other mathematics, physics and engineering courses may be substituted with special permission. Each student's selection of four technical electives must be approved by his advisor during preregistration in the spring semester of his junior year.

PULP AND PAPER COMPUTER OPTION IN ELECTRICAL ENGINEERING

Five-Year Program

The first three years of this program are the same as the regular Electrical Engineering program.

Senior Year

Subject			Hours Lab Rec or Cr Comp			Subject			Hours Lab Rec or Cr Comp		
ChE	150	Analog Computation	2	2	3	ChE	151	Digital Computation	2	2	3
Ee	150	E-M Fields	3	0	3	Ch	41	Quant. Analysis	2	3	3
Ee	161	Electronics III	3	3	4	Ee	171	Servomechanisms	2	3	3
		Hum. Elective				Ee	194	Engineering Admin.	3	0	3
		Tech. Elective				Me	62	Heat & Fluid Flow	3	0	3
								Hum. Elective			

Lower Level Courses

Circuits, Fields and Systems

1. Basic Circuit Analysis I—Basic laws and theorems of electric circuits; writing and complete solution of differential equations for first-order circuits with various drives. Prerequisite: Ps 2 and Ms 27. *Rec 4, Comp or Lab 3, Cr 5.*

2. Basic Circuit Analysis II—Writing and complete solution of differential equations for second-order electric circuits with various drives; phasor solution of single phase a-c circuits. Prerequisite: Ee 1. *Rec 3, Cr 3.*

3. Intermediate Circuit Analysis I—The complex frequency plane and its application. Fourier analysis and elementary two-port networks. Prerequisite: Ee 2, or 47, Concurrent Ms 150. *Rec 2, Comp or Lab 2, Cr 3.*

4. Intermediate Circuit Analysis II—The study of low frequency transmission lines, Laplace transforms and the Fourier integral. Prerequisite: Ee 3, Ms 150. *Rec 2, Comp or Lab 2, Cr 3.*

Materials, Electronic Devices and Electronics

12. Basic Electrical Laboratory—Use of techniques developed in Ee 1, 2 for the analysis of circuits containing linear, nonlinear, passive and active elements; includes analysis of simple electronic circuits and the use of the oscilloscope. Prerequisite: Ee 2 required concurrently. *Rec 1, Lab 3, Cr 2.*

13. Electronics I—Electron ballistics; conduction in metals and semiconductors; emission; physics of electron devices; piecewise linear equivalent circuits of devices; rectifiers. Prerequisite: Ee 12, Ps 36, Ee 3 required concurrently. *Rec 3, Lab 3, Cr 4.*

14. Electronics II—Continuation of Ee 13: time and frequency domain analysis of electronic circuits; pulse and steady-state response of audio, video and tuned amplifiers; power amplifiers; feedback. Prerequisite: Ee 13. *Rec 3, Lab 3, Cr 4.*

Energy Conversion, Machines, and Control

23. Introduction to Electric Machines—Introductory study of magnetic fields and circuits with application to machines, transformers, and magnetic amplifiers. The theory, construction, operating characteristics, and the elements of control of d-c motors and generators. Introduction to polyphase circuits. Prerequisite: Ee 2. *Rec 3, Comp or Lab 3, Cr 4.*

25. Alternating Current Machinery—Theory, construction, and operating characteristics of alternating-current motors, generators, transformers, and rectifiers. Utilization of polyphase power. Prerequisite: Ee 3 and 23. *Rec 3, Lab 3, Cr 4.*

Communication, Information Theory, and Computer Theory

31. Elements of Communication—Characteristics of the auditory and vocal systems; elements of vision; colorimetry; basic information theory; physiological probability; coding and decoding of information; cybernetics; noise; storage of information; switching circuits; principles of feedback and automation. Prerequisite: Ps 2 and Ms 27. *Rec 3, Cr 3.*

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Service Courses

41. Elementary Circuits—An introduction to d-c and a-c circuits analysis for students majoring in fields other than electrical engineering. Prerequisite: Ms 27, Ps 2. *Rec 3, Cr 3.*

42. Electric Machinery—An introduction to a-c power systems and machines for students majoring in fields other than electrical engineering. Prerequisite: Ee 41. *Rec 1½, Lab 1½, Cr 2.*

43. Electronics—An introduction to electronic devices and circuits for students majoring in fields other than electrical engineering. Prerequisite: Ee 41. *Rec 1½, Lab 1½, Cr 2.*

44. D-C Machines and Control Systems—An introduction to the theory and operating characteristics of d-c machines, typical applications of d-c machines in control systems. Prerequisite: Ee 43. *Rec 1½, Lab 1½, Cr 2.*

45. Electronic Instrumentation and Industrial Control—Principles of electric and electronic instruments and their applications, and an introduction to industrial control. Prerequisite: Ee 43. *Rec 1½, Lab 1½, Cr 2.*

47. Introduction to Electric Circuits—Introduction to transient and steady-state response of electric circuits. Ohm's Law, Kirchoff's Laws, phasor representation, loop and node equations, mutual inductance, network theorems. Portions of Ee 1 and 2, arranged to meet the needs of engineering physics students. Prerequisite: Ps 18, concurrent Ms 150. *Rec 4, Comp 2, Cr 5.*

Thesis

199. Thesis—The study of and report upon some original investigation or design. See regulations regarding degrees. *Cr 1-3.*

Upper Level Courses

Circuits, Fields, and Systems

150. 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: Ms 151. *Rec 3, Cr 3.*

153. Microwave Transmission—High frequency lossy and lossless lines; propagation of waves in free space; antennas; wave guides. Prerequisite: Ee 150. *Rec 1, Comp 4, Cr 3.*

155. Electric Power Transmission—Line constants, high and EHV transmission calculations, distributed parameters, ABCD constants, circle diagrams. Prerequisite: Ee 3, 23. *Rec 2, Comp or Lab 3, Cr 3.*

156. Electric Power Systems—Power limits, steady-state and transient stability, traveling waves and reflections, symmetrical component theory and its application to faulted conditions. Prerequisite: Ee 25 and 155. *Rec 2, Comp or Lab 2, Cr 3.*

157. Electric Power Systems and Transmission—Introduction to current practice in the generation, transmission, and distribution of electric power, with emphasis on the technical problems of lone lines and system networks. Prerequisite: Ee 25. *Rec 3, Comp or Lab 4, Cr 5.*

159. Application of Computers in Power System Analysis—Digital computer and network analyzer application to power system analysis with emphasis

on matrix methods of solution of power system networks. Prerequisite or concurrent: Ee 156 or 157. *Rec 3, Cr 3.*

Materials, Electronic Devices and Electronics

161. Electronics III—Continuation of Ee 14; sinusoidal and nonsinusoidal oscillators: wave generation and shaping; modulation and demodulation circuitry. Prerequisite: Ee 14. *Rec 3, Lab 3, Cr 4.*

164. Electronics and Communication Laboratory—Measurements at radio, video, UHF, and microwave frequencies; generation and amplification of sinusoidal and nonsinusoidal waves; noise measurements; waveshaping; modulation and demodulation. Prerequisite: Ee 161. *Rec 1, Lab 4, Cr 3.*

Energy Conversion, Machines, and Control

171. Servomechanism Fundamentals—Analysis of feedback control systems with emphasis on servo systems using LaPlace transformations, root locus, Nyquist, Bode and Nichols techniques. Introduction to design of compensating networks. Prerequisite: Ee 3, 23 and Ms 150, or permission. *Rec 2, Comp or Lab 3, Cr 3.*

173. Industrial Electrical Control—Study of manual and automatic control of motors, and feedback methods in regulated systems using rotating amplifiers and static switching devices such as silicon-controlled rectifiers and magnetic amplifiers. Prerequisite: Ee 25, *Rec 3, Cr 3.*

Communication, Information Theory, and Computer Theory

180. Analog and Digital Computer Systems—Basic analog computer elements, scale changing for machine equations, special analog elements; introduction to logical design of digital data processing systems, Boolean algebra, codes, switching networks, circuits for logical operation and binary arithmetic, general computer organization and control. Prerequisite: Ms 150, and Ee 14 or 43. *Rec 3, Cr 3.*

183. Probabilistic Methods in Electrical Engineering—The elements of probability theory including both the discrete and continuous cases with particular emphasis on the application to problems in electrical communication. Prerequisite: Ee 4, Ms 150. *Rec 3, Cr 3.*

184. Communication Systems—Time and frequency domain representations of signals, energy density, translation, sampling noise and noise figures, modulation, elements of probability, and information theory, signal flow graphs. Prerequisite: Ee 4 and 161. *Rec 3, Cr 3.*

Miscellaneous

191. Illuminating Engineering—General and advanced illumination theory, illuminating sources and their application, photometry, interior and exterior lighting problems, national electric code, design of electric distribution systems for buildings and for exterior lighting. Prerequisite: Ee 3 or 41. *Rec 2½, Lab 1, Cr 3.*

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 upperclass and graduate students. *Rec 3, Cr 3.*

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Service Courses

41. Elementary Circuits—An introduction to d-c and a-c circuits analysis for students majoring in fields other than electrical engineering. Prerequisite: Ms 27, Ps 2. *Rec 3, Cr 3.*

42. Electric Machinery—An introduction to a-c power systems and machines for students majoring in fields other than electrical engineering. Prerequisite: Ee 41. *Rec 1½, Lab 1½, Cr 2.*

43. Electronics—An introduction to electronic devices and circuits for students majoring in fields other than electrical engineering. Prerequisite: Ee 41. *Rec 1½, Lab 1½, Cr 2.*

44. D-C Machines and Control Systems—An introduction to the theory and operating characteristics of d-c machines, typical applications of d-c machines in control systems. Prerequisite: Ee 43. *Rec 1½, Lab 1½, Cr 2.*

45. Electronic Instrumentation and Industrial Control—Principles of electric and electronic instruments and their applications, and an introduction to industrial control. Prerequisite: Ee 43. *Rec 1½, Lab 1½, Cr 2.*

47. Introduction to Electric Circuits—Introduction to transient and steady-state response of electric circuits. Ohm's Law, Kirchoff's Laws, phasor representation, loop and node equations, mutual inductance, network theorems. Portions of Ee 1 and 2, arranged to meet the needs of engineering physics students. Prerequisite: Ps 18, concurrent Ms 150. *Rec 4, Comp 2, Cr 5.*

Thesis

199. Thesis—The study of and report upon some original investigation or design. See regulations regarding degrees. *Cr 1-3.*

Upper Level Courses

Circuits, Fields, and Systems

150. 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: Ms 151. *Rec 3, Cr 3.*

153. Microwave Transmission—High frequency lossy and lossless lines; propagation of waves in free space; antennas; wave guides. Prerequisite: Ee 150. *Rec 1, Comp 4, Cr 3.*

155. Electric Power Transmission—Line constants, high and EHV transmission calculations, distributed parameters, ABCD constants, circle diagrams. Prerequisite: Ee 3, 23. *Rec 2, Comp or Lab 3, Cr 3.*

156. Electric Power Systems—Power limits, steady-state and transient stability, traveling waves and reflections, symmetrical component theory and its application to faulted conditions. Prerequisite: Ee 25 and 155. *Rec 2, Comp or Lab 2, Cr 3.*

157. Electric Power Systems and Transmission—Introduction to current practice in the generation, transmission, and distribution of electric power, with emphasis on the technical problems of lone lines and system networks. Prerequisite: Ee 25. *Rec 3, Comp or Lab 4, Cr 5.*

159. Application of Computers in Power System Analysis—Digital computer and network analyzer application to power system analysis with emphasis

on matrix methods of solution of power system networks. Prerequisite or concurrent: Ee 156 or 157. *Rec 3, Cr 3.*

Materials, Electronic Devices and Electronics

161. Electronics III—Continuation of Ee 14; sinusoidal and nonsinusoidal oscillators: wave generation and shaping; modulation and demodulation circuitry. Prerequisite: Ee 14. *Rec 3, Lab 3, Cr 4.*

164. Electronics and Communication Laboratory—Measurements at radio, video, UHF, and microwave frequencies; generation and amplification of sinusoidal and nonsinusoidal waves; noise measurements; waveshaping; modulation and demodulation. Prerequisite: Ee 161. *Rec 1, Lab 4, Cr 3.*

Energy Conversion, Machines, and Control

171. Servomechanism Fundamentals—Analysis of feedback control systems with emphasis on servo systems using LaPlace transformations, root locus, Nyquist, Bode and Nichols techniques. Introduction to design of compensating networks. Prerequisite: Ee 3, 23 and Ms 150, or permission. *Rec 2, Comp or Lab 3, Cr 3.*

173. Industrial Electrical Control—Study of manual and automatic control of motors, and feedback methods in regulated systems using rotating amplifiers and static switching devices such as silicon-controlled rectifiers and magnetic amplifiers. Prerequisite: Ee 25, *Rec 3, Cr 3.*

Communication, Information Theory, and Computer Theory

180. Analog and Digital Computer Systems—Basic analog computer elements, scale changing for machine equations, special analog elements; introduction to logical design of digital data processing systems, Boolean algebra, codes, switching networks, circuits for logical operation and binary arithmetic, general computer organization and control. Prerequisite: Ms 150, and Ee 14 or 43. *Rec 3, Cr 3.*

183. Probabilistic Methods in Electrical Engineering—The elements of probability theory including both the discrete and continuous cases with particular emphasis on the application to problems in electrical communication. Prerequisite: Ee 4, Ms 150. *Rec 3, Cr 3.*

184. Communication Systems—Time and frequency domain representations of signals, energy density, translation, sampling noise and noise figures, modulation, elements of probability, and information theory, signal flow graphs. Prerequisite: Ee 4 and 161. *Rec 3, Cr 3.*

Miscellaneous

191. Illuminating Engineering—General and advanced illumination theory, illuminating sources and their application, photometry, interior and exterior lighting problems, national electric code, design of electric distribution systems for buildings and for exterior lighting. Prerequisite: Ee 3 or 41. *Rec 2½, Lab 1, Cr 3.*

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 upperclass and graduate students. *Rec 3, Cr 3.*

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196. *Electro-Acoustics*—Fundamentals of acoustic waves; electromechanical and acoustical circuits; radiation; electro-acoustic systems of microphones and loudspeakers; architectural acoustics; sound measuring systems; noise reduction. Prerequisite: Ee 31. *Rec 3*, with four laboratory periods substituted for equivalent class time. *Cr 3*.

198. *Selected Topics in Electrical Engineering*—Topics in electrical engineering 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 1-3*.

Graduate Courses

222/223. *Transients in Linear Systems*—Ee 222: *Rec 2, Cr 2*; Ee 223: *Rec 3, Cr 3*.

235/236. *Advanced Electric Power Systems*—*Rec 3, Cr 3*.

237. *Power System Protection and Relaying*—*Rec 3, Cr 3*.

240/241. *Communication Networks*—Ee 240: *Rec 2, Cr 2*; Ee 241: *Rec 3, Cr 3*.

250. *Electromagnetic Waves*—*Rec 3 Cr 3*.

260/261. *Pulse and Digital Circuits*—*Rec 3, Cr 3*.

263. *Microwave Circuits*—*Rec 3, Cr 3*.

267/268. *Circuit Laboratory*—*Lab 4, Cr 2*.

271. *Modern Control Theory*—*Rec 3, Cr 3*.

272. *Non-Linear Control Systems*—*Rec 3, Cr 3*.

280/281. *Statistical Communication Theory*—*Rec 3, Cr 3*.

295. *Communication Seminar*—*Rec 2, Cr 2*.

298. *Selected Advanced Topics in Electrical Engineering*—*Cr 1-3*.

399. *Graduate Thesis*—*Cr 6-10*.

GENERAL ENGINEERING

PROFESSOR MCNEARY; ASSOCIATE PROFESSOR WESTFALL; ASSISTANT PROFESSORS DESCHANES, METCALF; MR. KEENE

The Department of General Engineering does not have major students, but offers service courses to students majoring in other curricula, principally technology and forestry.

The conceptions 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 topics that fall in this category.

The Department of General Engineering is responsible for the orientation and advising of freshman engineering students and offers an orientation course at the freshman level. Basic instruction in computer programming, both digital and analog, is provided for sophomores in engineering.

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Engineering Graphics (Eg)

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.* 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.* 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 drawings with applied problems in wood utilization, topographical drawing, and other fields related to forestry. Prerequisite: Course 1. *Rec & Lab 4, Cr 2.* MR. WESTFALL

150. Nomography—The construction of graphical representations of equations which must be solved repeatedly. Prerequisite: Eg 1, Ms 27. *Rec 1, Lab 2, Cr 2.* MR. MCNEARY

General Courses (Gc)

5/6. Orientation—A series of meetings involving lectures, discussion, and the like with frequent use of audio-visual material to acquaint technology freshmen with the nature of engineering and science. *Cr 0.* MR. MCNEARY

7. Computer Programming for Engineers—Elements of digital and analog computer programming. Basic and Format Fortran, numerical analysis techniques, and elements of analog scaling are included. Prerequisite: Ms 28 (may be taken concurrently). *Rec 1, Lab 2, Cr 2.* MR. MCNEARY

ENGINEERING PHYSICS

PROFESSORS BENNETT, BISCOE, AND KRUEGER; ASSOCIATE PROFESSORS CARR, COFFIN, TODD, AND WYLIE; ASSISTANT PROFESSORS BROWNSTEIN, HARMON, AND ROCKMORE; MR. LITTLEFIELD

This curriculum is an answer to an established 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, especially if there is evidence of concentration on the scientific principles underlying engineering. 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 also is 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.

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Graduate Work in Physics

Graduate opportunities and requirements for the master of science degree and the doctor of philosophy degree in physics are given on page 117 and in the catalog of the Graduate School.

Freshman Year. See page 250.

Sophomore Year

FALL SEMESTER				SPRING SEMESTER			
Subject		Hours		Subject		Hours	
		Lab Rec or Cr Comp				Lab Rec or Cr Comp	
*Ec	1	Princ. of Economics or other		*Ec	2	Princ. of Economics or other	
		Hum. Elective I	3 0 3			Hum. Elective I	3 0 3
*Gm	11	Scientific German (Elem.) or other		Gc	7	Computer Programming	1 2 2
		Hum. Elective II	3 0 3	*Gm	12	Scientific German (Elem.) or other	
Me	7	Manufacturing Processes	1 2 1½			Hum. Elective II	3 0 3
Ms	28	Calculus	4 0 4	Ms	29	Calculus	4 0 4
Ps	17	Intermed. Physics	2 4 4	Ps	18	Intermed. Physics	2 4 4
Sh	1	Public Speaking	2 0 2				

Junior Year

		Lab Rec or Cr Comp				Lab Rec or Cr Comp	
Ms	55	Statics & Str. of Mat.	3 0 3	Eh	5	Technical Comp.	2 0 2
Ms	150	Ord. Diff. Eq.	3 0 3	Me	152	App. Mech. Dyn.	3 0 3
Ps	153	Elec. Meas.	0 4 2	Ms	151	Vectors & Matrices	3 0 3
Ps	155	Elec. and Mag.	3 0 3	Ps	172	Optics	3 0 3
		Hum. Elective	3 0 3	Ps	176	Phys. Meas.	0 4 2
						Hum. Elective	3 0 3
†Technical Electives (choose one field)				†Technical Electives (choose one field)			
†ChE	1	Fun. Chem. Eng.	2 4 4	†ChE	2	Fun. Chem. Eng.	2 4 4
†Ch	171	Physical Chemistry	2 6 5	†Ch	172	Physical Chemistry	2 6 5
†Ee	47	Elec. Circuit Anal.	4 2 5	†Ee	3	Interm. Circuit Anal.	2 2 3
†Me	33	Thermodynamics	3 0 3	†Me	62	Heat Transf. & Fluid Flow	3 0 3

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Senior Year

						Lab Rec or Cr Comp									Lab Rec or Cr Comp		
Ee	47	Elec. Circuit Anal.	4	2	5	**Ch	84	Metallurgy		3	0	3					
**Ms	152	Introd. Complex Variables	3	0	3	**Ee	3	Interm. Circuit Anal.		2	2	3					
Ps	169	Modern Physics	3	0	3	**Ms	153	Partial Dig. Eq.		3	0	3					
*Ps	170	Nuclear Physics	2	1	3	Ps	162	Heat and Thermo		3	0	3					
Ps	181	Advanced Lab	0	6	3	Ps	182	Advanced Lab		0	6	3					
*Ps	191	Math. Physics I	3	0	3	*Ps	186	Intro. Quantum Mechanics		2	0	2					
Ps	198a	Seminar	1	0	½	*Ps	192	Math. Physics II		3	0	3					
						Ps	198b	Seminar		1	0	½					
†Technical Electives (same field as chosen in junior year)						†Technical Electives (same field as chosen in junior year)											

†ChE	164	Elem. Chem. Eng.	3	0	3	†ChE	165	Elem. Chem. Eng.	3	0	3
†Ch	151	Organic Chem. Lec.	3	0	3	†Ch	152	Organic Chem. Eng.	3	0	3
†Ee	13	Electronics	3	3	4	†Ee	14	Electronics	3	3	4
†Me	59	Fluid Mechanics	3	0	3	†Me	84	Industrial Management	3	0	3

* The asterisk designates courses which are *recommended* electives. Approved substitutions can be made. See page 251 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. Students planning to take Physical Chemistry as part of the "minor" should elect Ch 41 in the sophomore year.

†Under Technical Electives the student is expected to complete in the junior and senior years an informal "minor" consisting of approximately 12 hours (usually 4 but 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. Students choosing the field of Electrical Engineering may count the required courses Ee 47 and Ee 3 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 approved substitutions are made in the same area.

Courses in Engineering Physics. See Page 275.

MECHANICAL ENGINEERING

PROFESSORS SULLIVAN, HILL, LYMAN; ASSOCIATE PROFESSORS CLIFFORD, SCHNEIDER, MOSKOWITZ, WEBSTER, CLARK*, CHAPMAN; ASSISTANT PROFESSORS GRANT*, HOPKINS, SUCEC, LEE; MR. KLAVUHN, MR. HALL, MR. ROBERTSON, MR. RIVIERE

The Mechanical Engineering curriculum uses the foundation of mathematics, physics, chemistry, the humanities, and engineering science to prepare the student for specialized training in advanced courses.

Mechanical engineering embraces two major areas of interest; heat power and mechanical design. Professional careers in mechanical engineering include design, development, research, teaching, management and sales.

The curriculum is designed to allow the student to select electives in the area of his interest and aptitude. Sequences of courses are available in fluid and solid mechanics, thermal science and heat power, mechanical design, and environmental design and control.

* On leave of absence 1967-68.

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A Pulp and Paper Management Option and a Pulp and Paper Computer Option are offered in collaboration with the Chemical Engineering Department. Both of these five-year programs include all courses required in the Mechanical Engineering curriculum and lead to the degree of bachelor of science in mechanical engineering and a certificate indicating completion of the particular option in Pulp and Paper.

Graduate Work in Mechanical Engineering

The department offers programs leading to the degrees of master of science in mechanical engineering and master of mechanical engineering. The course of study may be chosen in any of the department's fields.

Freshman Year. See page 250.

Sophomore Year

FALL SEMESTER				SPRING SEMESTER			
Subject		Hours		Subject		Hours	
		Lab				Lab	
		Rec or Cr				Rec or Cr	
		Comp				Comp	
Eg	3 Desc. Geometry	0	4 2	Me	33 Thermodynamics I	3	0 3
Ms	28 Calculus	4	0 4	Ms	29 Calculus	4	0 4
Ee	41 Elementary Circuits	3	0 3	Ee	43 Electronics I	1½	1½ 2
Sh	1 Pub. Speaking	2	0 2	Me	52 Appl. Mechanics, Dynamics	3	0 3
Me	50 Appl. Mechanics, Statics	3	0 3		Hum. Elective		3
	Hum. Elective		3	Gc	7 Comp. Programming	1	2 2

Junior Year

		Lab				Lab	
		Rec or Cr				Rec or Cr	
		Comp				Comp	
Me	23 Kinematics	3	0 3	Me	24 Mechanical Design I	2	3 3
Me	34 Thermodynamics II	3	0 3	Me	59 Fluid Mechanics	3	0 3
Me	7 Mfg. Process I	1	2 1½	Me	8 Mfg. Process II	1	2 1½
Me	37 Mechanical Lab.	0	3 1½	Me	38 Mechanical Lab.	0	3 1½
Me	51 Strength of Materials	4	0 4	Me	21 Engr. Mats. & Metallurgy	3	0 3
Ms	150 Ord. Diff. Equations	3	0 3	Ms	130 Math. Statistics	3	0 3
	Hum. Elective		3	Eh	5 Technical Comp.	2	0 2

Senior Year

		Lab				Lab	
		Rec or Cr				Rec or Cr	
		Comp				Comp	
Me	160 Heat Transfer	3	0 3	Ee	42 Electric Machinery	1½	1½ 2
Me	164 Mech. Vibrations	3	0 3	Me	72 Mechanical Lab	0	3 1½
Me	187 Mechanical Design II	1	3 2	Me	99 Seminar	1	0 1
Me	71 Mechanical Lab.	0	3 1½		Hum. Electives		3
	Hum. Electives		3		Technical Electives		6
	Technical Electives		6				

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M. E. Technical Electives

						Lab Rec or Cr Comp			Lab Rec or Cr Comp		
Me	84	Indus. Management	3	0	3	Me	188	Dynamics of			
Me	94	Hydraulic Machinery	3	0	3			Machines	3	0	3
Me	156	Theory of Elasticity	3	0	3	Me	189	Prin. Optimum Design			
Me	157	Adv. Dynamics	3	0	3			& Reliability	3	0	3
Me	158	Adv. St. of Materials	3	0	3	Me	190	Adv. Thermodynamics	3	0	3
Me	167	Direct Energy				Me	191	Heat & Vent. Systems	3	0	3
		Conversion	3	0	3	Me	192	Aerodynamics	3	0	3
Me	181	Turbomachinery	3	0	3	Me	193	I. C. Engines	3	0	3
Me	186	Power Plants	3	0	3	Me	195	Gas Dynamics I	3	0	3
						Me	196	Air Condg. & Refrig.	3	0	3

PULP AND PAPER MANAGEMENT AND COMPUTER OPTIONS IN MECHANICAL ENGINEERING

The first three years of these programs are the same as the regular Mechanical Engineering program, including all specified courses through the junior year with the additional requirements of Ec 1/2, Principles of Economics.

Senior Year

FALL SEMESTER						SPRING SEMESTER					
Subject			Hours Lab Rec or Cr Comp			Subject			Hours Lab Rec or Cr Comp		
Me	160	Heat Transfer	3	0	3	Me	186	Power Plants	3	0	3
Me	71	Mechanical Lab	0	3	1½	Me	72	Mechanical Lab	0	3	1½
Me	187	Mechanical Design II	1	3	2	Ee	42	Electric Machinery	1½	1½	2
Ch	41	Quant. Analysis	2	3	3	Pa	166	Paper Technology	3	0	3
Pa	165	Pulp Technology	3	0	3			Hum. Elective			3
Me	164	Mech. Vibrations	3	0	3						

Management Option

Ba	130	Leg. Env. Business	3	0	3	Ba	9	Prin. of Accounting I	3	0	3
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Computer Option

ChE	150	Analog. Comp.	2	2	3	ChE	151	Digital Comp.	2	2	3
						ChE	242	Process Dynamics	3	0	3

Fifth Year

Pa	173	Pulp Mfg. & Test	0	8	4	Pa	172	Pulp & Paper Equip.	3	0	3
Pa	99	Thesis	0	2	1	Pa	174	Paper Mfg. & Testing	0	8	4
Pa	295	Seminar	1	0	½	Pa	295	Seminar	1	0	½
		Hum. Elective			3	Pa	199	Thesis	0	4	2
		Tech. Elective			3			Tech. Elective			3

Management Option

Ba	51	Business Finance I	3	0	3	Me	84	Industrial Mgmt.	3	0	3
Pa	184	Mgt. & Operations of Paper Mills	3	0	3						
Pa	189	Pulp & Paper Mill Insp.	0	4	2						

Computer Option

ChE	152	Special Problems in Computer Programming	2	2	3	ChE	153	Special Topics in System Analysis	3	0	3
		Tech. Electives			3			Hum. Elective			3

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Courses in Mechanical Engineering (Me)

7/8. Manufacturing Processes—Theory of metal forming, the machine tools and materials of modern manufacturing, mass production processes, use of basic machine tools. *Rec & Lab 3, Cr 1½.*

11. Introductory Engineering Metallurgy—Methods of defining the microstructure of metals, phase diagrams, and mechanical properties. Thermal, mechanical, and chemical manipulation of microstructure. Not for mechanical engineering degree credit. *Rec 3, Cr 3.*

12. Elementary Heat Power—Elementary thermodynamics, mechanical apparatus, power plant equipment; engineering calculations relative to heat, power, work, and mechanical and electrical energy. Not for mechanical engineering degree credit. *Rec 3, Cr 3.*

21. Engineering Materials and Metallurgy—The principles of material science with emphasis on the relationship between structure and properties and their control through composition, mechanical working and thermal treatment. Prerequisite: Me 34, 51, and Ms 29. *Rec 3, Cr 3.*

23. Kinematics—Introduction to vector kinematics, analysis of displacements, velocities, and accelerations in modern machines, and introduction to synthesis and creative design solution of unique kinematic problems. Prerequisite: Me 52. *Rec 3, Cr 3.*

24. Mechanical Design I—Analysis of machine elements, stress concentration, fatigue, factor of safety. Introduction to creative synthesis and economic design. Prerequisite: Me 23, 51, and Ms 29. *Rec 3, Cr 3.*

33. Thermodynamics I—A study of energy and energy transformations; the First and Second Laws applied to systems and to control volumes; thermodynamic properties of systems, availability of energy. Prerequisite: Ps 1, Ms 28. *Rec 3, Cr 3.*

34. Thermodynamics II—A continuation of Me 33. Thermodynamics of mixtures; chemical thermodynamics, thermodynamics of fluid flow, vapor and gas cycles, applications to compressors, internal combustion engines and turbines. Prerequisite: Me 33. *Rec 3, Cr 3.*

37/38. Mechanical Laboratory—An introduction to laboratory techniques, instrumentation and calibration of equipment. Application of thermodynamics, mechanics of materials, fluid mechanics, and metallurgy. Prerequisite: M. E. junior. *Lab 3, Cr 1½.*

50. Applied Mechanics, Statics—The study of force systems and equilibrium, trusses, frames, friction, distributed forces, centroids, and moments of inertia. Prerequisite: Ms 27 and Ps 1. *Rec 3, Cr 3.*

51. Strength of Materials—The principles of solid mechanics and their applications to practical problems, stresses and deflections in axial loading, torsion, beams, columns, combined stresses. Prerequisite: Me 50 and Ms 28. *Rec 4, Cr 4.*

52. Applied Mechanics, Dynamics—A study of motion of particles and rigid bodies; force, mass and acceleration; impulse and momentum; work and energy and simple harmonic motion. Prerequisite: Me 50, Ms 28. *Rec 3, Cr 3.*

55. Statics and Strength of Materials—The basic principles of statics and their applications in strength of materials. Equilibrium of various systems. Stress-

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es and deformations of axially loaded members, connections, circular shafts, beams and columns. Prerequisite: Ms 28. *Rec 3, Cr 3.*

59. Fluid Mechanics—Fluid statics, kinematics, Bernoulli equation, momentum, free-surface flow, viscosity, pipe friction, dimensional analysis and similitude, and an introduction to compressible flow. Prerequisite: Ms 52 and Ms 151. *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. *Rec 3, Cr 3.*

71/72. Mechanical Laboratory—Designed experiments to encourage analytical and experimental investigations in the thermal science and solid and fluid mechanics area. Individual student project investigations. Prerequisite: M. E. senior. *Lab 3, Cr 1-1½.*

84. Industrial Management—A study of the relation between accounting, marketing, production and wage administration in the modern industrial plant. Prerequisite: M. E. senior. *Rec 3, Cr 3.*

94. Hydraulic Machinery—Prerequisite: Me 52 and 59. *Rec 3, Cr 3.*

99. Seminar—*Rec 1, Cr 1.*

101. Metallography—Structure, metallic bonding and properties of metals. Solidification, alloying, and constitution diagrams. Deformation and annealing. Prerequisite: Me 21, Ms 150. *Lab 6, Cr 3.*

156. Theory of Elasticity—Plane stress and plane strain, stress function. Problems in Cartesian and polar coordinates. Photo-elasticity, strain energy. Three dimensional problems. Prerequisite: Ms 150 and Me 51. *Rec 3, Cr 3.*

157. Advanced Dynamics—Particle dynamics, vibrations, numerical methods, planetary motion, projectiles. Variable mass motion, angular momentum, impact, engine balancing. Constraints, generalized coordinates and forces. Lagrange's equations. Hamilton's principle. Gyroscopes. Prerequisite: Ms 150 and Me 52. *Rec 3, Cr 3.*

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 cylinders, stress concentrations, energy methods, and introduction to theory of elasticity. Prerequisite: Ms 29 and Me 51. *Rec 3, Cr 3.*

160* Heat Transfer—A study of the fundamental laws of heat transfer by conduction, convection and radiation. Application of the study of engineering problems via analytical, numerical, and graphical techniques. Prerequisite: Me 33, 59, and Ms 150. *Rec 3, Cr 3.*

164. Mechanical Vibrations—Free and forced vibrations with viscous damping for discrete and continuous mass systems. Derivation and application of energy methods. Applications. Prerequisite: Ms 150 and Me 52. *Rec 3, Cr 3.*

167. Direct Energy Conversion—Analysis of direct energy conversion. Energy converters such as thermionic, thermoelectric, photoelectric, fuel cells, and magneto-hydrodynamic generators considered as components of power systems. Prerequisite: Me 33 and Ms 150. *Rec 3, Cr 3.*

* Not for graduate students in mechanical engineering. For others, graduate credit with approval of student's adviser.

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181.* Turbomachinery—Fundamental analysis of the theory and design of turbomachinery flow passages; control and performance of turbomachinery; gas-turbine engine process. Prerequisite: Me 34. *Rec 3, Cr 3.*

186.* Power Plants—Power station engineering and economy. Design, construction and operating theory of steam, internal-combustion, and hydroelectric power plants. An introduction to nuclear power plants, utilization of solar energy, fuel cells, and associated problems. Prerequisite: M. E. senior. *Rec 3, Cr 3.*

187.* Mechanical Design II—Formulation and design of mechanical elements and systems covering a variety of problems confronting the practicing mechanical engineer. Emphasis on original design problems and the development of creative ability. Prerequisite: Me 24. *Rec 1, Comp 3, Cr 2.*

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 52 and 187. *Rec 3, Cr 3.*

189. Principles of Optimum Design and Reliability—Optimization of mechanical engineering systems, statistical treatment of systems breakdown, utilization of reliability theory in design. Prerequisite: Ms 130, Ms 150 and Me 187. *Rec 3, Cr 3.*

190. Advanced Thermodynamics—General thermodynamic relations for the pure substance, development of equation of state, real gas studies, the criteria of equilibrium, and an introduction to irreversible phenomena. Prerequisite: Me 34. *Rec 3, Cr 3.*

191.* Heating and Ventilating System Design—Determination of heating, ventilating requirements for buildings and industrial processes. Analysis of heat transfer devices and their applications. Heating and ventilating system design, layout and control. Prerequisite: Me 34. *Rec 3, Cr 3.*

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.*

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. Prerequisite: Me 34. *Rec 3, Cr 3.*

195. Gas Dynamics I—An introduction to the basic dynamics of compressible flows. Fundamental equations and concepts will be considered in isentropic flow, normal shock waves, flows in constant area ducts, and generalized one-dimensional continuous flow. Prerequisite: Me 34 and 59. *Rec 3, Cr 3.*

196.* Refrigeration and Air Conditioning—Methods of producing artificial low temperatures. Refrigeration for controlled-temperature applications in comfort air conditioning and industrial manufacturing processes and their control. Prerequisite: Me 34. *Rec 3, Cr 3.*

Graduate Courses

202. Generalized Classical Thermodynamics—*Rec 3, Cr 3.*

203. Analytical Thermodynamics—*Rec 3, Cr 3.*

210. Advanced Heat Transfer I—*Rec 3, Cr 3.*

220. Advanced Fluid Mechanics I—*Rec 3, Cr 3.*

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- 222. *Gas Dynamics II*—Rec 3, Cr 3.
- 231. *Fatigue Theory*—Rec 3, Cr 3.
- 232. *Nonlinear Vibrations*—Rec 3, Cr 3.
- 233. *Theory of Deformation and Stress*—Rec 3, Cr 3.
- 234. *Advanced Vibrations*—Rec 3, Cr 3.
- 235. 236. *Mechanical Engineering Analysis*—Rec 3, Cr 3.
- 304. *Selected Topics in Advanced Thermodynamics*—Rec 3, Cr 3.
- 311. *Advanced Heat Transfer II*—Rec 3, Cr 3.
- 312. *Advanced Topics in Heat Transfer*—Rec 3, Cr 3.
- 330. *Theory of Plates and Shells*—Rec 3, Cr 3.
- 391. *Mechanical Engineering Projects*—Cr Ar.
- 399. *Graduate Thesis*—Cr Ar.

TECHNICAL INSTITUTE DIVISION COLLEGE OF TECHNOLOGY

ASSOCIATE DIRECTOR R. B. RHOADS

Through this division of the college are offered two-year programs in Civil Engineering Technology, Electrical Engineering Technology, Mechanical Engineering Technology, and Chemical Engineering (pulp and paper) Technology.

The objective of the two-year programs is to provide an education to young people who are interested in technical employment but who do not want, or are not admissible to, the University's regular degree program in engineering. The two-year courses in engineering technology are not equivalent to work offered during the freshman and sophomore years of the B.S. degree programs. Rather the curricula in engineering technology differ in content, philosophy and objective from the four-year curricula.

Graduates from the Technical Institute should find ready employment as engineering technicians or as engineering aides in industry and business, with local or state government, or with consulting engineers.

Graduates with superior records from the Technical Institute may be considered for admission to the college's degree programs in engineering with the amount of transfer credit to be determined on an individual basis.

Chemical Engineering (Pulp & Paper) Technology

The objective of this program is to provide the student with the background of training and experience required for the successful handling of routine technical and laboratory assignments in the pulp and paper or allied industry. Specifically, it is expected that the graduate from this course will be well qualified to work in the testing and control laboratories as a technician, in the development and research laboratories as a laboratory assistant, or in production departments as an engineering aide.

The curriculum provides considerable training in the laboratory, with emphasis on the analytical and testing procedures most common to the pulp and paper industry. Courses in the basic sciences provide the student with the background necessary for an understanding of the pulp and paper making operations, the evaluation of laboratory data, and the solution to routine problems. Courses in English and speech are included so that the student may acquire an interest and some proficiency in the ability to communicate his ideas and the results of his work to others.

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Chemical Engineering (Pulp & Paper) Technology Curriculum

SEMESTER 1					SEMESTER 2				
Subject		Rec	Lab	Cr	Subject		Rec	Lab	Cr
ChE	T1 Chem. Science	3	2	4	ChE	T2 Chem. Science	3	0	3
Eg	T1 Technical Drawing	0	4	2	ChE	T3 Analytical Chemistry	0	8	4
Eh	T1 English Comp.	3	0	3	Eh	T2 English Comp.	3	0	3
Ms	1 Algebra	2	0	2	Pa	T1 Pulp Technology	3	0	3
Ms	3 Trigonometry	2	0	2	Pe	2 Physical Education	0	2	0
Pe	1 Physical Education	0	2	0	Ps	T8 Basic Physics	3	2	4
Ps	T7 Basic Physics	3	2	4					
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13 10 17					12 12 17				

SUMMER INTERNSHIP (MILL WORK)

SEMESTER 3					SEMESTER 4						
Subject			Rec	Lab	Cr	Subject			Rec	Lab	Cr
ChE	T4	Elem. Chem. Eng.	3	0	3	2	Ab	Intro. to Economics	3	0	3
ChE	T5	Instru. Analysis	1	2	2	ChE	T7	Chem. Process Indus.	3	0	3
ChE	T6	Tech. Literature	2	0	2	ChE	T8	Eval. of Test Data	3	0	3
Pa	T2	Paper Technology	3	0	3	Pa	T4	Paper Testing	0	12	6
Pa	T3	Pulp Testing	0	12	6			Elective	3	0	3
Sh	1	Fund. of Public Speaking	2	0	2						
			11	14	18				12	12	18

Courses in Chemical Engineering (Pulp and Paper) Technology (ChE T)

1/2. Chemical Science—Principles of general chemistry with emphasis on the application of experimental aspects to the chemical industry. Equations for basic inorganic reactions will be stressed. An introduction to organic chemistry. *Rec 3, Comp 2, Cr 4; Rec 3, Cr 3.*

3. Analytical Chemistry—Laboratory techniques, training in use of apparatus. Preparation and adjustment of standard solutions, practice in methods of analysis of typical industrial chemicals. Prerequisite: ChE T 1. *Lab 8, Cr 4.*

4. Elementary Chemical Engineering—An introduction to the basic principles of the process industries. A quantitative and qualitative analysis of some typical process systems and equipment. Prerequisite: ChE T 2. *Rec 3, Cr 3.*

5. Instrumental Analysis—A course to familiarize the student with the purpose and use of various instruments encountered in the pulp and paper industry for measurement of temperature, pressure, liquid level, flow rates, and composition. Prerequisite: ChE T 3. *Lab 2, Cr 2.*

6. Technical Literature—A course to familiarize the student with use of the current pulp and paper technical journals, bibliographies, abstracts, and handbooks. *Rec 2, Cr 2.*

7. Chemical Process Industries—The scope of the course includes the discussion of some selected chemical process industries. The processes are chosen on the basis of their importance in chemical industry and in the economy of the state of Maine. The course will comprise the production of sulfuric acid, ammonia, soda ash, sugar, starch, and natural and synthetic fibers. Problems will be discussed involving stoichiometric calculations and material and energy balances. Prerequisite: ChE T 4. *Rec 3, Cr 3.*

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8. Evaluation of Test Data—An introduction to the presentation and evaluation of laboratory data with emphasis on graphical data presentation and control charts. *Rec 3, Cr 3.*

Pa T 1. Pulp Technology—A course in the manufacture of various kinds of wood pulp used in papermaking. Prerequisite: Ch ET 1. *Rec 3, Cr 3.*

Pa T 2. Paper Technology—A course describing the processes for the manufacture of paper. Prerequisite: Pa T 1. *Rec 3, Cr 3.*

Pa T 3. Pulp Testing—A laboratory course in physical and chemical testing of the commonly used commercial pulps. Prerequisite: Pa T 1. *Lab 12, Cr 6.*

Pa T 4. Paper Testing—A laboratory course covering some of the operations and processes used in making paper, and including the methods used to test the physical properties of paper. Prerequisite: Pa T 1, 2, and 3. *Lab 12, Cr 6.*

Civil Engineering Technology

The curriculum is designed to provide the student with a basic grounding in the physical and mathematical sciences as preparation for his specialized studies in Civil Engineering Technology. These specialized studies are coordinated so as to prepare the graduate to assist as an aide to professional civil engineers in the areas of surveying, materials testing, highway engineering, construction engineering and structural engineering.

The emphasis in all the work is on the practical aspects of civil engineering design and construction. The program includes on-the-job summer training after the first year of study. Employment opportunities are excellent for the well-trained engineering technician in the construction field.

Civil Engineering Technology Curriculum

SEMESTER 1					SEMESTER 2				
	Subject	Rec	Lab	Cr		Subject	Rec	Lab	Cr
Ce	T1 Plane Surveying	2	6	4	Ce	T2 Adv. & Geodetic Surveying	3	3	4
Eg	T1 Technical Drawing	0	4	2					
Eh	T1 English Comp.	3	0	3	Ce	T11 Structural Mech.	3	0	3
Ms	T2 Basic Mathematics	3	0	3	Eg	T2 Technical Drawing	0	4	2
Pe	1 Physical Education	0	2	0	Eh	T2 English Comp.	3	0	3
Ps	T7 Basic Physics	3	2	4	Ms	T4 Basic Mathematics	3	0	3
					Pe	2 Physical Education	0	2	0
					Ps	T8 Basic Physics	3	2	4
<hr/>					<hr/>				
11 14 16					15 11 19				

SUMMER INTERNSHIP REQUIRED WITH HIGHWAY DEPARTMENT OR CONTRACTOR OR CONSULTANT

SEMESTER 3					SEMESTER 4				
	Subject	Rec	Lab	Cr		Subject	Rec	Lab	Cr
2	Ab Intro. to Economics	3	0	3	6	Ab Dynamics of Human Behavior	3	0	3
Ce	T3 Hwy. & Bld. Surv.	2	3	3					
Ce	T12 Struct. Design	3	3	4	Ce	T13 Struct. Design	3	3	4
Ce	T21 Material Props. & Testing	2	3	3	Ce	T22 Material Props & Testing	2	3	3
Ce	T30 Hwy. Operations	3	4	5	Ce	T31 Const. Engineering	3	3	4
					Ce	T40 Civil Engr. Mgmt.	3	0	3
<hr/>					<hr/>				
13 13 18					14 9 17				

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Courses in Civil Engineering Technology (CeT)

1. Plane Surveying—Surveying instruments and their use in line measurement, leveling and traversing. Construction and drawing of plans, profiles, and topographic maps. *Rec 2, Lab 6, Cr 4.*

2. Advanced and Geodetic Surveying—Curves and earthwork computation and field layout. Property surveys and legal aspects. Astronomical observations, triangulation, and precise leveling using precision surveying instruments. Prerequisite: CeT 1. *Rec 3, Lab 3, Cr 4.*

3. Highway and Building Surveys—Computation and layout of buildings, bridges, pipelines, canals and highways for line and grade. Reconnaissance, location, construction, and final quantity surveys together with appropriate mapping are undertaken. *Rec 2, Lab 3, Cr 3.*

11. Structural Mechanics—Analytical and graphical solutions of force systems. Load, shear, moment and deflection values are solved for in beams, trusses, and frames under static loading. Studies of stresses and strains that occur as structural members are subjected to shearing, tensile, compressive and flexural forces. *Rec 3, Cr 3.*

12/13. Structural Design—Application of structural analysis principles to the design of timber, steel, and concrete beams, trusses, and frames. Current design codes and practices are used. *Rec 3, Lab 3, Cr 4.*

21/22. Material Properties and Testing—The study and testing of the properties of materials used in the construction of civil engineering works. Timber, steel, concrete, soil aggregates, and bituminous materials are tested. Their selection and application to specific purposes are emphasized. *Rec 2, Lab 3, Cr 3.*

30. Highway Operations—The fundamentals of highway, street and intersection design and layout are studied. Data collection methods relating to traffic volumes and distribution, traffic survey techniques, traffic operations in work areas and temporary routines are treated. Consideration of drainage requirements and pavement sufficiency studies related to highway design criteria. Administrative, right-of-way, maintenance and financing problems are discussed. *Rec 3, Lab 4, Cr 5.*

31. Construction Engineering—Studies of the use, performance and economics of light and heavy construction equipment. Performances and rates of production for various skilled labor trades. Field trips will be taken to study construction practices. *Rec 3, Lab 3, Cr 4.*

40. Civil Engineering Management—A study of office and field practice from beginning to end of the construction of a major civil engineering project. Contracts and specifications, labor relations, professional ethics and practice, accounting and reporting procedures, and legal aspects will be included. *Rec 3, Cr 3.*

Electrical Engineering Technology

The purpose of this two-year program is to prepare the student for practical work in the application of electrical engineering principles to equipment and instrumentation. Graduates will find employment opportunities in all types of industry, in large firms as responsible assistants to electrical engineers, and in small firms whose electrical needs require more than the talents of an electrician or an electrical technician.

In the first semester the groundwork is laid in algebra and trigonometry,

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mechanics and d-c circuits. In the second semester a-c circuits and laboratory techniques are introduced in the electrical courses, and the beginning of calculus in the math course. The third semester includes the introduction of electronics and machine theory. In the fourth semester applications are treated in electronics control, and instrumentation, and an opportunity for independent work is provided in a semester projects course. The program is rounded out with courses in English, speech, machine shop, and industrial practices.

Electrical Engineering Technology Curriculum

SEMESTER 1						SEMESTER 2					
Subject						Subject					
		Rec	Comp	Lab	Cr			Rec	Comp	Lab	Cr
Ee	T11 Basic Electricity	2	0	3	3	Ee	T21 Basic Circuits	3	3	3	5
Eg	T1 Technical Drawing	0	0	4	2	Ee	T22 Basic Methods of				
Eh	T1 English Comp.	3	0	0	3		Tech. Computation	0	4	0	2
Me	T9 Machine Shop & Welding	1	0	4	3	Eg	T2 Technical Drawing	0	0	4	2
Ms	T2 Basic Mathematics	3	0	0	3	Eh	T2 English Comp.	3	0	0	3
Pe	1 Physical Education	0	0	2	0	Ms	T4 Basic Mathematics	3	0	0	3
Ps	T7 Basic Physics	3	0	3	4	Pe	2 Physical Education	0	0	2	0
						Sh	1 Fund. of Public Speaking	2	0	0	2
		12	0	16	18			11	7	9	17
SEMESTER 3						SEMESTER 4					
Subject						Subject					
		Rec	Comp	Lab	Cr			Rec	Comp	Lab	Cr
EeT	33 Electronics	3	3	3	5	Ee	T43 Applied Electronics	3	0	3	4
EeT	34 Eng. Materials	2	0	3	3	Ee	T45 Power Distribution, Illu. and Acoustics	3	3	3	4
EeT	35 Elec. Machinery	3	3	3	5	Ee	T46 Elec. Foremanship	3	0	0	3
EeT	37 Tech. of Elec. Measurement	1	0	6	3	Ee	T47 Elec. Instrumentation & Control	3	0	3	4
EgT	4 Elec. and Electronic Drawing	0	0	4	2	Ee	T48 Elec. Projects	0	0	6	2
		9	6	19	18			12	3	15	17

Courses in Electrical Engineering Technology (EeT)

11. Basic Electricity—A non-calculus introduction to the elementary concepts of electricity; charge, current, potential, resistance, magnetism, power and energy; and including laboratory use of instruments for making d-c circuit measurements. Prerequisite: MsT 2 Concurrent. *Rec 2, Comp or Lab 3, Cr 3.*

21. Basic Circuits—Continuation of EeT 11, constituting a non-calculus introduction to d-c networks and network theorems, magnetic circuits; and continuing into the phasor analysis of single-phase and polyphase a-c circuits in the steady state. Prerequisite: EeT 11, MsT 4 concurrent. *Rec 3, Comp or Lab 6, Cr 5.*

2. Basic Methods of Technical Computations—Computation using logarithmic tables; natural and logarithmic trigonometric tables; common and natural logarithms; change of base. Computations by use of the slide rule. Techniques in

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curve plotting; weighted averages. Problem solving organization. Prerequisite: MsT concurrent. *Comp 4, Cr 2.*

30. Circuits, Machines, and Electronics for Mechanical Engineers—Electrical concepts and devices; elementary circuit analysis; fundamentals of AC and DC machinery; principles of electronic devices and circuits. Prerequisite: MsT 4, PsT 7. *Rec 4, Comp or Lab 3, Cr 5.*

33. Electronics—Basic physical principles of vacuum, gaseous, and solid state electronic devices. Analysis of rectification, amplification, signal generation, modulation, and detection. Prerequisite: EeT 21. *Rec 3, Comp 3, Lab 3, Cr 5.*

34. Engineering Materials—Physical and electrical properties of materials used in electrical equipment and electronic devices. Emphasis on electrical insulation, semiconductor materials, and thin films. *Rec 2, Lab 3, Cr 3.*

35. Electrical Machinery—Theory, performance characteristics and operational control of DC and AC machines. Prerequisite: EeT 21. *Rec 3, Comp 3, Lab 3, Cr 5.*

37. Techniques of Electrical Measurement—The theory and operation of both basic and sophisticated measuring devices and equipment. *Rec 1, Lab 6, Cr 3.*

43. Applied Electronics—Industrial and commercial electronic circuits and systems, including the cathode ray oscilloscope, radio and television, analog and digital computers, and process control. Prerequisite: EeT 33. *Rec 3, Lab 3, Cr 4.*

45. Power Distribution, Illumination and Acoustics—Distribution of electric power to load centers, losses, voltage regulation, power factor correction. General illumination theory; elementary acoustic theory. Prerequisite: EeT 21. *Rec 3, Comp 4 or Lab 3, Cr 4.*

46. Electrical Foremanship—Practices and methods of modern management in planning, organizing, and controlling men and equipment. *Rec 3, Cr 3.*

47. Electrical Instrumentation and Control—A study of controllers used for AC and DC motors; the use of selsyn devices, magnetic amplifiers, amplidyne, silicon controlled rectifiers and photo-electric devices in control systems. Prerequisite: EeT 35. *Rec 3, Lab 3, Cr 4.*

48. Electrical Projects—The student will design, build and test a specific piece of equipment such as an amplifier, voltage regulator, or a piece of test equipment. *Lab 6, Cr 2.*

Mechanical Engineering Technology

The field of mechanical engineering technology includes environmental control, mechanical design, manufacturing processes, heat power and internal combustion engines, and the many technical activities associated with them. The two-year program prepares its graduates for a variety of opportunities as engineering technicians in engineering departments, manufacturing operations and the mechanical service industries.

The curriculum provides a well-rounded education in mechanical engineering technology. Classroom instruction in the various subjects is supplemented by extensive training in their practical application in the laboratory and shop.

Students are urged to take technical or industrial employment during the summer between the two years.

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Mechanical Engineering Technology Curriculum

SEMESTER 1				SEMESTER 2			
Subject	Rec	Lab	Cr	Subject	Rec	Lab	Cr
Eg T1 Technical Drawing	0	4	2	Eg T2 Technical Drawing	0	4	2
Eh T1 English Comp.	3	0	3	Eh T2 English Comp.	3	0	3
Me T1 Orientation	1	0	0	Me T8 Mach. Tool Laboratory	1	3	2
Me T5 Heat Treatment	1	2	2	Me T33 Mechanical Tech.	3	0	3
Me T7 Mach. Tool Laboratory	1	4	3	Me T50 Statics & Kinematics	4	0	4
Ms T2 Basic Mathematics	3	0	3	Ms T4 Basic Mathematics	3	0	3
Pe 1 Physical Education	0	2	0	Pe 2 Physical Education	0	2	0
Ps T7 Basic Physics	3	2	4				
	12	14	17		14	9	17
SEMESTER 3				SEMESTER 4			
Subject	Rec	Lab	Cr	Subject	Rec	Lab	Cr
Ee T30 Circuits, Machines and Electronics for M. E. Technicians	4	3	5	2 Ab Intro. to Economics	3	0	3
Eg T3 Machine Drawing	0	4	2	Me T34 Mech. Tech. Lab.	1	4	3
Me T11 Machine Tool Lab	0	3	1	Me T37 I. C. Engines	3	2	4
Me T17 Dynamics	2	0	2	Me T61 Mach. Des. & Tool Des.	2	4	4
Me T19 Strength of Materials	3	2	4	Me T70 Metal Product Manufacturing Tech.	3	3	4
Me T36 Heating, Air Cond. & Refrig.	3	2	4				
	12	14	18		12	13	18

Courses in Mechanical Engineering Technology (MeT)

1. Orientation—A series of meetings involving lectures, discussions, guest speakers and audio-visual aids. The purpose of the course is to inform students entering mechanical engineering technology about the field and opportunities in it. *Cr 0.*

5. Heat Treatment—Modern non-ferrous metal heat treating operations and the basic principles underlying them. Analysis of the effects of thermal and mechanical operations on microstructure and attendant mechanical properties. *Rec 1, Lab 2, Cr 2.*

7. Machine Tool Laboratory—Theory and application of fundamental metal removing processes. Basic metrology and tool nomenclature. *Rec 1, Lab 4, Cr 3.*

8. Machine Tool Laboratory—Class projects, machine repair and maintenance, interdepartmental cooperation on student projects and advanced machine tool operation and set-up. Oxacetylene welding and electric arc welding. Prerequisite: MeT 7. *Rec 1, Lab 3, Cr 2.*

9. Machine Shop and Welding for Electrical Engineering Technicians—Fundamental bench work and light machine work using drill presses, lathes, milling machines, shapers and surface grinders. Familiarization with and use of oxyacetylene and electric arc welding equipment. *Rec 1, Lab 4, Cr 3.*

11. Machine Tool Laboratory—Design and manufacture of prototype assembly in conjunction with EgT 3. Application of skill and theory in supervising group projects. Construction and use of production tooling set-ups. Advanced metrology. *Lab 3, Cr 1.*

17. Dynamics—Kinetics of particles; translation, rotation and plane motion of rigid bodies; work and energy impulse and momentum. *Rec 2, Cr 2.*

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19. Strength of Materials—Stress and strain in materials and bodies subject to tension compression torsion and flexure. Beam theory; deflection in prismatic members; columns; combined stresses. *Rec 3, Lab 2, Cr 4.*

25. Fluid Mechanics—Fluid statics, kinematics, Bernoulli equation, momentum, viscosity, pipe and conduit flow, and an introduction to compressible flow. Prerequisite: MsT 4, PsT 7. *Rec 3, Lab 2, Cr 4.*

33. Mechanical Technology—Elementary thermodynamics, mechanical apparatus, power plant equipment. Engineering calculations relative to heat, power, work and mechanical and electrical energy. Prerequisite: PsT 7. *Rec 3, Cr 3.*

34. Mechanical Technology Laboratory—Elementary thermodynamics, mechanical apparatus, power plant equipment; engineering calculations relative to heat, power, work mechanical and electrical energy, fluid mechanics, and heat transfer. *Rec 1, Lab 4, Cr 3.*

36. Heating, Air Conditioning, and Refrigeration—Heat transmission and properties of air. Heating systems, ventilation requirements and design. Refrigeration cycles, refrigerant properties, load calculations for summer air conditioning and industrial refrigeration. Refrigeration equipment and controls. Prerequisite: MeT 33. *Rec 3, Lab 2, Cr 4.*

37. Internal Combustion Engines—Thermodynamics of engine cycles, design and operation of steam and internal combustion engines, steam and gas turbines and jet engines. Fuels and combustion, carburetion and injection, efficiencies, detonation and knock testing, cooling and lubrication. *Rec 3, Lab 2, Cr 4.*

50. Statics and Kinematics—The study of forces and rigid bodies in equilibrium, properties of area and masses. The analysis of motion: linkages, cams, gear teeth and gear trains. Prerequisite: PsT 7. *Rec 4, Cr 4.*

61. Machine Design and Tool Design—The design of machine elements, theories of failure, fatigue and stress concentration. Design of jigs, fixtures, special tools and their relation to manufacturing methods and production efficiency. *Rec 2, Lab 4, Cr 4.*

70. Metal Product Manufacturing Technology—A presentation of production processes and problems to include: process planning, automation, numerical control, quality analysis, quality control, specialized machine tools and current advances in the field of metal working. Completion of prototype assembly and evaluation of same. *Rec 3, Lab 3, Cr 4.*

Service Courses for the Technical Institute Division

EgT 1/2. Technical Drawing—Exercises in instrumental drawing, multi-view drawing, freehand technical sketching, and lettering. Course 2 introduces instrumental pictorial drawing, threads and fasteners, and working drawings. *Lab 4, Cr 2.*

EgT 3. Machine Drawing—Analysis of space relationships with matching applied problems. Practical design problems utilizing various engineering materials. Preparation of complete working drawings. Prerequisite: EgT 2. *Lab 4, Cr 2.*

EgT 4. Electrical and Electronic Drawing—Electrical and electronic symbols; complete electric power and electronic diagrams. *Lab 4, Cr 2.*

EhT 1. 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.*

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EhT 2. English Composition—A continuation of EhT 1 with particular emphasis given to expository writing. *Rec 3, Cr 3.*

MsT 2. Basic Mathematics—Algebra and trigonometry, including numbers, functions, graphs, factoring and fractions, exponents and radicals, logarithms, linear equations, quadratic functions, equations of higher degree and solutions of triangles. *Rec 3, Cr 3.*

MsT 4. Basic Mathematics—Elements of analytical geometry and introductory calculus, including the straight line, the circle, the conics, polar and parametric forms, differentiation and integration. *Rec 3, Cr 3.*

Ps 7/8. Basic Physics—An introduction to the basic concepts of mechanics, sound, heat, electricity, magnetism, modern physics and optics with illustrations taken from technical applications. Calculus is not used. *Lec with Dem 1, Rec 2, Lab 2, Cr 4.*

MR. COFFIN AND STAFF



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ready to collide*



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UNIVERSITY OF MAINE
IN PORTLAND

DAVID R. FINK, DEAN



Bonney Hall and library wing, UMP

University of Maine in Portland

The University of Maine in Portland is located near the center of the city on an 18-acre campus at the intersection of State Route 25 and U.S. Route 302. Present buildings include Luther I. Bonney Hall, with an attached two-story library wing. Payson Smith Hall, the University Store, and a small gymnasium. Two other major buildings are under construction: a physical education building and a science building to provide added scientific courses and laboratory facilities.

The Portland campus already provides a variety of scientific laboratories, a language laboratory, an engineering graphics room, a number of conference rooms, and specialized reading rooms. Other specialized rooms are available for music, art, and lecture-demonstrations in the physical sciences. The library is designed for maximum efficiency in individual study, with open stacks interspersed with private carrels.

ACADEMIC PROGRAM

The University of Maine in Portland is a full-fledged campus of the University, organized for commuting students and offering four-year degree programs in a number of areas of concentration, master's degree programs in business administration, engineering, and secondary education, and a more limited variety of graduate courses in other areas of concentration.

Students currently starting their college work at the Portland campus may continue at Portland to complete University requirements for the degrees of associate in business administration, bachelor of science in business administration, bachelor of arts with concentration in English, French, biology, psychology, mathematics, history and political science, or sociology, bachelor of science in education with concentration in any of the appropriate academic areas previously listed for the teaching of secondary subjects, and master of business administration.

Freshmen intending to concentrate in other areas may complete at least one year of academic credit at Portland before moving to the Orono campus for more specialized work. In the same way, students who complete one or more semesters of satisfactory college work at Orono in any of the academic programs listed previously may make arrangements to continue their work at the Portland campus at the beginning of any semester.

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THE CONTINUING EDUCATION DIVISION

A center of the Continuing Education Division is located at the University of Maine in Portland. The Portland office of the Continuing Education Division administers the programs at York, Biddeford, Brunswick, Bath, and other communities, as well as a large variety of degree credit, non-degree credit, and special short courses on the Portland campus. For general information concerning the organization, purpose, and aims of the Continuing Education Division, please refer to pages 15, 43 and 333 of this catalog. Specific information relating to subjects and programs offered at the Portland center is available from the Assistant Director of Continuing Education, 96 Falmouth Street, Portland, Maine 04103.

THE COOPERATIVE EXTENSION SERVICE

Offices of the Cumberland County Extension staff and certain other specialists of the Cooperative Extension Service are located at the University of Maine in Portland. In addition to the types of programs described on page 43 of this catalog, the Cooperative Extension Service sponsors a number of non-credit short courses and seminars at the Portland campus.

UNIVERSITY POLICY ON HOUSING

The University of Maine in Portland is a commuter campus, and it is envisioned that unmarried students below legal age will live at home or with relatives. In instances where students with the approval of their parents, decide to obtain student apartments or rooms, the University of Maine in Portland will not assume any responsibility with respect to locating or recommending facilities, resolving problems arising between tenants and landlords, or providing supervision over the use of such facilities. Students in this category, however, will be subject to University disciplinary action if their conduct reflects adversely upon themselves or UMP.

CAFETERIA FACILITIES ON THE PORTLAND CAMPUS

The serving counter of the cafeteria in Payson Smith Hall is open each day of regularly scheduled classes from before the opening of classes in the morning until early afternoon. Complete hot lunches are sold, as well as short order items. These facilities are supplemented by vending machines, which may be used whenever the building is open and which are stocked with a good variety of beverages and foods, including both refrigerated items and hot dishes.

UNIVERSITY STORES

The Portland campus building of the University Stores, West Hall, carries all required textbooks and supplemental materials, as well as several thousand college-level paperbacks and many other items of interest to the college student. The store is open to the public.

ADMISSION

Applications 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 04103. Application blanks should be

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filled out and returned promptly, together with the application fee of \$10, which cannot be refunded, to the Director of Admissions, Wingate Hall University of Maine, Orono, Maine 04473. Information for veterans may be procured on the Portland campus from the office of the Registrar, Payson Smith Hall, 96 Fal-mouth Street, Portland, Maine 04103.

The same requirements for admission prevail at both the Orono and Portland campuses of the University. Please see page 37 for these requirements for ad-mission.

FINANCIAL INFORMATION

The student expenses outlined below are the anticipated charges for 1967-68. Changing costs may require an adjustment of these charges.

Tuition and Fees for the Academic Year

	Residents of	Non-Residents of
Regular Students	Maine	Maine
Tuition	\$400	\$1,000
Special Students		
Tuition for <i>each semester hour</i>	\$ 20	\$ 50

Special Fees—A fee of \$10 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 deposit of \$25 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 June 1. After that date the deposit is forfeited. A matriculation fee of \$25 is required if a student is registering for the first time and must be paid as part of the first term bill. This fee is non-refundable.

A fee of \$10 is charged for late registration.

Each student provides his own books and supplies, including a physical edu-cation uniform. The annual cost varies from \$90-\$160. 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 10 semester hours.

Installment Program—Students whose circumstances are such that pay-ment 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
- ¼ the total semester charge on October 1
- ¼ the total semester charge on November 1
- ¼ the total semester charge on December 1

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Spring Semester

- ½ the total semester charge at registration
- ¼ the total semester charge on March 1
- ¼ the total semester charge on April 1
- ¼ the total semester charge on May 1

For the 1967-1968 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 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 1967-1968. A graduate nurse will be on duty from 8:00 a.m. to 4:30 p.m. each day, Monday through Friday, to give first aid and assist in minor ailments.

Since the University of Maine in Portland does not offer infirmary 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 spring semester.

In addition to the accident insurance, sickness insurance covering illness 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.

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PHYSICAL EDUCATION FOR WOMEN

The physical education requirement for freshman 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 following extent: 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 freshmen are required to take physical education.

STUDENT ACTIVITIES

Students have a full calendar of activities during the year. All student activities, other than athletics, are organized under the leadership of the Student Senate, a group of elected student representatives who control the expenditure of student activity funds by chartered clubs and organizations.

Sophomore honor groups for men and women—Owls and Eagles—operate on the Portland campus as they do in Orono.

The Athletic Department of the University of Maine in Portland sponsors teams in basketball, indoor track, outdoor track, cross-country, baseball, golf, and tennis.

The Physical Education Department supervises a growing program of intramural and sports activities.

Students are urged to organize new groups and ask for a charter from the Student Senate. Groups currently active are as follows:

Associated Women	Intercollegiate Council	Student Publications
Students	Intervarsity Club	(Weekly Newspaper,
Boxing Club	Laboratory Theatre	Yearbook Literary
Cheer Leaders	Literary Club	Magazine)
Circle K Club	Outing Club	Student Senate
Debating Club	Owls and Eagles	Varsity Club
French Club	Radio Forum	Veterans Club
Herodotus Society	Sailing Club	Young Democrats
International Relations	Ski Club	Young Independents
Club	Spanish Club	Young Republicans
Intervarsity Christian	Speech Club	
Society		

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 the preceding section on the "University Policy on Housing" and the general information on page 29 for additional information.)

UNIVERSITY OF MAINE IN PORTLAND

COURSES OF INSTRUCTION OFFERED AT PORTLAND

When a dash is used between the two numbers (e.g., 1-2), both semesters must be taken to obtain credit; when a slant 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.

The following abbreviations are used: Fresh—freshmen; Soph—sophomores; Jrs — juniors; Srs — seniors; per — permission.

BUSINESS ADMINISTRATION AND ECONOMICS DIVISION

ASSOCIATE PROFESSOR HARRY J. WATERS, Acting Chairman

Business and Economics

ASSOCIATE PROFESSORS DURGIN, FINDLAY, WATERS; ASSISTANT PROFESSORS BAY, CHRISTOPHER, DALTON, HALL, JAGOLINZER; LECTURER PLOWMAN;
INSTRUCTORS ANDREWS, MILNE, McKEIL

Ba	9/10	Principles of Accounting	3
Ba	23	Elements of Industrial Management	(Ec 1/2) 3
Ba	41/42	Intermediate Accounting	(Ba 9/10) 3
Ba	63	Marketing	(Ba 9, Ec 1/2) 3
Ba	76	Taxes	(Ba 9/10) 3
Ba	130	The Legal Environment of Business	(Jrs and Srs) 3
Ba	147	Business Data Processing	(Ba 9) 3
Ba	149	Business Economics	(Ec 1/2 and Ba 9) 3
Ba	159/160	Business Management and Policy	(Ec 1/2, 3 Ba 23, Ba 63, Ba 149 and Ba 151)
Ba	161	Personnel Management	(Ec 1/2) 3
Ba	162	Industrial Relations	(Ec 133) 3
Ba	164	Dynamics of Organ. Behavior	(Ec 1/2) 3
Ec	1/2	Principles of Economics	3
Ec	132	Business Fluctuations	(Ec 1/2) 3
Ec	133	Labor Economics	(Ec 1/2) 3
Ec	138	Economic Development	(Ec 1/2) 3
Ec	139/140	International Trade	(Ec 1/2) 3
Ec	168	Social Control of Business	(Ec 1/2) 3
Ec	173	Economic Analysis	(Ec 1/2) 3

TWO-YEAR BUSINESS PROGRAM

The University of Maine in Portland offers, in addition to the four-year undergraduate program in Business Administration, a two-year curriculum providing technical academic work in the field of Business Administration. Upon successful completion of the two-year curriculum, the student is awarded the degree of associate in business administration.

Any high school graduate may apply for admission to the two-year program. A college preparatory course is not required. Applicants should complete the regular University of Maine application form and specify the Associate in Business Administration program. Candidates must also complete the College Entrance Examination Board's general Scholastic Aptitude Test and the Strong Vocational Interest Test.

UNIVERSITY OF MAINE

THE FRESHMAN YEAR

Students admitted to the associate degree program at the University of Maine in Portland pursue the following curriculum during the freshman year:

FALL SEMESTER			SPRING SEMESTER		
	Subject	Hours		Subject	Hours
*1 Ba	Business Mathematics	3	*2 Ba	Business Mathematics	3
*3 Ba	Business and Society	3	*4 Ba	Business and Society	3
9 Ba	Principles of Accounting	3	10 Ba	Principles of Accounting	3
1 Ec	Principles of Economics	3	2 Ec	Principles of Economics	3
1 Eh	Freshman Composition	3	2 Eh	Freshman Composition	3
Pe 1	Physical Education	0	Pe 2	Physical Education	0
15			15		

* Associate degree credit only.

THE SECOND YEAR

23 Ba	Elements of Industrial Management	3	24 Ba	Elements of Industrial Management	3
63 Ba	Marketing	3	64 Ba	Marketing	3
130 Ba	Legal Environment of Business	3	147 Ba	Business Data Processing	3
90 Ba	Human Relations in Business	3	19 Eh	Expository Writing	3
Elect one of the following:			Continue first-semester elective:		
41 Ba	Intermediate Accounting	3	42 Ba	Intermediate Accounting	3
151 Ba	Business Finance	3	152 Ba	Business Finance	3

COURSES OF INSTRUCTION IN THE ASSOCIATE DEGREE PROGRAM

The following descriptions are limited to those courses taught by the faculty of business and economics in the two-year program. The courses taught by the faculty in English (1Eh, 2 Eh, and 19 Eh) are similar in description to Eh 1, Eh 2, and Eh 19, except that 19 Eh is a 3-credit course.

1/2 Ba Business Mathematics—The first semester introduces the student to the basic elements of algebra and geometry. The concepts of linear equations and systems are then developed which lead to the solution of business problems through the techniques of linear programming. Elements of the calculus and basis probability are then introduced as tools for business decision-making. *Cr* 3. (Associate degree credit only) MR. VANAMBURG

3/4 Ba Business and Society—An examination of the significant relationships which exist between business and the social, political, and economic environment of our society for the purpose of evaluating goals, values, ethics and practices in the business world. *Cr* 3. (Associate degree credit only) MRS. MILNE

9 Ba 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. MCKEIL

10 Ba Principles of Accounting II—Books of original entry, analysis of assets and liabilities, negotiable instruments, and an introduction to partnership and corporate accounting. Prerequisite: Ba 9. *Cr* 3. MR. MCKEIL

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23/24 Ba 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: Ec 1/2. Cr 3. MR. McKEIL

41/42 Ba Intermediate Accounting—Principles in regard to the valuation and recording of working capital items and concurrent items; capital stock and surplus; statement analysis. Prerequisite: Ba 9, Ba 10. Cr 3. MR. HALL

63/64 Ba 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: Ec 1/2, Ba 9. Cr 3. MR. ANDREWS

151/152 Ba 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: Ec 1/2, Ba 9. Cr 3. MR. ANDREWS

130 Ba The Legal Environment of Business—An examination of fundamental legal concepts and their application to the business community. Among the topics discussed are the evolution of law, its underlying conceptual framework from which legal rules and principles of business develop. Selected legal cases will be critically analyzed and discussed. Cr 3.

147 Ba Business Data Processing—The application of electronic data processing equipment to accounting systems. Basic principles of operation and programming. Selected case problems. Prerequisite: Ba 9, Ba 10. Cr 3. MR. CHRISTOPHER

1/2 Ec 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. MR. CHRISTOPHER

90 Ba Human Relations in Business—An introduction to the behavioral sciences emphasizing typical behavioral problems faced in business both by employees and members of management. The laboratory method of teaching, involving the student in role playing and analyzing collected data, is supplemented with lectures, case analysis, and outside reading. Cr 3. MRS. MILNE

HUMANITIES DIVISION

PROF. WILLIAM L. WHITING, Chairman

Art

(See page 67 for course descriptions.)

ASSISTANT PROFESSOR BEARCE; INSTRUCTOR RAKOVAN

At	1/2	Free-hand Drawing and Sketching	2
At	3.4	Principles of Art	2
At	5.6	Art Appreciation and History	3
At	7/8	Crafts and Design	2

Classics

(See page 84 for course descriptions.)

LECTURER DUCLOS

Cl	1.2	Greek and Latin Literature in English Translation	3
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UNIVERSITY OF MAINE IN PORTLAND

Music

(See page 99 for course descriptions.)

LECTURER BRYANT

Mc	01. 02	University Singers	1
Mc	L3/L4	Understanding Music	2

Philosophy

(See page 107 for course descriptions.)

ASSOCIATE PROFESSOR SWEIGART

Pl	1. 2	Philosophy and Modern Life	3
Pl	135	Ethics	3
Pl	136	Logic	3

Speech

(See page 134 for course descriptions.)

ASSOCIATE PROFESSORS HANSEN, WHITING; INSTRUCTORS POWER, STEELE

Sh	1	Fundamentals of Public Speaking	2
Sh	11	Theater Today	2
Sh	17	Fundamentals of Acting	2
Sh	31	Voice and Diction	2
Sh	41	Fundamentals of Interpretation	2

SCIENCE AND MATHEMATICS DIVISION

ASSOCIATE PROFESSOR HAIG H. NAJARIAN, Chairman

Chemistry

(See page 260 for course descriptions.)

ASSOCIATE PROFESSOR SOTTERY; STAFF ASSISTANT CINAMON

Ch	1/2	General Chemistry	3
Ch	151/152	Organic Chemistry	(Ch 2) 3

Engineering Graphics

(See page 275 for course descriptions.)

ASSOCIATE PROFESSOR HOPKINSON

Eg	1/2	Engineering Drawing	2
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Geology

(See page 84 for course descriptions.)

PROFESSOR JOSEPH M. TREFETHEN

Gy	1a	Physical Geology	3
Gy	2a	Historical Geology	3

University of Maine in Augusta

The University of Maine in Augusta is located at 99 Western Avenue, a short distance from the Interstate Route 95.

ACADEMIC PROGRAM

The University of Maine in Augusta was organized for the purpose of serving commuting students. Currently two day-time programs are being offered. The programs are: (1) Associate in Liberal Studies and (2) Associate in Administration with a major in either Business or Public Administration.

The objective of the Associate in Liberal Studies is to offer a two-year program of collegiate liberal education.

The objectives of the Associate in Administration are: (1) To provide a combined program of liberal arts and career training. (2) To provide a two-year semi-professional terminal program.

THE CONTINUING EDUCATION DIVISION

A center of the Continuing Education Division is located at the University of Maine in Augusta. Approximately 140 graduate and undergraduate credit courses will be offered this year through this program. Many non-credit and special short courses will also be available. For information regarding courses and programs offered at the University of Maine in Augusta contact the Assistant Director of Continuing Education, 99 Western Avenue, Augusta, Maine, 04330.

UNIVERSITY POLICY ON HOUSING

The University of Maine in Augusta is a commuter campus, and it is envisioned that unmarried students below legal age will live at home or with relatives. In instances where students, with the approval of their parents, decide to obtain student apartments or rooms, the University of Maine in Augusta will not assume any responsibility with respect to locating or recommending facilities, resolving problems arising between tenants and landlords, or providing supervision over the use of such facilities. Students in this category, however, may be subject to University disciplinary action if their conduct reflects adversely upon themselves or the University.

UNIVERSITY OF MAINE IN AUGUSTA

BOOK STORE

A branch of the University Book Store is located in the University of Maine in Augusta Administration Building. All required textbooks, supplemental materials, a wide selection of college-level paperbacks as well as many other items of interest to the college student are carried. The store is open to the public.

ADMISSIONS

Application for admission and all inquiries concerning admission to the University of Maine in Augusta should be addressed to the Admissions Office, 99 Western Avenue, Augusta, Maine, 04330. Application blanks should be completed and returned promptly accompanied by the application fee of \$10 which cannot be refunded. A flexible admission policy is followed.

FINANCIAL INFORMATION

The student expenses outlined below are the anticipated charges for 1967-68. Changing costs may require an adjustment of these charges.

Regular Student's Tuition per semester	\$200
Regular Student's Tuition per year	\$400
Special Student's Tuition for each semester hour	\$ 20

Special Fees—A fee of \$10 is required with the application for admission and this fee cannot be refunded. A fee of \$10 is charged for late registration. Each student provides his own books and supplies. The annual cost is approximately \$100.

Payment of Bills—Charges for tuition are due and payable on or before registration day for each semester. Full tuition will be charged for 10 or more 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

- 1/2 the total semester charge at registration
- 1/6 the total semester charge on October 1
- 1/6 the total semester charge on November 1
- 1/6 the total semester charge on December 1

Spring Semester

- 1/2 the total semester charge at registration
- 1/6 the total semester charge on March 1
- 1/6 the total semester charge on April 1
- 1/6 the total semester charge on May 1

For the 1967-1968 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 payments is correlated with the charges. Those who have prepaid their semester charges will be refunded the money they have prepaid in excess of the amounts specified by the installment program.

UNIVERSITY OF MAINE

HEALTH AND MEDICAL CARE

The University offers at nominal cost comprehensive accident and illness protection coverage, for either the college or calendar year. Further information may be obtained at the Director's Office.

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.

HONORS PROGRAM

The University of Maine in Augusta Honors Program is open to interested students. Its purpose is two-fold:

- 1) To introduce students to the major areas of knowledge—mathematics and science, social studies, literature, philosophy, and the fine arts—through individual reading and group discussions;
- 2) To develop their skills to as high a degree as possible in the field in which they choose to concentrate.

STUDENT ACTIVITIES

Students at University of Maine in Augusta have a variety of activities in which to participate. There are teams in basketball, tennis, rifle marksmanship and fencing. The intramural program is tailored for maximum participation in basketball, badminton, tennis, softball, and volleyball. Instruction in the arts of judo and karate is available. Cultural films, lecture and musical programs are made available to the student at little or no cost.

GUIDED STUDY IN ENGLISH, READING, AND MATHEMATICS

Tutorial instruction is available for those students who need extra help in English, reading, and mathematics.

GUIDANCE PROGRAM

Every effort is made to provide adequate academic and personal counseling for all students, with the aim of enabling them to successfully complete their courses of study. Students are assigned faculty advisers to assist them in planning their programs.

STUDENT REGULATIONS

It is assumed that all students admitted to the University of Maine in Augusta 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.

UNIVERSITY OF MAINE IN AUGUSTA

COURSES OF INSTRUCTION OFFERED AT AUGUSTA

When a dash is used between the two numbers (e.g., 1-2), both semesters must be taken to obtain credit; when a slant 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.

Associate in Administration

Options: A) Business B) Public

Objectives—This is a semi-professional terminal program designed primarily for students who wish to complete their education in two years by combining liberal education with career training. This curriculum will prepare the student for a career in business or public administration. A flexible admissions policy will be followed.

Upon successful completion of this program (60 credit hours at a minimum quality point average of 1.8) the student will be awarded an associate in administration degree, with the elected option indicated.

SPECIMEN CURRICULUM

First Year

FALL SEMESTER			SPRING SEMESTER		
	Subject	Credit Hours		Subject	Credit Hours
Ad 1	Communication Skills	3	Ad 2	Communication Skills	3
Ad 3	Dynamics of Human Behavior	3	Ad 4	Dynamics of Human Behavior	3
Ad 5	Political Science	3	Ad 6	Political Science	3
Ad 7	Economic Problems and Policies	3	Ad 8	Economic Problems and Policies	3
Ad 9	Accounting	3	Ad 10	Accounting	3
		15			15

Second Year

Business Administration Option

FALL SEMESTER			SPRING SEMESTER		
	Subject	Credit Hours		Subject	Credit Hours
AdB 11	Business Math	3	AdB 14	Electronic Data Processing	3
AdB 13	Business Law	3	AdB 16	Financial Administration	3
AdB 15	Financial Institutions	3	AdB 18	Sales Promotion	3
AdB 17	Marketing Problems and Policies	3	AdB 22	Personnel Administration	3
AdB 19	Fundamentals of Business Management I	3	AdB 20	Fundamentals of Business Management II	3
		15			15

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Public Administration Option

FALL SEMESTER			SPRING SEMESTER		
	Subject	Credit Hours		Subject	Credit Hours
AdP 11	Principles and Problems of Public Administration I	3	AdP 21	Principles and Problems of Public Administration II	3
AdP 13	Governmental Finance	3	AdP 14	Public Personnel Policy	3
AdP 15	Governmental Statistics	3	AdP 16	Public Office Management	3
AdP 17	Public Planning	3	AdP 22	Project in Public Administration	6
AdP 19	Maine Politics & Government	3			
		<hr/> 15			<hr/> 15

Associate in Administration Course Descriptions for the First Year

Ad 1/2. Communication Skills—The objectives are to help the student to express his ideas clearly, correctly, and forcefully in oral and written communication. Also to deepen his understanding of literature and to acquaint him with the techniques of the research paper. *Cr 3.*

Ad 3/4. Dynamics of Human Behavior—This course explores the basic propositions of psychology, social psychology, and sociology. Attention will be given to work situations involving human relationships, leadership, and supervision. Social systems of community, family, religion, education, and economics will be emphasized. *Cr 3.*

Ad 5/6. Political Science—A survey of national, state and local government. The first semester includes the fundamental features of the American federal system and an analysis of the national government's structure and powers. The second semester includes the structure, powers, and functions of state and local government and an analysis of selected intergovernmental relationships. *Cr 3.*

Ad 7/8. Economic Problems and Policies—Background of the American economy, private enterprise, profits and price system, national income, employment and growth, price levels, economic fluctuations, money banking systems, savings, investment, stabilization policies. *Cr 3.*

(Second Semester)—The role of business enterprise in the economy; relations of supply, demand, and market prices; free competition, oligopoly, monopoly and competition under each; distribution of income, wages, rent, interest, and profit; the public economy and wages; the farm problem, labor unions and collective bargaining, social security systems, and comparative economic systems. *Cr 3.*

Ad 9/10. Accounting—An introduction to accounting principles, practices, and concepts including journals, ledgers, income, expenses, plus the accounting procedures and techniques involved in the preparation of simple financial statements. *Cr 3.*

(Second Semester)—Preparation of financial statements, accounting procedure, changes in owners' investments, adjustments, adjusting and closing of account books, merchandising operations, special accounting techniques, forms of business organization, investments, inventory accounting, and accounting for fixed assets and long-term debts. *Cr 3.*

UNIVERSITY OF MAINE IN AUGUSTA

Associate in Liberal Studies (ALS)

Objective—The objective of the Associate in Liberal Studies is to offer a two-year program of collegiate liberal education.

The program of study is planned to give the student maximum opportunity to explore various academic areas.

Upon successful completion of this program (60 credit hours at a minimum quality point average of 1.8) the student will be awarded an associate in liberal studies degree.

Transfer—The student completing this program who applies for transfer to an appropriate University of Maine baccalaureate program will be considered on an individual basis.

PROGRAM REQUIREMENTS

- A. Complete mathematics through Ms 6 or Ms 12
- B. Eight credit hours of science
- C. Eh 1 English Composition and Co 10 Communications
- D. Six credit hours of humanities
- E. Twelve hours of social science
- *F. The equivalent of one year of a foreign language at the college level is required.

* This requirement may be met by examination or enrollment in one year of a foreign language at college level. If Program Requirement F has been met, Foreign Language may be replaced by an elective.

SPECIMEN CURRICULUM

First Year

FALL SEMESTER		SPRING SEMESTER	
Subject	Credit Hours	Subject	Credit Hours
English	3	Communications	3
Foreign Language	3 (4)	Foreign Language	3 (4)
Mathematics	3	Mathematics	3
Social Science	3	Social Science	3
Elective	3	Elective	3
<hr/>		<hr/>	
15		15	

Second Year

FALL SEMESTER		SPRING SEMESTER	
Subject	Credit Hours	Subject	Credit Hours
Humanity	3	Humanity	3
Science	4	Science	4
Social Science	3	Social Science	3
Elective	5	Elective	5
<hr/>		<hr/>	
15		15	

Course Offerings—Program requirements are selected from the following:

Social Sciences

- Ec 1/2 Principles of Economics
- Hy 3/4 United States History
- Hy 5/6 History of Western Europe
- Pol 1/2 Introduction to Government
- Py 1/2 General Psychology
- Sy 3/4 Introduction to Sociology

Humanities

- Eh 15. 16 Masterpieces of English and American Literature
- Hy 1. 2 Classical and Medieval Civilization
- Pl 1. 2 Philosophy and Modern Life

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Foreign Languages

Fr	1-2	Elementary French
Fr	3/4	Intermediate French
Ru	1-2	Elementary Russian
Ru	3/4	Intermediate Russian

Mathematics

CSB	2	Functional Algebra
Ms	1	Trigonometry
Ms	3	College Algebra
Ms	5/6	Elements of College Mathematics
Ms	12	Analytic Geometry and Calculus

Sciences

Bio	1-2	Introduction to Biology
By	21	Introduction to Bacteriology
Gy	1	Physical Geology
Gy	2	Historical Geology

Electives

At	5.6	Art Appreciation and History
Ba	9/10	Accounting
EdB	2	The American School
EdB	3	Growth Learning Process
Hr	47	Honors Group Tutorial
Mc	L1	Understanding Music

ASSOCIATE IN LIBERAL STUDIES COURSE DESCRIPTIONS

Art

At 5.6. Art Appreciation and History—Techniques and trends in architecture, sculpture, and painting as related to the history of art from the earliest time to the present day. *Cr 3.*

Business and Economics

Ba 9. Principles of Accounting I—An introductory course in accounting. 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.*

Ba 10. Principles of Accounting II—Books of original entry, analysis of assets and liabilities, negotiable instruments, and an introduction to partnership and corporation accounting. Prerequisite: Ba 9. *Cr 3.*

Ec 1/2. Principles of Economics—Analysis of the fundamentals, characteristics, and institutions of modern economic society, including business and labor organizations, national and international policies. *Cr 3.*

Communications

Co 10. Communications—To develop the ability to select, organize and deliver an effective speech. In addition, the practice of extemporaneous speaking will be stressed. Consideration will be given to the choice of subject, selection and arrangement of material, audience analysis and delivery. Classroom experience in the preparation and delivery of short speeches. *Cr 3.*

Education

EdB 2. The American School—Examines the nature, role, purposes, and curriculum of elementary and secondary schools. Special attention to the place and function of the teacher within this social institution. This is one of the courses prerequisite to student teaching in all regular undergraduate programs. Not open to freshmen. *Cr 3.*

EdB 3. Growth-Learning Process—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.*

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English

Eh 1. Freshman Composition—Expository and narrative writing, with the reading of illustrative material. *Cr 3.*

Eh 15.16. Masterpieces of English and American Literature—An introduction to literary appreciation through the study of selected masterpieces from English and American literature. *Cr 3.*

Foreign Languages

Fr 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 less than two years of high school French. *Cr 4.*

Fr 3/4. Intermediate French—Continuation of 1-2. Laboratory practice. For students who have completed French 1-2 or who have completed two or three years of high school French. *Cr 3.*

Ru 1-2. Elementary Russian—Emphasis on development of listening comprehension, speaking, reading, and writing skills. Laboratory practice. *Cr 4.*

Ru 3/4. Intermediate Russian—Continuation of 1-2. Laboratory practice. This course fulfills the language generalization requirement. *Cr 3.*

History

Hy 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.*

Hy 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.*

Mathematics

CSB 2. Functional Algebra—A course designed to review the fundamentals of algebra for those who wish to prepare for more advanced mathematics. *No credit.*

Ms 1. Trigonometry—The trigonometric functions, their properties and applications. *Cr 2.*

Ms 3. College Algebra—Basic topics in algebra necessary for further work in mathematics. *Cr 2.*

Ms 5/6. Elements of College Mathematics—Modern viewpoints on certain basic mathematical material. *Cr 3.*

Ms 12. Analytic Geometry and Calculus—Equations and graphs, differentiation and integration of polynomials, application. Prerequisite: Trigonometry and the equivalent of Ms 3. *Cr 4.*

Music

Mc 11. Understanding Music—The development of music appreciation through the study of music from the 4th century to the present day. Emphasis on the various historical movements in the arts, together with a study of the great

UNIVERSITY OF MAINE

composers and their contrasting styles as exemplified by their most important compositions. *Cr 3.*

Philosophy

Pl 1. 2. Philosophy and Modern Life—Pl 1 pays special attention to logic, the nature of knowledge and world views. Pl 2 is concerned with the value disciplines of ethics, aesthetics and religion. The whole course relies directly on original philosophic writings and provides an introduction to the philosophers themselves. *Cr 3.*

Political Science

Pol 1/2. Introduction to Government—The first semester includes the development and nature of the state, theories and types of government, constitutionalism, the nature, structure and control of political power, freedom and order, and the modern state in international relations. The second semester emphasizes the structure, practices and problems of American national government. *Cr 3.*

Psychology

Py 1/2. General Psychology—Survey of psychology as the science of behavior. Lecture and discussion of major areas such as motivation, personality, intelligence, learning, etc. *Cr 3.*

Science

Bio 1/2. General Biology—A study of the organization of the plant and animal body including that of man, with emphasis on protoplasm, the cell, tissues, organs, and systems. It will include a survey of the basic processes of growth and development, the maintenance of life, the origin and evolution of organisms and the multiple relationships of living things as they exist in the complex world of today. Two lecture periods and one laboratory. *Cr 4.*

By 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. *Cr 3.*

Gy 1. Physical Geology—A study of earth materials and processes, volcanism, mountain building, the work of seas, streams, ice and winds. Laboratory work includes an elementary consideration of minerals, rocks, and maps. Field trips. *Cr 4.*

Gy 2. Historical Geology—The geologic history of the earth and the development of life upon it. Laboratory includes study of selected fossils and various types of geologic maps. Field trip. *Cr 4.*

Sociology

Sy 3/4. Introduction to Sociology—The fundamental concepts, principles and methods of sociology; analyzes the influence of social and cultural factors upon human behavior; evaluates effect of group processes, social classes, stratification and basic institutions on contemporary society. The first semester (Sy 3) concentrates on concepts and principles; the second semester (Sy 4) on application of these to various social problem areas. *Cr 3.*



*Photographing prize-winning Winter
Carnival snow sculpture*



Touch football game, with (left to right) Penobscot Hall, Carnegie Hall, and Balentine Hall in background



The Four Freshmen perform in Memorial Gymnasium

GRADUATE SCHOOL

FRANKLIN P. EGGERT, DEAN



Reference Room, Fogler Library

Graduate School

Programs of study leading to degrees of master of agricultural business and economics, master of arts, master of arts in teaching, master of business administration, master of science, master of education, master of engineering, master of library service, master of mechanical engineering, doctor of education and doctor of philosophy are offered by the University. The Ph.D. degree is awarded in the fields of American history, animal nutrition, chemical engineering, chemistry, plant science, physics, clinical psychology, general-experimental psychology and zoology.

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 continuing education courses given at various centers in the state and in the Continuing Education Division of the University. 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 C.E.D. classes. However, only six hours of continuing education work can be accepted toward the M.A. or M.S. degree in education.

The professional degree of forest engineer is granted upon completion of appropriate requirements.

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.

A thesis usually is required of candidates for the M.A. and M.S. degrees, and is required for the Ph.D. degree and the D.Ed. degree.

All work for the M.A., M.S., and non-thesis master's programs (with the exception of M.Ed.) must be completed within an eight-year period. The limit for the M.Ed., Ed.D. and Ph.D. degrees is 10 years.

The bulletin of the Graduate School, containing more detailed information concerning the graduate program, may be obtained from the Office of the Graduate School, 76 Fogler Library.

Students may not register for graduate degree credit until duly admitted to a program of graduate study at the University of Maine.

SCHOOL OF LAW, PORTLAND

EDWARD S. GODFREY, DEAN



Moot court, School of Law

School of Law, Portland

DEAN EDWARD S. GODFREY; *Resident Faculty*—PROFESSORS HARRY P. GLASSMAN, L. KINVIN WROTH, JOHN ANDREW SPANOGLE; ASSOCIATE PROFESSORS DONALD L. GARBRECHT (LIBRARIAN), DAVID J. HALPERIN, PIERCE B. HASLER, ORLANDO E. DELOGU; LECTURERS CHARLES P. BARNES, JAMES R. FLAKER, LEONARD M. NELSON, RICHARD E. POULOS; L. THOMAS BRAND, ASSISTANT DEAN

The University of Maine School of Law is located in Portland, Maine, at 68 High Street, about one mile from the undergraduate campus of the University of Maine in Portland. It is a full-time day school, offering a three-year program leading to the degree of bachelor of laws. With its rapidly growing library, containing over 60,000 volumes, the school serves as the chief center of teaching and research in law in northern New England. It is fully approved by the American Bar Association and is a member of the Association of American Law Schools.

The School of Law provides sound preparation for entry into the legal profession. The instruction familiarizes the student with basic principles of law, their purposes and social origins, and the processes by which legal institutions grow. Programs of legal writing, drafting, and advocacy develop professional skills.

A law student's work consists primarily of independent study of assigned materials as groundwork for critical discussion under guidance of the professor. The classroom experience requires the student to apply, compare, and test legal ideas in varying fact situations. Precedents and authorities of many jurisdictions, as well as relevant materials drawn from other disciplines, are used as the basis for study. Although statutes and rules peculiar to Maine are noted, the course of study consists primarily of an investigation and analysis of legal processes and institutions.

A candidate for the law degree at the University of Maine must, by the time he begins his law study, hold a bachelor's degree from a college or university accredited by the appropriate regional association of colleges and secondary schools. Each applicant for admission is required to take the Law School Admission Test administered by the Educational Testing Service, Princeton, New Jersey. Information concerning admission requirements and other matters may be obtained from the Office of the Dean of the Law School, 68 High Street, Portland, Maine. At the Orono campus of the University of Maine, information about the school may also be obtained from the Pre-law Adviser, Professor Robert B. Thompson, East Annex.

MISCELLANEOUS



Language class in Little Hall

Military Science

PROFESSOR OF MILITARY SCIENCE COLONEL GERETY; ASSISTANT PROFESSORS
CAPT. DAMOUR, CAPT. QUINN; INSTRUCTORS SERGEANT MAJOR WALMAN,
MASTER SERGEANT PRITCHARD; CHIEF OF ADMINISTRATION, STAFF
SERGEANT HOFFMANN; SUPPLY CUSTODIAN, THOMAS GEAGHAN;
SUPPLY CLERK, PRIVATE FIRST CLASS WHITMORE

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 also provides junior officers for the Regular Army through the selection of a number of volunteers, under the Distinguished Military Graduate Program, for direct appointment as Regular Army second lieutenants.

Curriculum—The complete course of instruction is four academic years plus a summer camp of six weeks between the junior and senior years. For students transferring from other institutions and for other selected students, the four-year course may be compressed into two years; however, to gain necessary credit for the basic course, the compressing student must attend an additional six-week summer camp between the sophomore and junior year. The course is organized and correlated in sequence with the various four-year college curricula. For example:

Basic Course:

- Mt 1 and 2, freshman year, 2 hours per week
- Mt 3 and 4, sophomore year, 3 hours per week

Advanced Course:

- 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 complete some of the military instruction by taking selected subjects from a list of approved academic courses in the general areas of Science Comprehension, General Psychology, Effective Communication, and Political Institutions and Development. The academic subject must be the equivalent of 30 class hours for freshmen, 45 class hours for juniors, and 45 class hours for seniors.

MILITARY SCIENCE AND TACTICS

FALL SEMESTER					SPRING SEMESTER				
	Subject	Hours				Subject	Hours		
		Rec	Lab	Cr			Rec	Lab	Cr
Mt 1	Military Science Basic	1	1	0*	Mt 2	Military Science Basic	1	1	0*
Mt 3	Military Science Basic	2	1	0*	Mt 4	Military Science Basic	2	1	0*
Mt 5	Military Science Advanced	3	1	3	Mt 6	Military Science Advanced	2	1	2
Mt 7	Military Science Advanced	2	1	2	Mt 8	Military Science Advanced	3	1	3

* Grades included in College Accumulative.

GENERAL

Basic Military Science (Mt 1, 2, 3, 4)—All physically fit male citizens enrolled in the University of Maine are eligible for enrollment in the Basic Military Science Course (Two years).

Advanced Military Sciences (Mt 5, 6, 7, 8)—Students requesting admission 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; be selected by the PMS and the President of the University according to their leadership, 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 a military and civilian leader.

Credits—Credit for placement due to previous active military service or ROTC training toward admission into Advanced Military Science may be granted on the following basis:

Four or more months of active military service or active duty for training—Credit for placement for Mt 1, 2, 3, 4.

Previous training in the Army, Navy, Air Force, or Coast Guard Academies, and in the Army, Naval or Air ROTC. Credit for equivalent training.

Military School Division ROTC. Partial credit in accordance with Army Regulations.

Completion of Junior Division (high school) ROTC training. Credit not to exceed Mt 1, 2.

Completion of the six-week basic summer camp between Mt 4 and Mt 5. Credit for Mt 1, 2, 3, 4.

Enrollment—Basic Military Science cadets are issued modified officer-type uniforms free of charge for use during leadership laboratory. 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 and appointment, these uniforms become their personal property. These uniforms can be modified by the addition of braid to conform with uniforms worn by officers on active duty.

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Deferment—University Military Training and Service Act provides for the deferment of all Advanced Military Science ROTC members. Basic Military Science ROTC members who have satisfactorily completed Mt 1 may, at the discretion of the PMS, also be deferred.

Pay—Advanced Military Science cadets are paid an allowance of \$40 per month for 10 months of each year. For the six-week period of Summer Camp they receive \$147.30 plus rations, quarters, all necessary uniforms and equipment, and a monetary allowance for transportation at the rate of six cents per mile between their home of record, Summer Camp, and return. Upon completion of Mt 8 and graduation, qualified personnel are commissioned 2nd lieutenants, U.S. Army Reserve. These officers receive a uniform allowance of \$300 upon reporting for active duty to cover costs of necessary uniforms.

Obligation—Cadets commissioned as second lieutenants are required to serve on active duty for periods up to two years, dependent upon the needs of the service. Individuals being appointed in the Regular Army and personnel completing the Flight Training Program are required to serve on active duty for a period of three and four years respectively.

TWO-YEAR SCHOLARSHIP PROGRAM

The Department of Army offers a two-year scholarship to select sophomore cadets who have enrolled in the military program and who have demonstrated outstanding leadership and scholastic qualities. This scholarship pays full tuition for two years, all text books and laboratory fees, plus \$50 a month for two years.

LEADERSHIP LABORATORY

General—Military leadership is taught using the brigade organization as a training vehicle. The brigade consists of a Brigade Headquarters, two battalions, and a separate Pershing Rifle Company. Individual cadets are assigned to positions of leadership and promoted to more advanced positions based on their leadership and experience.

The training of the cadet as a part of the brigade exposes him to the initial need-to-know military subjects from drill to field work. Maximum stress is placed on leadership by example, command responsibility, and completed staff action.

Organization: Brigade Headquarters—Brigade headquarters consists of a commander and full staff. This headquarters has the responsibility of direction and coordination of all brigade activities to include field exercises, physical fitness tests, drill competitions and the like.

Special Forces Battalion—The Special Forces Battalion meets for one two-hour evening period each week and one Saturday during each six-week period. The objective of this battalion's training program is the development of the individual. This is accomplished through a program which includes extensive physical training, hand-to-hand combat, all-weather survival, land navigation, mountaineering, small unit tactics, and close order drill. Maximum emphasis is placed on individual participation and accomplishment through which self-confidence and leadership are developed.

1st Battalion—The 1st Battalion meets for one single-hour evening period each week. The objectives of this unit are essentially the same as those for the Special Forces Battalion within the shorter time available.

MILITARY SCIENCE AND TACTICS

Pershing Rifles—Company M, 12th Regiment, Pershing Rifles meets for one two-hour evening period each week. This organization specializes in precision drill and functions as a unit within the National Pershing Rifles Organization as well as a company organic to the Maine Cadet Brigade. The company represents the University at several precision drill meets throughout the school year at various institutions. The company also receives extra field training in tactics, guerrilla warfare, and marksmanship. Operating within the framework of a nationwide military organization, company officers receive valuable training in personnel, operations and logistic duties and responsibilities.

ADDITIONAL COURSES

Flight Training—Army ROTC Flight Training is offered to selected senior ROTC cadets as an extracurricular subject at no extra cost. Upon completion of 35 hours ground instruction and 37½ hours in-flight instruction, cadets are eligible for a CAA pilot's certificate and are qualified for further Army flight training when on active duty. U.S. Army flight uniforms are provided for this instruction.

Rifle Marksmanship Training—Offered to all enrolled ROTC students. The ROTC Rifle Team has an enviable record and has won many trophies. Those qualifying may compete in the scheduled varsity and ROTC matches. Rifle marksmanship is also a major sport of the University and is coached by the Military Department. Participation enables individuals to earn their freshman numerals and their varsity letter.

OTHER ACTIVITIES

20th Maine—The 20th Maine is the University of Maine Military Honor Society composed of the outstanding Advanced Course cadets. The Society is both a service and social organization serving the University and the Military Department. Objectives are to develop those leadership qualities essential for effective officers and to prepare members as educated men to take a more active part and have a greater influence in the military affairs of the communities in which they reside.

The 20th Maine holds meetings at which guest speakers appear and movies are shown, supervises ushering at football games, and sponsors the annual Military Ball.

Pershing Rifles—The Pershing Rifles is a national honorary military society established in 1894. The objective of the Pershing Rifles is to encourage, preserve, and develop the highest ideals of the military profession and to promote the American way of life. Company M, 12th Regiment, at the University of Maine, represents the University at several precision drill meets throughout the school year at various institutions. The Pershing Rifles provides the University with color guards, trick drill performances and military guards on various occasions.

Pershingettes—A girls' drill team, the Pershingettes, was started in February 1966 and began this year with membership of 60 and big plans for the future. They hope to become nationally affiliated with the Pershing Rifles Coed affiliates. This new group not only operates as a drill team but also acts as a service organization on the University campus.

Physical Education and Athletics

PROFESSORS WESTERMAN, WOODBURY, SEZAK; ASSOCIATE PROFESSORS HAAS, BROWN, BUTTERFIELD, CASSIDY, MCCALL, STYRNA, SULLIVAN*; ASSISTANT PROFESSORS ABBOTT, LEPLEY, AND WALKUP; INSTRUCTORS MISS ANDERSON, MR. FOLGER, MR. HADLEY, MISS HASHEIDER, MR. JORDAN, MR. LIVESEY, MR. MARTIN, MR. PHILBRICK, MR. PICKETT, MR. RAND, MR. STURGEON*, MR. WALLACE

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 activity 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.

PHYSICAL EDUCATION FOR MEN

Prescribed courses in physical education are required of all non-veteran freshmen in the Colleges of Arts and Sciences, Business Administration, Life Sciences and Agriculture, and Technology. Physical education is required of all freshmen and sophomores in the College of Education. These courses are designed to improve body control and strength, to stimulate the development of mental and physical alertness, to establish habits of regular physical activity, 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 College of Education students who have passed Pe 1 and are taking Pe 2, will take a physical proficiency test at the end of the spring term. Students passing this test will be given credit for Pe 3 and 4 requirements. Those men who fail the physical proficiency test must 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.

PHYSICAL EDUCATION AND ATHLETICS

Men registered in Pe 3 who fail the test 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 proficiency test and must register for and pass all four semesters of the required course.

A prescribed uniform is required for all physical education classes, at the approximate cost of \$9.

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 arranged in a wide variety of outdoor 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 coordinated 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. Introduction and participation in outdoor and indoor games, fundamentals in individual activities, and participation in a program of physical fitness.

Pe 3, 4. Physical Education—These courses are a continuation of Courses 1 and 2. They may be elected by upperclassmen.

PHYSICAL EDUCATION FOR WOMEN

The role of physical education serves a vital part in the total program for the University woman. Instruction in the service program provides a means for physical development and maintenance of organic efficiency through a program of selected vigorous and moderate activities. Providing knowledge of structure and function for the basic tool of movement—the body—and providing satisfying opportunities for manipulating the body with or without an implement are also purposes of instruction. The Service Program is equally concerned with encouraging the pursuit of exercise as a pleasurable and healthy habit and instilling appreciation, respect, and love for participation in activity.

The University requirement for physical education for women is governed by each individual college. At the present time the College of Education requires four semesters to be completed in the freshman and sophomore years; the other colleges require two semesters of physical education to be completed in the freshman year.

The Department of Physical Education for Women believes that progress which is consistent with their philosophy may best be achieved through the following recommendations:

To fulfill the two-year requirement, students may elect four out of five areas. These areas are designated as: 1) Individual and Dual Sports; 2) Dance; 3) Team

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Sports; 4) Gymnastics; 5) Fitness. When the area requirements are satisfied, the student is free to select any activity with the stipulation that it not be a repeat activity.

To fulfill the one-year requirement, students may elect two of three areas. The areas are designated as: 1) Individual and Dual or Team Sports; 2) Dance; 3) Fitness or Gymnastics. When the area requirements are satisfied, the student is free to select any activity with the stipulation that it not be a repeat activity.

Within each area there is a variety of different activities for which the student may register. This allows the student to choose the activities in which she has an interest and would enjoy.

Students with activity restrictions, because of health, are scheduled into the Service Program by the Department of Physical Education for Women on recommendations from the University Student Health Service. The student must first go through the University Health Service for classification and then through the Physical Education Department for activity scheduling. The student then remains in the restricted program unless she is reclassified by the University Health Service.

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, badminton, fencing, golf, riflery roller skating, skiing, tennis); (3) Fundamentals of Gymnastics; (4) Dance (modern or folk); (5) Fitness and Conditioning. *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.

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 20.

Continuing Education Courses

The Continuing Education Division is a part of the University of Maine Extension Service. The primary function of the division is to coordinate the part-time study of adults in various Maine communities during later afternoon, evening and Saturday classes. Educational opportunities through C.E.D. are available at about 25 locations within Maine. An increasing number of courses are available by means of Educational Television. Television courses are administered by the Continuing Education Division. Courses offered by means of the division may be for degree credit or non degree credit.

This division provides a source of continuing education for mature and qualified persons who wish to supplement an earlier education. Programs offered may sometimes be applied toward degree programs or may be primarily for professional or personal use. However, all programs offered are designed to prepare adults to meet the challenges of a rapidly changing world and provide experiences in learning which will lead to a fuller and richer life.

Adult students in C.E.D. classes have varied backgrounds and interests. Most of them carry on full-time occupations, have graduated from high school some time ago, and have determined for themselves the need for earning a degree or for specific courses to be used for personal or occupational development. An increasing number of students have recently graduated from high school and are beginning their college career by commuting to C.E.D. classes before transferring to a campus.

A large variety of degree credit, non-degree credit and special short courses are available in many locations, operated by the C.E.D. Specific information concerning subjects currently available may be obtained from University of Maine Extension Service agents or from members of the Continuing Education Division at Orono, Portland, Presque Isle, Auburn and Augusta. C.E.D. personnel will be able to advise students on registration procedures for courses available. Regular tuition charges or nominal fees are charged for programs offered.

The Continuing Education Division also assists in the administration of many conferences and seminars conducted on the Portland, Augusta and Orono campuses.

Summer Session

The University offers a 12-week Summer Session of professional courses in elementary and secondary education, and academic subjects. 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 a week, are available for students who are interested in them.

The session also affords opportunities for students in the University of Maine or other similar institutions to secure credits toward a degree, thus enabling them to accelerate their program. State College 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.

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 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 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. Franklin P. Eggert, 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 ends early in September. (See calendar, pages 4 and 5.) 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 04473.

Educational Television

The University of Maine owns and operates WMEB-TV, Channel 12, Orono; WMEM-TV, Channel 10, Presque Isle; WMED-TV Channel 13, Calais, and translator station WO4AR, Channel 4, Madawaska, which together comprise the State of Maine ETV Network. The four stations are interconnected by microwave relay with a central programming source at the University. The stations also are interconnected with ETV stations WCBB, Augusta; WENH-TV, Durham, N. H.; WGBH-TV, Boston, Mass.; the Vermont ETV Network; and on a part-time basis with The National Educational Television network facilities in New York and Washington, D. C. Each station maintains a regular schedule of programs for adults and for children, both for home and for in-school use.

Studio and control facilities for the State of Maine ETV Network are located in Alumni Hall on the Orono campus. The facilities contain equipment for the production and recording of television programs, and the distribution of these programs to each of the stations. Programming on the network comes from three main sources: National Educational Television, the Eastern Educational Network, and the University of Maine. Of the locally produced programs, a number are presented in cooperation with other educational, cultural and public service organizations of the state.

An expanding closed circuit television system (CCTV) currently interconnects several classroom buildings on both the Orono and Portland campuses with the Alumni Hall facilities. A number of courses in Orono and Portland are taught, in part, by television using these facilities.

Both the network and closed circuit television operations offer students an excellent opportunity for part-time employment and training in the broadcast fields.

Personnel

EMERITI

- ASHMAN, ROBERT IRVING (1930-1957); A.B., Cornell University, 1913; M.F. Yale, 1929; Sc.D., Maine, 1957; Professor Emeritus of Forestry.
- BAILEY, RUSSELL MANLEY (1931-1967); B.S., Maine, 1928; Associate Professor Emeritus of Genetics.
- BEVERLY, VERNE CURTIS (1923-1957); B.S., Maine, 1920; County Agent Emeritus.
- BOARDMAN, HAROLD SHERBURNE (1901-1934); 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 (1957-58); B.A., Bates, 1906; M.A. (Hon.), 1951; Sc.D., in Ed., Maine, 1959; Dean Emeritus, University of Maine in Portland.
- BRANN, BERTRAND FRENCH (1909-1953); B.S., Maine, 1909; M.S., 1911; S.M., Massachusetts Institute of Technology, 1912; Professor Emeritus of Chemistry.
- BRIWA, KATHRYN ELIZABETH (1941-1960); A.B., Vassar, 1915; M.A., Columbia, 1929; Ph.D., 1940; Nutrition Specialist Emerita.
- BUZZELL, MARION STEPHANIE (1919-1958); B.A., Maine, 1914; M.A., 1915; Associate Professor Emerita of Romance Languages.
- CLAYTON, MARY MORRIS (1934-1957); B.S., Columbia, 1918; M.S., Rochester, 1926; Ph.D., 1929; Nutritionist Emerita.
- COMEGYS, ESTHER (1941-1960); B.A., Wellesley, 1921; M.A., University of Pennsylvania, 1926; Ph.D., Radcliffe, 1941; Associate Professor Emerita of Mathematics.
- CORBETT, RALPH ASHTON (1930-1966); B.S., Maine, 1930; M.S., Wisconsin, 1949; Extension Dairy Specialist Emeritus.
- CRABTREE, KENNETH GERARD (1926-1964); S.B., Massachusetts Institute of Technology, 1923; P.E. (Maine); Professor Emeritus of Electrical Engineering.
- CRANE, PERCY FREMONT (1936-1958); B.S., Bowdoin, 1917; Director of Admissions Emeritus.
- CRAWFORD, JOHN RAYMOND (1930-1962); B.A., Culver-Stockton, 1924; M.A., State University of Iowa, 1929; Ph.D., 1931; Professor Emeritus of Education.
- CREAMER, WALTER JOSEPH (1919-1961); B.S., Maine, 1918; E.E., 1921; B.A., 1923; Professor Emeritus of Communication Engineering.
- CROSBY, RUTH (1929-1962); A.B., Mount Holyoke, 1919; A.M., Radcliffe, 1920; Ph.D., 1929; Professor Emerita of English.
- CROSSLAND, CHARLES EDWARD (1917-1961); B.S., Maine, 1917; LL.D., 1962; Vice President for Administration Emeritus.
- DAY, CLARENCE (1913-1955); M.S., Maine, 1929; Extension Editor Emeritus.
- DIRKS, CHARLES ORVILLE (1927-1960); B.S., Kansas State College, 1924; M.S., Iowa State College, 1925; Ph.D., Cornell University, 1935; Professor Emeritus of Entomology.
- DOLLOFF, RICHARD CARLTON (1929-1963); B.S., Maine, 1927; M.S., Cornell University, 1950; County Agent Leader Emeritus.
- DOTEN, HENRY LEROY (1939-1964); B.S., Maine, 1923; C.E., 1942; P.E. (Maine); Business Manager Emeritus.

- EASTMAN, CHARLES LESLIE (1925-1966); B.S., Maine, 1922; Extension Agent Emeritus.
- EVANS, WESTON SUMMER (1923-1962); B.S., Maine, 1918; M.S., 1923; Sc.D., 1962; P.E. (Maine); Dean of Technology Emeritus.
- FOLSOM, DONALD (1918-1957); A.B., Nebraska, 1912; M.A., Minnesota, 1914; Ph.D., 1917; Plant Pathologist Emeritus.
- FOSTER, FRANK CLIFTON (1947-1960); B.S., Colby, 1916; B.D., Union Theological Seminary, 1924; M.A., Columbia, 1924; Ph.D., 1933; Professor Emeritus of Education.
- GANNETT, JAMES ADRIAN (1908-1953); B.S., Maine, 1908; M.A. (Hon.), 1928; Registrar Emeritus.
- GREENE, PEARL STUART (1923-1948); B.A., Northwestern, 1909; B.S., Lewis Institute, 1914; A.M., Columbia, 1923; Professor Emerita of Home Economics.
- HALL, HOWE WIGGINS (1923-1956); B.S., Maine, 1914; M.S., 1925; Assistant Professor Emeritus of Animal Husbandry.
- HAUCK, ARTHUR ANDREW (1934-1958); 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., Nason 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.
- HAWLEY, HENRY CHARLES (1946-1965); A.B., Oberlin, 1923; M.B.A., Harvard, 1925; D.C.S., 1930; Professor Emeritus of Business and Economics.
- HITCHNER, ELMER REEVE (1922-1959); B.S., Pennsylvania State, 1915; M.S., 1916; Ph.D., Wisconsin, 1931; Professor Emeritus of Bacteriology.
- HOWELL, CHARLES MANLEY (1951-1960); A.B., SWARTHMORE, 1919; M.S., Maine, 1922; P.E. (Maine); Professor Emeritus of Paper Technology.
- HYLAND, FAY (1926-1965); B.S., Michigan State College, 1925; M.S., Maine, 1929; Sc.D., 1965; Professor Emeritus of Botany.
- IBBOTSON, LOUIS TAPPE (1928-1963); A.B., Hamilton, 1922; B.L.S., New York State Library School, 1925; Librarian Emeritus.
- JENNESS, LYLE CLAYTON (1923-1966); B.S., New Hampshire, 1922; M.S., Maine, 1925; P.E., (Maine); Sc.D., N.H., 1966; Professor Emeritus of Chemical Engineering.
- JOHNSON, JUSTIN OLEY (1958-1960); B.S., Colby, 1927; Assistant Professor Emeritus of Mathematics University of Maine in Portland.
- JORDAN, MAYNARD FRED (1917-18; 1919-21; 1925-60); B.A., Maine, 1916; M.A., 1921; Professor Emeritus of Astronomy.
- LATHROP, FRANK HEIDTMAN (1934-1954); B.S., Clemson, 1913; M.S., Ohio State, 1915; Ph.D., 1923; Entomologist Emeritus.
- LENGYEL, HELEN ANNA (1924-1949); Diploma, Sargent School for Physical Education, 1915; B.A., Maine, 1927; M.A., 1936; Professor Emerita of Physical Education.
- LEVINSON, RONALD BARTLETT (1926-1962); A.B., Harvard, 1919; Ph.D., Chicago, 1924; L.H.D., Maine, 1962; Professor Emeritus of Philosophy.
- LUCAS, WARREN STANHOPE (1920-1958); B.A., Maine, 1914; M.A., 1922; Professor Emeritus of Mathematics.
- MERCHANT, CHARLES HENRY (1924-1962); B.S., Cornell University, 1920; M.S., 1922; Ph.D., 1928; Professor Emeritus of Agricultural Economics.

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- MONROE, MERNA MYRTHA (1931-1966); B.S., Iowa State, 1929; M.S., Kansas State, 1932; Associate Professor Emerita of Housing.
- MUSGRAVE, MARGUERITE RUTH (1929-1962); B.S., Columbia, 1925; A.M., 1926; Lecturer Emerita in Design.
- NASON, ESTELLE (1922-1957); B.S., Maine, 1922; Home Demonstration Agent Leader Emerita.
- OITO, CARL EVERETT; (1924-1961); B.A., Cincinnati, 1916; M.A., 1920; Ph.D., 1922; Associate Professor Emeritus of Chemistry.
- PRAGEMAN, IRVING HENRY (1927-1962); Ph.B., Yale, 1918; M.E., 1923; P.E. (Maine); President Emeritus of Mechanical Engineering.
- RANKIN, ROME (1947-1967); M.A., University of Michigan, 1934; Ph.D., University of Kentucky, 1948; Professor Emeritus of Physical Education.
- SCHRUMPF, WILLIAM ERNEST (1928-1958); B.S., Maine, 1928; M.S., 1930; Associate Agricultural Economist Emeritus.
- SHIBLES, LOANA SPEARIN (1946-1961); Castine Normal, 1926; Club Agent Emerita.
- SMALL, GEORGE WILLIAM (1929-1956); B.A., Tennessee, 1915; M.A., Johns Hopkins, 1921; Ph.D., 1922; B.Litt., Oxford, 1927; Professor Emeritus of English Language and Literature.
- SMITH, HARRY WOODBURY (1912-1952); B.S., Maine, 1909; M.S., 1922; Ph.D., Rutgers, 1934; Professor Emeritus of Biochemistry.
- SMYTH, JOHN ROBERT (1929-1961); B.S., Purdue, 1920; M.S., Kentucky, 1928; Professor Emeritus of Poultry Science.
- SNYDER, MARY ELLA (1936-1962); A.B., Gooding College, 1919; M.S., Iowa State College, 1936; Associate Professor Emerita of Food and Nutrition.
- SPARROW, THERON ALONZO (1926-1964); B.S., Maine, 1924; M.S., 1938; P.E. (Maine); Professor Emeritus of Mechanical Engineering.
- STEINMETZ, FERDINAND HENRY (1922-1954); 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 (1927-1961); B.S., Iowa State College, 1921; M.S., 1922; Ph.D., Minnesota, 1927; Professor Emerita of Home Economics.
- SWIFT, HAROLD CLAYTON (1920-1961); B.S., Maine, 1918; M.S., 1923; Associate Professor Emeritus of Agricultural Engineering.
- TALBOT, RICHARD FOSTER (1920-1953); B.S., Maine, 1907; Extension Dairy Specialist Emeritus.
- TOBEY, ELMER ROBERT (1911-1959); B.S., Maine, 1911; M.S., 1917; Ch.E., 1920; Chemist Emeritus.
- TURNER, ALBERT MORTON (1922-1956); A.B., Harvard, 1912; A.M., 1914; Ph.D., 1920; Professor Emeritus of English and Comparative Literature.
- WALLACE, STANLEY MOORE (1922-1959); Diploma, New Haven School of Gymnastics, 1917; Professor Emeritus of Physical Education.
- WATSON, HARRY DEXTER (1920-1961); B.S., Maine, 1920; M.S., 1929; P.E. (Maine); Professor Emeritus of Mechanical Engineering.
- WEBSTER, FRED LOT (1944-1961); County Agent Emeritus.
- WHITMORE, ALBERT AMES (1915-1949); B.S., Maine, 1906; M.A., 1917; Professor Emeritus of History.

- WHITNEY, WALTER REGINALD (1928-1933; 1935-1965); B.S., Bowdoin, 1923; A.M., Harvard, 1935; Professor Emeritus of English.
- YOUNGS, FREDERICK SHAW (1923-1959); 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; Assistant Professor of Physical Education and Head Football Coach.
- ABDALLA, DENNIS ARTHUR (1962); B.S., University of Maryland, 1958; M.S., Clemson Agricultural College, 1962; Extension Blueberry Specialist, Co-operative Extension Service.
- ABELSON, ROBERT M. (1967); B.S., Queens College, 1952; M.S., Virginia Polytechnic Institute, 1954, Ph.D., Boston University, 1961; Associate Professor of Psychology.
- ADAMS, GRAHAM CLEVEARN (1966); A.B., University of North Carolina, 1961; M.A., Indiana University, 1966; Instructor in English.
- AIKEN, JAMES BURRELL (1965); B.S. in Ed., Southern Illinois University, 1948; M.S. in Ed., 1951; Ed.D., Indiana University, 1963; Associate Professor of Community Development, Department of Agricultural Business and Economics.
- ALBEE, PARKER BISHOP, JR. (1966); A.B., Dartmouth College, 1961; M.A., Duke University, 1964; Assistant Professor of History, University of Maine in Portland.
- ALBION, ROBERT G.; A.B., Bowdoin, 1918; M.A., Harvard, 1920; Ph.D., Harvard, 1924; Visiting Professor of History.
- ALLEN, KENNETH WILLIAM (1963); B.S., Wheaton College (Illinois), 1962; M.S., Maine, 1956; Ph.D., Rice University, 1959; Professor and Head, Department of Zoology.
- ALMOND, GEORGE LEE (1964); B.S., Ohio State University, 1951; M.A., 1955; Ph.D., 1963; Professor of Business and Economics.
- ALPANDER, GUVENC (1965); B.A., Middle East Technical University, Ankara, Turkey, 1962; M.P.A., Michigan State University, 1963; Assistant Professor of Management, College of Business Administration.
- ALPERIN, JAY K. (1967); B.S., Boston University, 1964; M.B.A., 1966; Instructor in Business Administration.
- ALTENBERGER, RUSSELL ALBERT (1961); B.S., New York University, 1950; A.M., University of Pennsylvania, 1951; Associate Professor of Mathematics and Director of University Computing Center and Data Processing Center.
- ANDERSON, ALBERT, JR. (1967); B.A., University of New Hampshire, 1961; M.A., Maine, 1964; Instructor in Psychology, University of Maine in Portland.
- ANDERSON, CHARLES LOWELL (1955); B.A., University of Utah, 1949; M.A., 1951; Assistant Professor of English.
- ANDERSON, JANET RAE (1966); B.A.E., Wayne State College, 1963; Instructor in Physical Education, Women's Division.
- ANDREW, JEAN DOUGLAS (1967); B.S., Middlebury College, 1937; M.A., University

* Officers of the University are listed on pages 7-10.

UNIVERSITY OF MAINE

- of Connecticut, 1965; Assistant Professor of Political Science, University of Maine in Augusta.
- ANDREWS, SAMUEL GEORGE (1966); B.S.B.A., Babson Institute, 1964; M.S., Maine, 1966; Instructor in Business Administration, University of Maine in Portland.
- ANNIS, CECIL HERBERT, JR. (1964); B.S., Kansas State University, 1959; Extension Agent (Waldo County); Cooperative Extension Service.
- ANTONITIS, JOSEPH JOHN (1950); A.B., Indiana University, 1946; A.M., Columbia, 1947; Ph.D., 1950; Professor of Psychology.
- APGAR, WILLIAM PETER (1963); B.S., Rutgers, 1954; M.S., 1961; Ph.D., 1963; Assistant Professor of Animal Sciences.
- APOSTAL, ROBERT ALEXANDER (1961); B.A., University of Minnesota, 1954; M.A., University of Missouri, 1956; Ph.D., 1959; Director of the University Testing and Counseling Service and Associate Professor of Education.
- ARBAGI, MARTIN GEORGE (1967); A.B., Georgetown University, 1961; M.A., Rutgers University, 1963; Assistant Professor of History.
- ARMENTROUT, CHARLES (1960); B.S., Maine, 1955; M.S., Wesleyan University, 1958; Assistant Professor of Physics, University of Maine in Portland.
- ARMS, CHADWICK CUMMINGS (1964); B.S., Vermont, 1951; M.S., 1960; Area Dairy Specialist, Cooperative Extension Service.
- BAIER, LEE S. (1966); A.B., Reed College, 1948; M.A., Columbia University, 1952; Ph.D., 1965; Assistant Professor of English, University of Maine in Portland.
- BAGGETT, DANA RICHARD (1965); B.A., Maine, 1955; M.G.A., University of Pennsylvania, 1959; Director, Bureau of Public Administration.
- BAIN, WILLIAM MURRAY (1959); A.B., Indiana University, 1951; M.A., 1953; Ph.D., 1959; Associate Professor of Bacteriology.
- BAKER, GREGORY (1935); B.S., Maine, 1924; M.F., Yale, 1939; Professor of Forestry.
- BANKS, RONALD FILLMORE (1963); B.S., Gorham State Teachers College, 1956; M.A., Maine, 1958; Ph.D., 1966; Assistant Professor of History; Assistant Dean of the College of Arts and Sciences.
- BARDEN, ALBERT ARNOLD, JR. (1946); A.B., Brown, 1932; Sc.M., 1934; Ph.D., Northwestern, 1941; Professor of Zoology.
- BARDEN, CLARA LOUISE CARY (1967); B.A., University of Arkansas, 1965; M.A., Maine, 1967; Instructor in English.
- BARTLETT, MERRILL DAY (1958-59) (1961); B.A., Maine, 1952; M.A., 1958; Associate Professor of Business Administration; Assistant Dean, College of Business Administration.
- BARUSHOK, JAMES WILLIAM (1956); B.S., Northwestern University, 1951; M.A., 1952; Ph.D., Michigan State University, 1966; Associate Professor of Speech.
- BATES, EDWIN HILL (1953); B.S., Maine, 1937; M.S., University of Wisconsin, 1961; Associate Director, Cooperative Extension Service.
- BATTICK, JOHN FRANCIS (1964); A.B., Boston University, 1958; A.M., 1959; Ph.D., 1967; Assistant Professor of History.
- BAY, JOHN WILLIAM (1965); B.A., Saint Ambrose College, 1961; M.A., Boston College, 1964; Ph.D., 1966; Assistant Professor of Business and Economics, University of Maine in Portland.

- *BEAMESDERFER, JOHN WILLIAM (1947); B.S., Gettysburg College, 1932; M.S., University of Michigan, 1939; Ph.D., 1947; Professor of Chemistry.
- BEAN, EDWARD ELTON (1966); B.A., Bowdoin, 1960; M.A., Middlebury, 1966; Instructor in French.
- BEARCE, JEANA DALE (1965); B.F.A., Washington University, 1951; M.A., New Mexico Highlands University, 1954; Assistant Professor of Art, University of Maine in Portland.
- BEEMAN, WILLIAM JOSEPH (1967); B.A., St. John Fisher College, 1957; M.A., Syracuse, 1959; Assistant Professor of Economics.
- BEESON, ROBERT EARL (1966); B.S., Iowa State University, 1961; M.S., 1964; Assistant Professor of Electrical Engineering.
- BEHREND, DONALD FRASER (1967); B.S., Connecticut, 1958; M.S., 1960; Ph.D., Syracuse, 1966; Assistant Professor of Forestry.
- BEITZELL, ROBERT EGNER (1967); B.A., Wesleyan University, 1952; M.A., Columbia, 1955; Assistant Professor of History.
- BELL, HARRY ADELBERT (1956); B.S., Maine, 1949; Area Dairy Specialist, Co-operative Extension Service.
- BELYEA, JEANNETTE CYNTHIA (1965); B.S., Farmington State Teachers College, 1961; Extension Agent (Waldo County), Cooperative Extension Service.
- BELYEA, PAUL RAYMOND (1958); B.S., Maine, 1956; M.S., 1958; Assistant Professor of Biochemistry, Agricultural Experiment Station.
- BENNER, MARK OSWALD (1965); B.S., Indiana State University, 1964; M.A., 1966; Instructor in Speech.
- BENNETT, AUSTIN EDWARD (1963); B.S. in Ed., University of Connecticut, 1951; M.Ed., Colorado State University, 1962; University of Maine Coordinator for the New England Regional Center.
- BENNETT, CLARENCE EDWIN (1934); Ph.B., Brown, 1923; Sc.M., 1924; Ph.D., 1930; Professor of Physics.
- BENNETT, JACOB (1963); A.B., Boston University, 1949; M.A., Columbia University, 1949; Ph.D., Boston University, 1960; Associate Professor of English.
- BENOIT, JOHN ROSAIRE (1966); B.S. in Ed., Maine, 1959; M.Ed., 1965; Assistant Director, Continuing Education Division, University of Maine in Augusta.
- BERCE, LEWIS CHARLES (1966); B.S., Maine, 1950; Extension Agent (Aroostook County), Cooperative Extension Service.
- BERNARD, JULES EUGENE (1963); B.A., Yale, 1934; M.A., 1936; Ph.D., 1937; Associate Professor of English, University of Maine in Portland.
- BEYER, FRANK KEMP (1947); B.S., Cornell University, 1929; M.S., University of Wisconsin, 1930; Associate Professor of Forestry.
- BILLINGTON, MURRAY R. (1961); B.S., Maine Maritime Academy, 1955; B.A., Maine, 1961; Director of Purchases.
- BIRD, FRANCIS HOWE (1961); B.S., University of Michigan, 1936; Ph.D., University of California, 1948; Professor of Poultry Science.
- BISCOE, JONATHAN (1946); B.S., Massachusetts Institute of Technology, 1931; M.S., 1932; Professor of Physics.
- BISHOP, DAVID WINN (1962); B.S., Harvard, 1949; M.A., Maine, 1951; Assistant Professor of Education.

* On leave of absence, fall semester, 1967-68.

UNIVERSITY OF MAINE

- BISHOP, ISABEL MACPHERSON (1961); B.S. in Ed., Boston University, 1948; Ed.M., 1958; Ed.D., 1962; Associate Professor of Education.
- BISHOP, JAMES JOSEPH (1966); B.A., Maine, 1961; M.A., Florida State University, 1965; Instructor in English.
- BISSELL, LEWIS PROUTY (1949); B.S., New Hampshire, 1940; M.F., Yale, 1947; Forestry Specialist, Cooperative Extension Service.
- BLACKSTONE, ROGER ALTON (1967); B.S., Maine, 1964; Business Management Consultant, Agricultural Business and Economics, Cooperative Extension Service.
- BLAISDELL, CORINNE MERRILL (1928-38) (1951); B.S., Farmington Normal, 1928; Extension Agent, (Penobscot County), Cooperative Extension Service.
- BLAKE, JOHN MORTIMER (1961); B.S., Boston University, 1941; I.A., Harvard, 1943; Associate Director for Continuing Education, University of Maine Extension Service.
- BLAMBERG, DONALD LEE (1966); B.S., University of Maryland, 1954; M.S., 1956; Ph.D., 1960; Assistant Professor of Animal Sciences.
- BLEASE, ALFRED DUDLEY (1963); B.S., Brown, 1961; M.S., Maine, 1965; Instructor in Physics, University of Maine in Portland.
- BLEASE, JOHN A. (1960); B.S., University of Rhode Island, 1960; Assistant Chemist, Department of Biochemistry, Agricultural Experimental Station.
- BOBALEK, EDWARD GEORGE (1963); B.S., St. Mary's College (Winona, Minnesota), 1938; M.S., Creighton University, 1940; Ph.D., Indiana University, 1942; D.S. Gottesman Research Professor and Head, Department of Chemical Engineering.
- BOKUS, 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; Professor of Chemistry.
- BOLARIA, BHOPINDER SINGH (1965); B.A., Punjab University, India, 1955; M.A., 1958; M.A., Kansas State University, 1961; Ph.D., Washington State University, 1967; Assistant Professor of Sociology.
- BOLDUC, MARCEL LIONEL (1966); B.A., St. Francis College, 1960; M.A., Middlebury, 1966; Instructor in French.
- BOOKER, LILLIAN W. (1955); B.S., New Hampshire, 1937; Extension Agent (Kennebec County), Cooperative Extension Service.
- BORNS, HAROLD WILLIAM, JR. (1955); B.S., Tufts, 1951; M.A., Boston University, 1955; Ph.D., 1959; Associate Professor of Geology.
- BOST, JAMES STEPHEN (1962); A.B., University of Illinois, 1947; A.M., 1951; Ph.D., University of Indiana, 1961; Associate Professor of Speech.
- BOULANGER, LEO WILFRED (1955); B.S., Providence College, 1951; M.S., Cornell University, 1954; Ph.D., 1957; Professor of Entomology.
- BOURQUE, ANDRÉE MARIE (1966); B.Sc., Laval University, 1953; B.Ed., University of New Brunswick, 1961; Assistant Professor of Home Economics.
- *BOYCE, MARION (1959); B.S., Farmington State Teachers College, 1956; M.Ed., Maine, 1959; Assistant Professor of Education.

* On leave of absence, fall semester, 1967-68.

- BRADBURY, HARRY EDWARD (1958); B.S., Maine, 1954; M.S., Rutgers, 1956; Assistant Professor of Biochemistry, Agricultural Experiment Station.
- BRANCH, CHARLES F.; M.D., Vermont, 1923; Lecturer in Medical Technology; Central Maine General Hospital, Lewiston.
- BRANDT, EDUARD CARL, JR. (1966); B.A., Principia College, 1951; M.A., University of Connecticut, 1958; Ph.D., 1966; Assistant Professor of Education, University of Maine in Portland.
- BRENNAN, JUDE DEVERON (1966); B.A., University of Connecticut, 1959; Assistant Director, Urban Renewal Technical Advisory Service, Cooperative Extension Service.
- **BRICKER, HERSCHEL LEONARD (1928); A.B., Coe, 1928; Professor of Speech.
- BRIMMER, HARVEY HARTER, II (1963); A.B., University of Missouri, 1948; Assistant Professor of Philosophy.
- BRIMMER, JACQUELINE DELOBEL (1964); Licence d'Anglais (licence d'enseignement), Université de Lille, France, 1935; Diplôme d'études supérieures, 1937; Assistant Professor of French.
- BROCKWAY, PHILIP JUDD (1935); B.A., Maine, 1931; M.A., 1940; Director of Placement.
- BROMFIELD, SAMUEL (1965); B.A., City College of New York, 1957; M.A., Atlanta University, 1961; Assistant Professor of Sociology, University of Maine in Portland.
- BROWN, CARLETON MERLE (1955); B.S., Maine, 1949; M.S., 1959; Associate Professor of Electrical Engineering.
- BROWN, CECIL SANFORD (1953); B.S., New Hampshire, 1949; M.S., Cornell University, 1951; Ph.D., 1955; Professor of Agronomy.
- BROWN, ELLA CORINNE (1962); B.S., University of Missouri, 1949; M.A., Montana State University, 1961; Associate Professor of Physical Education, Women's Division.
- BROWN, LEROY C. (1960); B.S., Maine, 1941; Area Poultry Specialist, Cooperative Extension Service.
- BROWN, WILLIAM ALLEN (1960); B.A., Bowdoin, 1954; M.A., Maine, 1959; Assistant Professor of Mathematics, University of Maine in Portland.
- BROWNSTEIN, KENNETH ROBERT (1965); B.S., Rensselaer Polytechnic Institute, 1957; Ph.D., 1966; Assistant Professor of Physics.
- BRUCE, DONALD MALCOLM (1967); B.S., Maine, 1960; Youth Education Specialist, Cooperative Extension Service.
- BRUGMAN, HERMAN HENRY (1950); B.S.A., University of Manitoba, 1944; M.S., University of Minnesota, 1947; Ph.D., 1948; Associate Professor of Animal Sciences.
- BRUSH, EDWARD NEWCOMB (1928); A.B., Vermont, 1925; A.M., Harvard, 1926; Ph.D., 1932; Professor of Psychology.
- BRUSH, LILLIAN HATFIELD; B.A., Lake Forest College, 1923; M.A., University of Illinois, 1924; Ph.D., Cornell University, 1928; Lecturer in Psychology.
- BRYANT, MARSHALL F.; Mus.B., Cincinnati Conservatory, 1926; Part-time Lecturer in Music, University of Maine in Portland.
- BRYANT, THOMAS GENE; B.S., Maine, 1966; Part-time Instructor in Electrical Engineering.

* * On Leave of absence, spring semester, 1967-68.

UNIVERSITY OF MAINE

- BUCK, CHARLES ELON (1951); B.S., North Dakota State College, 1942; M.S., 1947; Ph.D., Ohio State University, 1951; Associate Professor of Bacteriology.
- BURKE, L. MORRILL, JR. (1959); A.B., Bowdoin, 1949; M.A., University of Washington, 1951; Assistant Professor of English, University of Maine in Portland.
- BURKE, MELVIN (1966); B.A., Wayne State University, 1960; M.A., 1962; Ph.D., University of Pittsburgh, 1967; Assistant Professor of Business and Economics.
- BUTTERFIELD, JOHN EVERETT (1955); B.S., Maine, 1953; Associate Professor of Physical Education, Assistant Coach of Football and Head Coach of Baseball.
- BUTTON, LLOYD H., JR. (1954); B.S., Vermont, 1953; M.S., 1954; Area Dairy Specialist, Cooperative Extension Service.
- BYTHER, THOMAS ERNEST (1966); B.A., Ricker College, 1964; M.A., Maine, 1966; Instructor in Mathematics and Programmer, University Computing Center.
- CAMP, PAUL RICE (1967); B.A., Wesleyan University, 1941; M.A., Harvard, 1947; Ph.D., Pennsylvania State University, 1951; Professor and Head, Department of Physics.
- CAMPANA, RICHARD JOHN (1958); B.S., University of Idaho, 1943; M.F., Yale, 1947; Ph.D., 1952; Professor of Botany and Head, Department of Botany and Plant Pathology.
- CAMPBELL, HELEN DARE (1966); B.S., Berea College, 1964; M.S., Wisconsin, 1966; Assistant Professor of Textiles and Clothing, School of Home Economics.
- CAMPBELL, MIRIAM MACDONALD; A.B., Tufts, 1931; M.P.H., Yale, 1933; Part-time Assistant Professor of Nursing.
- CANNON, DONALD QUAYLE (1967); B.A., University of Utah, 1961; M.A., 1962; Assistant Professor of History, University of Maine in Portland.
- CANTY, JOSEPH PATRICK (1959); B.S., United States Naval Academy, 1929; M.A., Maine, 1962; Assistant Professor of Mathematics, University of Maine in Portland.
- †CARLSON, CONSTANCE HEDIN (1962); A.B., Vassar, 1937; M.A., Maine, 1945; Assistant Professor of English.
- CARPENTER, PAUL NATHANIEL (1943-44) (1946); B.S., Bates, 1933; M.S., Maine, 1949; Associate Professor of Agronomy, Agricultural Experiment Station.
- CARPER, THOMAS R. (1967); A.B., Harvard University, 1958; M.A., New York University, 1967; Instructor in English, University of Maine in Portland.
- CARR, EDWARD FRANK (1957); B.S., Michigan State University, 1943; Ph.D., 1954; Associate Professor of Physics.
- CARROLL, BETTY ANN DENISEVICH (1964); B.S., Boston College School of Nursing, 1959; Instructor in Nursing.
- CASSIDY, MARGARET EILEEN (1937); Diploma, Sargent School of Physical Education, 1928; B.S. in Ed., Maine, 1939; Associate Professor of Physical Education, Women's Division.

† On leave of absence, 1967-68.

- CAUGHRAN, ALEX MADISON (1953-57) (1960); B.A., Drury College, 1937; M.Ed., University of Missouri, 1949; Ed.D., 1953; Professor of Education.
- CAVANAGH, GEORGE ALFRED (1965); B.M., Eastman School of Music, 1960; M.S., University of Illinois, 1961; Assistant Professor of Music.
- CHABOT, MAURICE JOSEPH (1965); B.A., Maine, 1961; M.A., Bowdoin, 1965; Instructor in Mathematics, University of Maine in Portland.
- CHAPELLIER, DANIELLE; Licence ès Lettres de Français, University of Paris, 1965; Visiting Lecturer in French.
- CHAPELLIER, JEAN; Licence ès Lettres d'Anglais, University of Paris, 1958; Certificat de Psychologie generale, 1965; Visiting Lecturer in French.
- CHAPMAN, BEN ROBERTS (1956); B.S., Maine 1952; M.S., 1963; Associate Professor of Mechanical Engineering.
- CHAPMAN, DORIS VERNON (1967); B.A., Maine, 1958; M.A., 1960; Instructor in English.
- CHAPMAN, KENNETH S. (1957); B.S., Maine, 1954; M.S., Vermont, 1956; Area Potato Specialist, Cooperative Extension Service.
- CHASE, ANDREW JACKSON (1949); B.S., Maine, 1949; M.S., 1951; Professor of Chemical Engineering.
- CHECCHI, ANTHONY CHARLES (1967); B.S., Oswego College, 1961; M.S., Purdue University, 1964; Ph.D., 1967; Assistant Professor of Biology, University of Maine in Portland.
- CHEVALIER, JACQUES ANATOLE (1967); B.A., Yale University 1948; M.A., University of California (Berkeley), 1952; Ph.D., 1954; Associate Professor of Psychology, University of Maine in Portland.
- CHIAPPONE, ANTHONY DONALD (1967); B.S., SUCE, Geneso, New York, 1954; M.S., Syracuse University, 1961; Ed.D., 1963; Assistant Professor of Education.
- CHONG, KEY RAY (1966); B.A., Aoyama Gakuin University, Tokyo, Japan; M.A., University of Washington, 1964; Ph.D., Claremont, 1966; Assistant Professor of History.
- CHRISTOPHER, ALBERT (1965); B.S., New York University, 1949; M.B.A., 1953; Assistant Professor of Business and Economics, University of Maine in Portland.
- CHRONISTER, FLOYD BROWN (1966); B.M., Conservatory of Music of U.M.K.C., Missouri, 1953; B.M.E., University of Kansas, 1955; M.M.E., 1959; Assistant Professor of Education, University of Maine in Portland.
- CHUTE, HAROLD LEROY (1949); D.V.M., University of Toronto, 1949; V.S., Ontario Veterinary College 1949; M.Sc., Ohio State, 1953; D.V.Sc., Toronto, 1955; Professor of Animal Pathology, Agricultural Experiment Station.
- CLAPP, ROGER (1929); B.S., Cornell University, 1928; M.S., Maine, 1932; Associate Professor of Ornamental Horticulture.
- CLARK, CHARLES NEWELL (1965); B.A., Yale, 1948; M.A., 1949; Ph.D., 1952; Associate Professor of French.
- CLARK, DAVID HENRY (1963); B.A., University of Oklahoma, 1954; M.S., University of Wisconsin, 1960; Ph.D., 1962; Associate Professor of Business and Economics.
- CLARK, ELMER BANKS FRED (1946); B.A.E., University of Florida, 1935; M.A., 1937; Associate Professor of French and Spanish, University of Maine in Portland.

UNIVERSITY OF MAINE

- CLARK, GORDON BAINE (1964); B.A., Rollins College, 1952; M.A., Maine, 1964; Instructor in English, University of Maine in Augusta.
- CLARK, JAMES MILFORD (1960); B.A., University of Michigan, 1952; M.A., University of the Philippines, 1955; Ph.D., University of Michigan, 1962; Associate Professor of Political Science, and Assistant to the President.
- ‡CLARK, LEWIS E. (1954); B.S., Maine, 1950; M.S.A., Cornell University, 1951; Associate Professor of Agricultural Business and Economics; Agricultural Business Specialist, Cooperative Extension Service.
- †CLARK, LLEWELLYN EVANS (1955); B.S., Maine, 1955; M.S., 1956; Ph.D., Colorado, 1966; Associate Professor of Mechanical Engineering.
- CLARK, RUSSELL EMERY (1958); B.S., Maine, 1957; Extension Agent (Oxford County), Cooperative Extension Service.
- CLARKE, ALFRED EVANS (1946); A.B., Dartmouth, 1929; Director of Admissions, University of Maine in Portland.
- CLIFFORD, GEORGE EDWIN (1946-51) (1954); B.S., Maine, 1943; M.S. in Education, 1951; P.E. (Maine); Associate Professor in Mechanical Engineering.
- COBB, ROBERT BRANSON (1965); B.S., University of Idaho, 1940; Director of Student Services.
- COCK, LORNE MACINTOSH (1965); B.S., McGill University, 1954; M.S., University of Wisconsin, 1960; Ph.D., Maine, 1966; Assistant Professor of Animal Sciences.
- COFFIN, RICHARD NEAL (1964); B.A., Bowdoin, 1951; A.M., Harvard, 1952; Ph.D., Boston University, 1962; Assistant Professor of English, University of Maine in Portland.
- COFFIN, VICTOR HALFORD (1943); B.A., Maine, 1931; M.S., 1948; Associate Professor of Physics.
- COLE, PHILIP ALBERT (1957); B.S., Boston University, 1954; M.A., 1955; Ph.D., 1963; Associate Professor of History, Chairman of the Division of Social Sciences, University of Maine in Portland.
- COLE, RODNEY MAHLON (1961-64) (1965); B.S., Kansas State University, 1956; M.S., 1959; Assistant Professor of Speech.
- COLES, BRUCE CHARLES (1966); B.S., Maine, 1966; Instructor in Civil Engineering.
- COLLINS, EDWARD, JR. (1962); B.A., Marshall University, 1954; M.A., 1957; Ph.D., Emory University, 1959; Associate Professor of Political Science.
- COLLINS, ROBERT C. (1964); B.M., University of Texas, 1951; M.M., 1952; Assistant Professor of Music.
- CONNICK, GEORGE PERCY (1966); B.A., Stanford University, 1957; M.A., San Jose State College, 1960; Assistant Professor of History, University of Maine in Portland.
- COOK, ARLIN MILLER (1930-34) (1959); A.B., Western Reserve, 1927; M.A., Columbia, 1928; Associate Professor of Speech.
- COOK, BETTY SLOCUM; B.S., Mansfield State College, 1953; M.S., Pennsylvania State University, 1955; Part-time Instructor in Zoology.
- COOK, HENRY J., JR. (1959); B.S., University of Rhode Island, 1952; M.S., 1957; Area Dairy Specialist, Cooperative Extension Service.

† On leave of absence, 1967-68.

‡ On leave of absence, May 1, 1967-April 30, 1968.

- †COOK, JAMES RICHARD (1963); B.S., Concord College (Athens, West Virginia), 1950; M.S., West Virginia University, 1955; Ph.D., University of California (Los Angeles), 1960; Associate Professor of Zoology.
- COOK, RICHARD ALFRED (1965); B.S., Maine, 1965; Assistant Nutritionist, Department of Home Economics, Agricultural Experiment Station.
- COOK, WILLIAM PAUL (1964); B.S., Maine, 1964; Assistant Chemist, Department of Biochemistry, Agricultural Experiment Station.
- COOPER, GEORGE RAYMOND (1950); B.A., Colorado State College of Education, 1942; M.S., Iowa State, 1948; Ph.D., 1950; Professor of Botany.
- CORCORAN, THOMAS JOSEPH (1961); B.S., Michigan College of Mining and Technology, 1955; M.S., Purdue, 1960; Ph.D., 1962; Associate Professor of Forestry; Assistant Director, School of Forestry.
- COTTON, JEAN (1967); B.S., Simmons College, 1960; M.S., Boston University, 1962; Assistant Professor of Nursing.
- COULTER, MALCOLM WILFORD (1948); B.S., Connecticut, 1942; M.S., Maine, 1948; Ph.D., Syracuse University, 1966; Professor of Game Management; Assistant Leader, Maine Cooperative Wildlife Research Unit.
- COUPE, JOHN DONALD (1958-61) (1962); B.S., Worcester Polytechnic Institute, 1953; M.A., Clark University, 1957; Ph.D., 1960; Professor of Business and Economics.
- CRAM, GORDON WILBUR (1956); B.S., Maine, 1953; Assistant Chemist, Department of Biochemistry, Agricultural Experiment Station.
- CROBAUGH, CLYDE JAMES; A.B., Stanford University, 1928; A.M., 1929; Ph.D., University of Pittsburgh, 1941; Lecturer in Business and Economics, University of Maine in Portland.
- CROSBY, GEORGE HOWARD (1955); B.A., Colby, 1936; Registrar.
- CROSBY, HOWARD ALVAH (1946); B.S., Maine, 1943; E.E., 1959; P.E. (Maine); Associate Professor of Electrical Engineering.
- CROXFORD, HORACE ALCANDER (1963); B.A., Maine, 1930; M.Ed., 1947; Assistant Professor of Education.
- CUNNINGHAM, GEORGE SNOWDEAL (1962-63) (1967); B.A., Maine, 1933; M.Ed., 1958; Associate Professor of Mathematics.
- CUSHMAN, PARKER GRINDELL (1946); B.S., Maine, 1931; P.E. (Maine); Director, Engineering Services.
- CYRUS, EDGAR ALLAN (1960); B.A., West Virginia University, 1958; M.A., Western Reserve University, 1960; M.F.A., 1966; Assistant Professor of Speech.
- DALTON, DOROTHY BLANKER (1964); B.S., Tufts, 1943; Part-time Instructor in Home Economics; Administrative Assistant, School of Home Economics.
- DALTON, JAMES ARNOLD (1967); B.A., LaSalle College, 1963; M.A., Boston College, 1967; Assistant Professor of Economics, University of Maine in Portland.
- DAMOUR, ALFRED DONAT (1966); Captain, Armor, United States Army; B.A., New Hampshire, 1961; Assistant Professor of Military Science.
- DAVENPORT, HENRY WALTER, III (1966); B.S., Brigham Young University; Assistant Pomologist, Department of Plant and Soil Sciences, Agricultural Experiment Station.

† On leave of absence, 1967-68.

UNIVERSITY OF MAINE

- DAVIS, GEORGE THEODORE (1951); A.B., Pennsylvania State University, 1935; M.S., 1941; Ed.D., Harvard, 1950; Professor of Education.
- DAVIS, STEPHEN LODWICK (1966); B.A., Bucknell University, 1961; Instructor in English, University of Maine in Portland.
- DAY, RICHARD B. (1956); B.S., Maine, 1942; Extension Agent (Franklin County), Cooperative Extension Service.
- DEAN, DAVID (1966); A.B., Lehigh University, 1949; Ph.D., Rutgers, 1957; Professor of Zoology; Director of the Ira C. Darling Center for Research, Teaching and Service.
- DEARBORN, EVELYN ELLSWORTH (1966); B.A., Maine, 1949; M.L.S., University of Pittsburgh, 1965; Cataloger, Raymond H. Fogler Library.
- DEARBORN, JOHN HOLMES (1966); B.A., University of New Hampshire, 1955; M.S., Michigan State University, 1957; Ph.D., Stanford University, 1965; Assistant Professor of Zoology.
- DEARBORN, VANCE EDWARD (1964); B.S., Maine, 1949; Public Affairs Specialist, Cooperative Extension Service.
- DECKER, DAVID OWEN (1965); B.A., Marlboro College, 1960; M.A., New York University, 1964; Instructor in Art.
- DECKER, LESLIE EDWARD (1961); B.A. Maine, 1951; M.A., Oklahoma State University, 1952; Ph.D., Cornell University, 1961; Associate Professor of History.
- DECOTEAU, RUTH CALLAGHAN (1934-1941) (1951); B.S., Maine, 1933; Extension Agent (Oxford County), Cooperative Extension Service.
- D'ELIA, MICHAEL TIRRELL (1967); A.B., Dartmouth, 1959; M.B.A., Amos Tuck School, 1963; Ph.D., Cornell University, 1966; Assistant Professor of Education.
- DE HAAS, HERMAN (1959); B.S., Westminster College, 1947; M.S., University of Michigan, 1950; Ph.D., 1955; Associate Professor of Biochemistry.
- DELOGU, ORLANDO EDWARD (1966); B.S., University of Utah, 1960; M.S., University of Wisconsin, 1963; LL.B., 1966; Associate Professor of Law, School of Law, Portland.
- DELPHENDAHL, JOHANNES (1962); Dipl. Landw. Landwirtschaftliche Hochschule Hohenheim, Germany, 1950; M.S., University of Massachusetts, 1956; Ph.D., Michigan State University, 1961; Associate Professor of Agricultural Business and Economics.
- DELPHENDAHL, RENATE (1967); B.A., Michigan State University, 1959; Instructor in Latin and German.
- DESCHANES, BERNARD OLIVER (1957); B.S., Maine, 1956; M.S., 1962; Assistant Professor of General Engineering.
- DEVINO, WILLIAM STANLEY (1960); B.A., University of Vermont, 1951; M.A., University of Connecticut, 1953; Ph.D., Michigan State University, 1959; Professor of Business and Economics; Dean, College of Business Administration.
- DICKEY, HOWARD CHESTER (1947); B.S., Michigan State, 1934; M.S., West Virginia University, 1936; Ph.D., Iowa State, 1939; Professor of Animal Sciences.
- DIMOND, JOHN BARNET (1959); B.S., University of Rhode Island, 1951; M.S., 1953; Ph.D., Ohio State University, 1957; Professor of Entomology.

- DISSELL, DOROTHY GILLETTE (1966); B.A., Wellesley, 1935; M.A., University of New Hampshire, 1940; Ph.D., Boston University, 1954; Director of Student Affairs and Associate Professor of English, University of Maine in Portland.
- DODGE, CLAYTON WILLARD (1956); B.A., Maine, 1956; M.A., 1959; Assistant Professor of Mathematics.
- DONNINI, MARY WRIGHT (1955); B.S., Maine, 1938; Extension Agent (Cumberland County), Cooperative Extension Service.
- DOTY, CHARLES STEWART (1964); B.A., Washburn Municipal University, 1950; M.A., University of Kansas, 1955; Ph.D., Ohio State University, 1964; Associate Professor of History.
- DOUGLASS, IRWIN BRUCE (1940); B.S., Monmouth College, 1926; Ph.D., Kansas, 1932; Sc.D., Monmouth College, 1958; Professor of Chemistry.
- DOW, EDWARD FRENCH (1929); B.S., Bowdoin, 1925; A.M., Harvard, 1926; Ph.D., 1932; Professor of Political Science.
- DOW, GEORGE FARRINGTON (1927); B.S., Maine, 1927; M.S., 1929; Ph.D., Cornell University, 1938; Director, Agricultural Experiment Station.
- DOWE, PAUL JONES (1948); B.S., Maine, 1948; Extension Agent (Androscoggin-Sagadahoc Counties), Cooperative Extension Service.
- DRANCHAK, JOHN JOSEPH (1966); B.S., University of Alaska, 1963; M.S., 1966; Instructor in Mathematics.
- DUBE, GERALD FRELENCE (1964); B.A., Maine, 1963; M.A., 1964; Instructor in Mathematics and Astronomy and Programmer in Computing Center.
- DUBORD, OLIVE CONANT (1957); B.S., Maine, 1957; Extension Agent (Franklin County), Cooperative Extension Service.
- DUCHESNEAU, THOMAS D. (1967); A.B., St. Anselm's College, 1963; Assistant Professor of Economics.
- DUCLOS, ALBERT JOSEPH (1965); B.S. in Ed., Maine, 1963; M.A., 1965; Instructor in English, University of Maine in Portland.
- DUCLOS, GLORIA LIVERMORE; A.B., Radcliffe, 1949; M.A., 1963; A.B., Oxford University, 1951; M.A. 1955; Lecturer in Classics, University of Maine in Portland.
- DUFOUR, F. PHILIP (1966); B.A., Maine, 1957; Coordinator, Technical Services Program.
- DUNHAM, PAUL CLINTON (1966); B.A., Vermont, 1959; M.A., 1963; Supervisor of Government Research, Bureau of Public Administration.
- DUNHAM, WALLACE CLAYTON (1966); B.S., University of Vermont, 1952; M.S., Ohio State University, 1956; Associate Professor of Agricultural Business and Economics.
- DUNLAP, ROBERT DOWNING (1949); B.A., Colgate, 1943; M.S., Pennsylvania State, 1944; Ph.D., 1949; Professor of Chemistry.
- DUNLOP, JOHN WILSON (1962); B.A., Auburn University, 1960; General Manager, Educational Television Network.
- DUNNING, CLEMENT STEVENS (1947); B.S., Maine, 1947; Extension Agent (Cumberland County), Cooperative Extension Service.
- DURGIN, FRANK ALBERT, JR. (1964); B.A., Tufts University, 1949; Licence en Droit, University of Toulouse, France, 1954; Docteur en Droit, 1956; Associate Professor of Business and Economics, University of Maine in Portland.

UNIVERSITY OF MAINE

- DURST, RICHARD EDWARD (1949); B.S., Otterbein College, Westerville, Ohio, 1929; Ph.D., Ohio State, 1948; P.E. (Ohio, Maine); Professor of Chemical Engineering.
- DUVAL, MARJORIE ANN (1962); B.Mus., New England Conservatory of Music, 1945; M.S., Simmons College, 1962; Librarian, University of Maine in Portland.
- †EDE, ALAN WINTHROP (1960); B.S., Worcester Polytechnic Institute, 1955; M.S., Maine, 1963; Assistant Professor of Electrical Engineering.
- EDE, ELWOOD KOSSUTH (1962); B.A., Clark University, 1960; M.A., 1964; Instructor in Mathematics.
- EDWARDS, HERBERT JOSEPH (1947); B.A., Ohio State, 1923; A.M., Princeton, 1927; Ph.D., Ohio State, 1930; Professor of English.
- EDWARDS, MARY JORDAN (1966); B.S., Cornell, 1952; Instructor in Nursing.
- EGGERT, FRANKLIN PAUL (1949); B.S., Cornell University, 1942; M.S., 1947; Ph.D., 1949; Professor of Horticulture; Dean of Graduate School.
- ELIAS, ROCHID JOSEPH (1965); B.A., Saint Francis College, 1963; M.A., Maine, 1965; Instructor in Mathematics, University of Maine in Augusta.
- ELLIOTT, LLOYD GENE (1966); B.A., Maine, 1963; M.S. in L.S., Western Reserve University, 1966; Reference Librarian-Bibliographer, Raymond H. Fogler Library.
- ELLIS, ANN PERKINS (1967); B.S., Maine, 1964; Instructor in Nursing.
- ELLIS, GERALD C. (1966); B.S., Maine, 1964; Instructor in Physical Education and Freshman Track Coach.
- ELTON, EDWARD FRANCIS (1962); M.E., Stevens Institute of Technology, 1957; M.S., Lawrence College, 1959; Ph.D., 1962; Associate Professor of Chemical Engineering.
- EMERICK, RICHARD GIBBS (1958); B.A., Syracuse University, 1950; M.A., University of Pennsylvania, 1954; Ph.D., 1960; Associate Professor of Anthropology; Director of the Anthropology Museum.
- ENGLISH, PHILIP CARL; B.S., Ithaca, 1962; Part-time Instructor in Journalism.
- ERHARDT, WILFRED HENRY (1966); B.S., South Illinois University, 1958; M.S., University of Nebraska, 1961; Ph.D., University of Wisconsin, 1966; Vegetable Crops Specialist, Cooperative Extension Service.
- EVES, HOWARD WHITLEY (1954); B.S., University of Virginia, 1934; M.S., Harvard, 1936; Ph.D., Oregon State College, 1948; Professor of Mathematics.
- FARR, WANDA KIRKBRIDGE; B.S., Ohio University, 1915; M.A., Columbia, 1918; Lecturer in Botany, Agricultural Experiment Station.
- FARRAR, JOHN NORTH (1966); B.A., Maine, 1951; M.Ed., 1958; Assistant Director, Continuing Education Division (Portland), University of Maine Extension Service.
- FENTER, NEAL ROSS (1965); B.S. in Ed., Bowling Green State University, 1964; M.A., 1965; Instructor in Speech.
- FENTON, JOHN WALTER (1966); B.S., Maine, 1964; Instructor in Civil Engineering (Technical Institute Division).

† On leave of absence, 1967-68.

- FERNALD, EDWARD ALTON; B.S. Maine, 1966; Part-time Instructor in Civil Engineering (Technical Institute Division).
- FIFE, HILDA MARY (1946); A.B., Colby, 1926; A.M., Cornell University, 1933; Ph.D., 1941; Professor of English.
- FINDLAY, ROBERT WALKER (1967); B.S., Boston University, 1955; M.B.A., 1964; C.P.A. (Mass.); Associate Professor of Accounting, University of Maine in Portland.
- FINK, DAVID REAM, JR. (1957); B.A., Dartmouth, 1950; M.S. in Ed., University of Pennsylvania, 1953; Ph.D., 1957; Professor of Education; Dean, University of Maine in Portland.
- FINNEMORE, LEONARD R. (1966); A.B., Colby College, 1927; Ed.M., Boston University, 1959; CAGS, 1962; Assistant Director, Project Upward Bound, Co-operative Extension Service.
- FINNER, STEPHEN LAWRENCE (1965); A.B., Colby, 1960; Assistant Professor of Sociology.
- FISHER, IRVING D. (1967); B.A., University of Connecticut, 1946; M.A., Columbia University, 1953; Assistant Professor of Political Science, University of Maine in Portland.
- FITZGERALD, PETER HOPKINS (1966); A.B., Manhattan College, 1961; M.A., Maine, 1965; Instructor in English.
- FITZPATRICK, ROBERT JOHN (1965); A.B., Spring Hill College, 1963; M.A., 1964; Assistant Professor of French.
- FITZPATRICK, SYLVIE MONIQUE; Certificat d'etudes litteraires generales, La Sorbonne, 1961; Etudes pratiques d'Anglais, 1962; Philologie anglaise, 1964; Part-time Instructor in French.
- FLYNN, CARL MUNRO (1933-1936) (1940); B.A., Maine, 1930; M.A., Wesleyan, 1932; M.A., Harvard, 1939; Ph.D., 1940; Professor of Zoology and Assistant Dean, College of Arts and Sciences.
- FOBES, KENNETH BROWN (1948); B.S. in Ed., Maine, 1949; Lecturer in Education and Assistant Dean of the College of Education.
- FOLEY, KATHRYN ANN (1966); B.M., Manhattanville College, 1957; M.M., Villa Schifanoia, 1958; Instructor in Music.
- FOLGER, JUDITH MACLEOD; B.A., Colby College, 1961; Part-time Instructor in English.
- FOLGER, PHILIP EMMONS, JR. (1966); B.A., Middlebury College, 1962; Instructor in Physical Education, and Head Coach of Winter Sports, Tennis, and Freshman Soccer.
- FOLSTER, HARRY GORDON; B.S., Maine, 1957; M.S., 1962; Part-time Instructor in Chemical Engineering.
- FORRESTER, KENT ALLEN (1967); B.A., University of Oregon, 1964; M.A., 1966; Instructor in English.
- FORSGREN, RODERICK ALFRED (1965); B.B.A., University of Minnesota, 1952; B.S., St. Cloud State, 1956; M.B.A., University of Denver, 1959; D.B.A., University of Colorado, 1965; Assistant Professor of Business and Economics.
- FOSTER, CAROLYN NEIDIG (1966); A.B., Douglass College (Rutgers), 1958; M.S., Purdue University, 1961; Instructor in Mathematics, University of Maine in Portland.
- FOX, RICHARD ROMAIN; B.S., University of Connecticut, 1956; M.S., University of Minnesota, 1958; Ph.D., 1959; Lecturer, Department of Animal Sciences.

UNIVERSITY OF MAINE

- FREEMAN, STANLEY LEONARD, JR. (1952); B.A., Bates, 1948; M.A., Teachers College, Columbia University, 1950; Ed.D., 1957; Professor of Education; Coordinator of Research Support and Federal Relations.
- FREY, ROGER BURNHAM (1962); B.A., Maine, 1956; M.A., 1960; Ph.D., 1966; Assistant Professor of Psychology.
- FRIDINGER, WALTER P. (1961); B.S., Lebanon Valley College; Assistant Director, Continuing Education (Portland Center), University of Maine Extension Service.
- FUCHS, ARNOLD J.; B.A., Hunter College, 1958; Ph.D., Adelphi University, 1961; Lecturer in Psychology.
- FUENTES, GREGORIO J. (1967); Litentiate in Mathematical Sciences, University of Madrid, 1953; M.A., Rutgers University, 1966; Instructor in Mathematics.
- FULLER, BARBARA RUTH (1964); B.S., Farmington State Teachers College, 1964; Extension Agent (Franklin County), Cooperative Extension Service.
- FURBER, CONAN PAUL (1966); B.S., Maine, 1961; M.S., 1966; Assistant Professor of Civil Engineering (Technical Institute Division).
- FURROW, STANLEY DONALD (1963-64) (1966); B.S., Maine, 1956; M.S., 1962; Ph. D., 1965; Assistant Professor of Chemistry.
- GALBIS, IGNACIO RICARDO (1966); LL.D., University of Havana, 1952; M.A., Mississippi State University, 1966; Instructor in Foreign Languages and Classics.
- GALL, ARTHUR (1965); B.S., North Dakota State University, 1951; M.S., 1964; Extension Pesticides Safety Specialist, Cooperative Extension Service.
- GARBRECHT, DONALD LEROY (1962); A.B., University of Minnesota, 1958; LL.B., University of Minnesota Law School, 1961; M.A., 1962; Professor of Law and Law Librarian, School of Law, Portland.
- GARDNER, WOFFORD GORDON (1946); A.B., Southwestern College, 1935; M.A., Northwestern University, 1941; Ph.D., 1952; Professor and Head, Department of Speech.
- GEIGER, WILLIAM ROGER (1965); B.E.S. Fenn College, 1961; M.S., Western Reserve University, 1964; Ph.D., 1965; Assistant Professor of Mathematics.
- GENTRY, CASTELLE G. (1965); B.S., Michigan State University, 1957; M.A.T., 1960; Ed.D., 1965; Assistant Professor of Education and Director of Audio-Visual Service.
- GEORGISTIS, WILLIAM J. (1965); B.S., Bowdoin, 1942; M.S., Maine, 1949; Associate Professor of Chemistry.
- GERETY, JOHN STEPHEN (1964); Colonel, Armor, United States Army; A.B., Norwich University, 1937; Professor of Military Science.
- GERRY, RICHARD WOODMAN (1948); B.S., Maine, 1938; M.S., Purdue, 1946; Ph.D., 1948; Professor of Poultry Science.
- GERSHMAN, ELAINE SONIA (1965); B.S., Maine, 1963; M.Ed., 1965; Instructor in Psychology.
- GERSHMAN, MELVIN (1958); B.Sc., Ohio State University, 1954; M.Sc., University of Massachusetts, 1957; Associate Professor of Animal Pathology, Agricultural Experiment Station.
- GETCHELL, AMASA STANLEY (1942); B.S., Maine, 1938; M.S., 1940; Associate Professor of Chemistry, Agricultural Experiment Station.
- GETCHELL, JOHN SIMMONS (1940); B.A., Maine, 1936; M.S., 1939; Associate Professor of Food Science, Agricultural Experiment Station.

- GHIZ, RONALD GEORGE (1966); B.F.A., Massachusetts College of Art, 1964; M.F.A., Ohio University, 1966; Instructor in Art.
- GIBSON, MARSHALL D., III (1967); A.B., University of Maryland, 1960; Extension Agent (Kennebec County), Cooperative Extension Service.
- GIBSON, RICHARD CUSHING (1967); S.B., Massachusetts Institute of Technology, 1942; S.M., 1946; Sc.D., 1953; Professor and Head, Department of Electrical Engineering.
- GIGUÈRE, MADELEINE DINORA (1967); B.A., College of New Rochelle, 1947; M.A., Fordham University, 1950; Assistant Professor of Sociology, University of Maine in Portland.
- 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 of Psychology.
- GLASSMAN, HARRY PAUL (1962); A.B., University of California, 1949; LL.B., University of California (Berkeley), 1951; LL.M., University of Virginia, 1962; Professor of Law, School of Law, Portland.
- GOATER, JOHN CHARLES, JR. (1955); B.S., Virginia Polytechnic Institute, 1948; Livestock Specialist, Cooperative Extension Service.
- GODFREY, EDWARD SETTLE (1962); A.B., Harvard College, 1934; LL.B., Columbia University School of Law, 1939; Professor of Law; Dean, School of Law, Portland.
- GODWIN, ROBERT CHANDLER (1967); B.Mus., University of Jacksonville, 1956; M.Mus., Eastman School of Music, 1957; D.M.A., University of Illinois, 1966; Professor and Head, Department of Music.
- GOLYA, THOMAS JOSEPH (1967); B.F.A., Kent State University, 1965; M.F.A., Ohio University, 1967; Instructor in Art, University of Maine in Augusta.
- GOODFRIEND, PAUL LOUIS (1966); B.S., The University of Virginia, 1952; Ph.D., Georgia Institute of Technology, 1957; Associate Professor of Chemistry.
- GOODMAN, JEAN SALZMANN (1963); Ph.B., University of Wisconsin, 1942; M.S., University of Minnesota, 1963; C.P.A., State of Wisconsin, 1947; Associate Professor of Accounting.
- 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); Professor of Civil Engineering.
- GOVIN, ARTHUR NELSON, JR. (1967); B.A., Maine, 1953; M.Ed., 1962; Extension Agent, Cooperative Extension Service.
- GOULD, CHARLES SEWELL (1966); B.S., Rutgers, 1949; M.S., 1951; Extension Agent (Androscoggin-Sagadahoc Counties), Cooperative Extension Service.
- GRANT, CHARLES OSCAR (1962); B.A., Maine, 1958; Ph.D., University of Buffalo, 1962; Lecturer in Psychology; Director, Mental Health Service, Student Health Center.
- †GRANT, DONALD ANDREW (1956); B.S., Maine, 1956; M.S., 1963; P.E. (Maine); Assistant Professor of Mechanical Engineering.

† On leave of absence, 1967-68.

UNIVERSITY OF MAINE

- GRANT, FREMA S. (1955); B.S., Farmington State Teachers College, 1929; Extension Agent (York County), Cooperative Extension Service.
- GRAVES, ROBERT A. (1959); M.D., University of Rochester, 1948; Director, Student Health Center.
- GRAY, DURWOOD EARL (1963); B.S., Maine, 1963; Extension Agent (Washington County), Cooperative Extension Service.
- GRAY, HURLIE GLENN (1966); B.S., University of Tennessee, 1959; M.S., Cornell University, 1964; Ph.D., 1966; Extension Dairy Specialist, Cooperative Extension Service, and Assistant Professor of Animal Sciences.
- GREEN, BRIAN (1962-63) (1965); B.Sc., Liverpool University, England, 1956; Ph.D., 1959; Assistant Professor of Chemistry.
- GREEN, CHARLES ALLEN (1965); B.A., Ohio University, 1954; B.S., 1954; M.S., 1958; Ph.D., University of Wisconsin, 1964; Assistant Professor of Mathematics.
- GREENWOOD, GEORGE WATKINS (1963); B.S., Maine, 1951; M.S., University of Illinois, 1960; Ph.D., 1963; Associate Professor of Civil Engineering.
- GRIFFIN, CONRAD WILSON (1963); B.S., University of Connecticut, 1955; M.S., Kansas State University, 1960; Extension Agent (York County), Cooperative Extension Service.
- GRIFFIN, GERALD THOMAS (1967); B. Gen. Ed., University of Omaha, 1964; M.S., Simmons College, 1967; Cataloger-Reference Librarian, University of Maine in Portland.
- 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; Lecturer in Spanish.
- GROSS, STUART MURRAY (1948); A.B., Stanford University, 1932; M.A., 1936; Professor of Spanish.
- GUITÉ, PAUL VILBON (1967); B.A., University of Notre Dame, 1957; M.A., Georgetown University, 1960; M.S., Simmons College, 1964; Reference Librarian-Cataloger, University of Maine in Portland.
- GUSHEE, NELLIE IRENE (1966); B.S., Maine, 1962; M.S., 1966; Extension Specialist in Nutrition, Cooperative Extension Service.
- HAAS, MARY ANN (1965); B.A., Nemo State Teachers College, Missouri, 1954; M.A., 1955; Ph.D., University of Iowa, 1966; Associate Professor of Physical Education and Head, Women's Division.
- HACKETT, EDWARD W., JR. (1963); B.A., University of Maine, 1952; M.Ed., 1953; Assistant Director (Orono) of the Continuing Education Division of the University of Maine Extension Service.
- HADLEY, ALTON LEON III (1967); B.S., Maine, 1963; Instructor in Physical Education, Freshman Football Coach, Assistant Coach for Winter Sports, Golf, and Tennis.
- HAEFNER, PAUL ALOYSIUS, JR. (1963); B.S., Franklin and Marshall College, 1957; M.S., University of Delaware, 1959; Ph.D., 1962; Assistant Professor of Zoology.
- HAGAN, FRANK WILBUR (1952); B.S., Maine, 1933; Coordinator, Higher Education Act., Title I, University of Maine Extension Service.

- HAKOLA, JOHN WILLIAM (1959); B.A., Montana State University, 1950; M.A., 1951; Ph.D., Indiana University, 1961; Associate Professor of History; Assistant Dean of Graduate School.
- HAKOLA, JUDITH HOFFMAN (1965); B.A., Colby, 1961; M.A., Maine, 1965; Instructor in English.
- HALE, RICHARD AUGUSTUS, II (1966); B.S., Maine, 1947; M.F., Yale University, 1948; Assistant Professor of Forestry, Wood Technology.
- HALL, AVAIRD EDWARD (1965); Instructor in Mechanical Engineering (Technical Institute Division).
- HALL, BRADFORD ALLYN (1962); B.A., Maine, 1955; M.Sc., Brown University, 1959; Ph.D., Yale, 1964; Assistant Professor of Geology
- HALL, DOUGLAS AREY (1965); B.A., Maine, 1959; Assistant Professor of German.
- HALL, MILLARD WAYNE (1966); B.E., Vanderbilt University, 1962; M.S., University of Illinois, 1963; Assistant Professor of Civil Engineering.
- HALL, OWEN C. (1961); B.S., Portland University, 1956; C.P.A., Maine Society of Public Accountants; Assistant Professor of Business and Economics, University of Maine in Portland.
- HALPERIN, DAVID JACOB (1966); B.S., Illinois Institute of Technology, 1949; M.S., Columbia University, 1950; J.D., Chicago-Kent College of Law, 1958; Associate Professor of Law, School of Law, Portland.
- HALPERIN, JOAN UNGERSMA (1967); B.A., University of California at Berkeley, 1955; M.A., 1959; Assistant Professor of French, University of Maine in Portland.
- HAMILTON, BROOKS WITHAM (1952); A.B., Bates, 1941; Associate Professor and Head, Department of Journalism.
- HAMILTON, KATHRYN HORNICKEL (1967); B.S., Kent State University, 1951; M.N., Yale University School of Nursing, 1954; Assistant Professor of Nursing.
- HAMILTON, KEITH EVERARD (1966); B.S.E.E., Rutgers University, 1960; M.S., University of Colorado, 1966; Assistant Professor of Electrical Engineering.
- HAMILTON, WAYNE ANDREW (1960); B.S., Ohio Northern University, 1958; M.S., Case Institute of Technology, 1960; P.E. (Ohio), (Maine); Associate Professor and Acting Head, Department of Civil Engineering.
- HAMM, PHILLIP LORD (1952); B.S. in Ed., Maine, 1943; M.A., 1955; Associate Professor of Mathematics.
- HAMMER, MAX; B.S., City College of New York, 1956; Ph.D., University of North Dakota, 1961; Lecturer in Psychology, part-time.
- HANCOCK, RONALD LEE; A.B., University of Kansas City, 1952; M.D., University of Kansas, 1959; Lecturer in Biochemistry.
- HANKINS, JOHN ERSKINE (1956); B.A., University of South Carolina, 1924; M.A., 1925; Ph.D., Yale University, 1929; Professor of English.
- HANNULA, PEARL LYDINE; B.S., University of Illinois, 1963; M.S., 1965; Part-time Instructor in Mathematics.
- HANNULA, THOMAS ANDREW (1966); B.S., University of Illinois, 1962; M.S., 1964; Assistant Professor of Mathematics.
- HANSEN, EDWIN RUSSELL (1964); B.S., Tufts College, 1936; M.A., University of Denver, 1947; Ph.D., Cornell University, 1952; Associate Professor of Speech, University of Maine in Portland.

UNIVERSITY OF MAINE

- HARE, CLAYTON FREDERIC (1965); Royal Conservatory, Toronto; Royal Academy of Music, London; specialized music study in Europe; Fellow of International Institute of Arts and Letters; Lecturer in Music.
- HARMON, GERALD STEARNS (1953-1956) (1962); B.A., Maine, 1953; M.S., 1956; Ph.D., Agricultural and Mechanical College of Texas, 1962; Assistant Professor of Physics.
- 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; Associate Professor of Astronomy and Mathematics.
- HARRIGAN, JOHN EDWARD, JR. (1967); B.A., University of Hawaii, 1955; M.A., 1957; Extension Agent (Somerset County), Cooperative Extension Service.
- HARRIMAN, EDWIN ALLAN (1965); B.S., Maine, 1959; Extension Agent (Somerset County), Cooperative Extension Service.
- HARRIS, PAUL CHAPPELL (1959); B.Sc., McGill University, 1952; M.S., University of Maryland, 1956; Ph.D., 1960; Associate Professor of Poultry Science.
- HART, JOHN ROBERT; B.S., Notre Dame University, 1958; Part-time Instructor in Chemical Engineering (Technical Institute Program).
- HARTGEN, VINCENT ANDREW (1946); B.F.A., University of Pennsylvania, 1941; M.F.A., 1942; John Homer Huddilston Professor of Art and Head of Department of Art.
- HASBROUCK, SHERMAN ST. CLAIR (1966); B.A., Yale, 1950; M.P.A., The Maxwell School, Syracuse University, 1951; Master of Urban Studies, Yale, 1965; Director, Urban Renewal Technical Advisory Service, Cooperative Extension Service.
- HASKELL, STUART PHELPS, JR. (1957-65) (1966); B.A., Maine, 1956; Business Manager of Intercollegiate Athletics.
- HASLER, PIERCE BARNARD (1966); B.S., Washington University, 1963; J.D., 1965; Associate Professor of Law, School of Law, Portland.
- HATCH, RICHARD WALLACE (1962); B.S., Tufts University, 1950; M.S., Cornell University, 1956; Ph.D., 1959; Associate Professor of Zoology; Leader, Cooperative Fishery Unit.
- HATLEN, BURTON NORVAL (1967); B.A., University of California at Berkeley, 1958; M.A., Columbia, 1959; M.A., Harvard, 1961; Assistant Professor of English.
- HAYES, KENNETH PHILBRICK (1965); B.A., Maine, 1960; M.A., Yale, 1963; Assistant Professor of Political Science.
- HEIDORN, ROBERT DON (1963); B.A., Lawrence College, 1959; M.A., University of Illinois, 1960; Ph.D., 1963; Assistant Professor of Political Science.
- HENDERSON, JEROME DISQUE (1965); B.S., Hartwick College, 1962; M.A., Temple University, 1964; Instructor in Speech.
- HEPLER, PAUL RAYMOND (1956); B.S., Michigan State College, 1948; M.S., University of Illinois, 1950; Ph.D., 1956; Associate Professor of Horticulture.
- HERLAN, JAMES JOHN (1966); A.B., Yale, 1957; Instructor in French.
- HERNANDEZ, ADELE BETANCOURT, Part-time Instructor in Spanish, University of Maine in Portland.
- 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, Department of Food Science.

- HILBORN, MERLE TYSON (1935); B.S., Maine, 1932; M.S., 1934; Ph.D., Yale, 1940; Professor of Plant Pathology, Agricultural Experiment Station.
- HILL, BERYL BARTON (1945-51) (1958); B.S., Massachusetts State University, 1940; Extension Agent (Androscoggin-Sagadahoc Counties), Cooperative Extension Service.
- HILL, RALPH ARTHUR (1957); B.S., Maine, 1928; M.S., Vermont, 1930; Ph.D., Columbia, 1942; Research Associate in Chemistry.
- HILL, RICHARD CONRAD (1946); B.S., Syracuse, 1941; P.E. (Maine); Professor of Mechanical Engineering; Director, Technology Honors Program; Associate Director, Department of Industrial Cooperation; Acting Dean, College of Technology.
- HILTON, DONALD BERTRAM (1958); A.B., Boston University, 1955; M.S., Northeastern University, 1958; Instructor in Chemistry.
- HINMAN, MARY KARLYNN (1967); B.A., University of Utah, 1961; A.M., Harvard, 1967; Assistant Professor of Political Science, University of Maine in Portland.
- HOBBS, HARVILLE ELSTON (1966); B.A., Maine, 1962; M.A., 1964; Instructor in English.
- HOBBS, SHIRLEY B. (1950); B.S., Farmington State Teachers College, 1929; Extension Agent (York County), Cooperative Extension Service.
- HODKINS, LAURENCE WHITNEY (1954); B.S., Maine, 1950; Extension Agent (Kennebec County), Cooperative Extension Service.
- HOGAN, JEANNE LEFEVRE; B.A., Douglass College, Rutgers University, 1944; Reference Librarian (part-time), Raymond H. Fogler Library.
- HOGAN, JOHN M. (1961); B.Sc., Rutgers, 1941; Ph.D., 1949; Professor of Food Science, Agricultural Experiment Station.
- HOLMES, EDWARD MORRIS (1956); A.B., Dartmouth, 1933; M.Ed., Maine, 1954; A.M., Brown, 1956; Ph.D., 1962; Associate Professor of English.
- HOLMES, JANE M. (1957); B.S., Simmons College, 1929; Head, Periodicals Division, Raymond H. Fogler Library.
- HOLT, CHARLES FRANCIS (1963); B.S., Maine, 1950; M.S., Cornell, 1961; Field Program Coordinator, Cooperative Extension Service.
- HOLYOKE, VAUGHN H. (1958); B.S., Maine, 1956; Crops Specialist, Cooperative Extension Service.
- HOMOLA, RICHARD LOUIS (1966); B.S., Muhlenberg College, 1956; M.S., University of Vermont, 1962; Assistant Professor of Botany.
- HOOPER, ROGER BRAY (1964); A.B., Tufts University, 1950; M.A.L.S., Wesleyan University, 1960; M.A., Bowdoin, 1963; Assistant Professor of Mathematics.
- HOOVER, WILLIAM H. (1962); B.S., Pennsylvania State University, 1956; M.S., 1958; Ph.D., 1961; Associate Professor of Animal Sciences.
- HOPKINS, HARRY SAUNDERS (1957); B.S., (Agr.), Maine, 1942; B.S., (Mech. Eng.), 1947; M.Ed., 1952; Assistant Professor of Mechanical Engineering.
- HOPKINSON, DAVID BRADFORD (1959); B.S., Maine, 1942; M.S., Vermont, 1949; M.E., Maine, 1961; P.E. (Maine); Associate Professor of Engineering Graphics; Assistant Director, Department of Industrial Cooperation, University of Maine in Portland.
- HORAN, JAMES FRANCIS (1965); B.A., University of Connecticut, 1958; Assistant Professor of Political Science.

UNIVERSITY OF MAINE

- HORNBERGER, ROBERT H.; B.A., Amherst College, 1954; M.A., University of Iowa, 1957; Ph.D., 1957; Lecturer in Psychology.
- HOUGH, CLAUDE LOURIE (1966); Director of Development.
- HOUGHTON, DAWN CAMERON (1966); B.S., Farmington State College, 1955; M.Ed., Maine, 1961; Instructor in Home Economics.
- HOWARD, ARLENE MARIE (1967); B.A., University of Montana, 1961; M.A., Michigan State University, 1964; Instructor in English.
- HOWARD, MARGARET ELIZABETH (1966); B.A., Colby College, 1948; M.S., Boston University, 1965; Assistant Professor of Nursing.
- HOWD, FRANK HAWVER (1959); A.B., University of Rochester, 1951; M.S., 1953; Ph.D., Washington State University, 1956; Associate Professor of Geology.
- HUFF, EDWARD REMICK (1966); B.S., Maine, 1952; M.S., 1966; Assistant Professor of Agricultural Engineering.
- HUFF, LOUISE N. (1958); B.S., Farmington State Teachers College, 1937; Extension Agent (Oxford County), Cooperative Extension Service.
- HUNNEWELL, ALICE F. (1956); B.S., Maine, 1953; Extension Agent (Penobscot County), Cooperative Extension Service.
- HUNT, HARRY DRAPER III (1965); B.A., Harvard, 1957; M.A., Columbia University, 1960; Assistant Professor of History, University of Maine in Portland.
- HUNTER, JAMES HERBERT (1957); B.S., Maine, 1953; M.S., 1957; P.E. (Maine); Associate Professor of Agricultural Engineering, Agricultural Experiment Station, Presque Isle, Maine Potato Handling Research Center.
- HUSSEY, NANCY TAYLOR (1965); B.S., Maine, 1964; Extension Agent (Somerset County), Cooperative Extension Service.
- HUTCHINSON, DIONE WILLIAMS; B.S., Maine, 1955; Part-time Instructor in Home Management, School of Home Economics.
- HUTCHINSON, FREDERICK EDWARD (1953); B.S., Maine, 1953; M.S., 1958; Ph.D., Pennsylvania State, 1966; Professor of Soils.
- HYATT, STEPHEN (1962); B.A., Maine, 1957; M.S., Pennsylvania State University, 1961; Assistant Professor of Rural Sociology, and Extension Rural Sociologist.
- ILLYN, TATIANA N. (1958); Degree of Chemist, Chemical Pharmaceutical Institute, Vinnitza, Russia, 1929; Master of Chemistry, 1936; Instructor in Food Science, Agricultural Experiment Station.
- IMLAY, ROBERT (1966); A.B., Cornell University, 1919; Instructor in Business Administration, University of Maine in Portland.
- IRONS, FRED H (1967); B.E.E., Ohio State University, 1956; M.S.E.E., Massachusetts Institute of Technology; E.E., 1961; Assistant Professor of Electrical Engineering.
- IVANISIN, ANNA BERNADINE (1967); B.S., Columbia, 1938; M.S., 1946; Associate Professor of Nursing.
- IVES, EDWARD DAWSON (1955); A.B., Hamilton College, 1949; M.A., Columbia, 1950; Ph.D., Indiana University, 1962; Associate Professor of Folklore, Department of Sociology and Anthropology.
- JACKSON, GEORGE STUYVESANT (1958); A.B., Bowdoin, 1927; M.A., Harvard, 1931; Associate Professor of English, University of Maine in Portland.

† On leave of absence, 1967-68.

- JACOBS, RICHARD MORRIS (1963); B.A., Colorado State College, 1956; M.A., 1957; M.F.A., State University of Iowa, 1959; Ph.D., 1964; Assistant Professor of Music.
- JAEGER, GILBERT BEYER (1948); B.S., Cornell University, 1942; Area Poultry Specialist, Cooperative Extension Service.
- JAGOLINZER, PHILIP (1966); A.B., Clark University, 1958; M.S., University of Rhode Island, 1960; C.P.A. (Maryland); Assistant Professor of Accounting, University of Maine in Portland.
- *JAQUES, JOHN FREDERICK (1957); A.B., Bowdoin, 1943; A.M., Columbia, 1946; Assistant Professor of English, University of Maine in Portland.
- JARDINE, AUTICE (1965); B.S., Maine, 1952; M.Ed., 1957; Assistant Professor of Education.
- **JEFFREY, WILLIAM HARTLEY (1946); A.B., Drew, 1942; M.A., University of Michigan, 1944; Ph.D., University of Colorado, 1950; Professor of History.
- JENSEN, HELENA MARIE (1967); B.S., Maine, 1943; M.Ed., Pennsylvania State University, 1951; Assistant Professor of Nutrition, School of Nursing.
- JEWETT, LLOYD JAY (1956); B.S., Maine, 1956; M.S., 1959; Director, University of Maine in Augusta.
- JOHNSON, ARTHUR LLOYD; B.A., Kenyon College, 1955; M.A., Maine, 1966; Temporary Instructor in History (C.E.D.)
- JOHNSON, EDWARD GARFIELD, JR. (1967); B.S., Ball State University, 1948; M.A., 1953; Ed.D., University of Toledo, 1967; Assistant Professor of Education and Staff Counselor, Testing and Counseling Service.
- JOHNSON, NORRIS OLIVER (1967); B.S., Syracuse University, 1927; M.A., Harvard, 1932; Ph.D., 1934; Maine Bankers Association Professor of Economics.
- JOHNSON, RICHARD ANDREW (1963); B.S., Maine, 1954; M.S., 1960; Extension Agent (Piscataquis County), Cooperative Extension Service.
- JOHNSTON, EDWARD FRANKLIN (1954); B.S., Maine, 1953; M.S., Pennsylvania State University, 1955; Associate Professor of Agricultural Business and Economics, Agricultural Experiment Station; Maine Potato Handling Research Center, Presque Isle.
- JONES, BRYANT P. (1966); B.A., Maine, 1964; Director of Public Information and Central Services, University of Maine in Portland.
- JONES, SUSAN PRINDLE (1966); B.S., Ursinus College, 1963; M.S., University of Minnesota, 1965; Assistant Professor of Home Economics; Regional Training Officer, Head Start Program.
- JORDAN, WESLEY DINGLEY (1965); B.S., in Ed., Maine, 1963; Instructor in Physical Education and Head Athletic Trainer.
- JURENAS, ALGIRDAS; Candidate of Philosophy, University of Vilnius, 1943; Th.D., Harvard, 1967; Part-time Instructor in Philosophy, University of Maine in Augusta.
- KADUNCE, RAYMOND EUGENE (1962-64) (1966); B.S., Grove City College, 1959; M.S., Maine, 1961; Ph.D., 1964; Assistant Professor of Biochemistry; Laboratory-Director (Inspections), Agricultural Experiment Station.
- KANDUTSCH, ANDREW AUGUST; B.A., Ripon College, 1950; M.S., University of

* * On leave of absence, spring semester 1967-68.

* On leave of absence, fall semester 1967-68.

UNIVERSITY OF MAINE

- Wisconsin, 1952; Ph.D., 1954; Lecturer in Zoology.
- KAPLAN, ARTHUR MARK (1958); B.A., Maine, 1949; M.A., Boston University, 1950; Ph.D., Cornell University, 1956; Professor and Head, Department of Psychology.
- KAPLAN, H. ROY; B.A., University of Bridgeport, 1966; Temporary Instructor in Sociology.
- KEARNEY, HAROLD MORTON (1965); A.B., Colby, 1947; M.Ed., Boston University, 1959; Ed.D., 1962; Youth Education Specialist, Cooperative Extension Service.
- KEENE, JAMES THURSTON (1960); B.S., Maine, 1960; Instructor in General Engineering.
- KEM, MARGARET ALICE (1966); B.A., University of Montana, 1964; M.A., 1966; Instructor in Mathematics.
- KENDA, WILLIAM VINCENT (1967); B.S., Northwestern University, 1964; M.F.A., University of Iowa, 1966; Instructor in English.
- KENDALL, PHILIP WESLEY (1962); B.A., DePauw University, 1957; A.M., Boston University, 1960; Assistant Professor of History, University of Maine in Portland.
- KENDER, WALTER JOHN (1962); B.S., Delaware Valley College, 1957; M.S., Rutgers, 1959; Ph.D., 1962; Associate Professor of Horticulture.
- KERN, ABRAHAM K. (1959); A.B. Bowdoin, 1936; M.Ed., Maine, 1956; Associate Professor of Botany and Zoology, University of Maine in Portland.
- 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, Department of Mathematics and Astronomy.
- KING, FRANCIS RICHARD (1967); B.S., University of Massachusetts, 1957; M.S., 1963; Agricultural Business Management Specialist, Cooperative Extension Service.
- KIRK, CHARLES RICHARD (1967); B.A., University of Akron, 1962; M.A., 1963; Assistant Professor of Psychology.
- KITTRIDGE, CHARLES W. (1955); B.S., Maine, 1949; Agricultural Engineer, Cooperative Extension Service.
- KLAVUHN, JOHN GUSTAVE (1964); B.S., University of Cincinnati, 1959; Instructor in Mechanical Engineering.
- KLINGE, ALBERT FREDERICK (1965); B.S., Purdue University, 1952; M.S., 1955; Ph.D., University of California, 1965; Associate Professor of Agricultural Engineering.
- KNOWLTON, PAUL H. (1966); B.S., Maine, 1963; M.S., 1966; Assistant Animal Nutritionist.
- KOEHN, DONALD ROBERT (1966); B.A., University of Illinois, 1953; M.A., University of Chicago, 1961; M.A., University of Illinois, 1966; Instructor in Philosophy.
- KONTIO, RAE CLARK (1961); B.S., Maine, 1958; Extension Agent (Kennebec County), Cooperative Extension Service.
- KROFTA, RAYMOND NORBERT (1966); B.S., University of Wisconsin, 1958; M.S., 1961; Ph.D., 1962; Associate Professor of Agricultural Business and Economics.

- KRUEGER, GEORGE CORWIN (1950); A.B., Reed, 1945; Ph.D., Brown, 1951; Professor of Physics.
- KULBERG, GORDON ERIC (1966); B.S., Tufts, 1956; M.S., Iowa State University, 1958; Ph.D., Vanderbilt University, 1965; Assistant Professor of Psychology.
- LAKE, SUSAN GLIDDEN (1965); B.S., University of Massachusetts, 1932; M.S., Cornell University, 1952; Home Management Specialist, Cooperative Extension Service.
- LAMB, VIRGINIA S. (1958); B.S., Maine, 1928; Extension Agent (Cumberland County), Cooperative Extension Service.
- LANE, JOHN MAURICE (1966); B.S., Maine, 1950; Rural Civil Defense Specialist, Cooperative Extension Service.
- LANGILLE, ALAN RALPH (1967); B.Sc., MacDonald College of McGill University, 1960; M.S., University of Vermont, 1962; Ph.D., Pennsylvania State University, 1967; Assistant Professor of Agronomy.
- LARSEN, REBECCA CHESTER (1966); A.B., Colby, 1933; M.A., Western Reserve University, 1934; Registrar, University of Maine in Portland.
- LAWRENCE, HAROLD MERRILL (1946); B.S., Boston University, 1940; Bursar, University of Maine in Portland.
- LEACH, ROGER STANFORD (1963); B.S., Maine, 1952; M.S., Pennsylvania State University, 1954; Ph.D., 1956; Field Program Coordinator, Cooperative Extension Service.
- LEE, LIN (1966); B.S., National Taiwan University, 1957; M.S., Michigan Technology University, 1961; Sc.D., Washington University (St. Louis), 1967; Assistant Professor of Mechanical Engineering.
- LEIRIS, HELENE (1967); Licence ès Lettres, Montpellier University (France), 1964; Diplome of Advanced Studies, 1965; Instructor in French.
- LEITCH, DONALD GEORGE; B.S., Lehigh University, 1956; M.S., University of Colorado, 1960; Associate Professor of Civil Engineering (temporary).
- LEMELIN, ROBERT ERNEST (1965); B.S., Southern Connecticut State College, 1959; M.A., University of Maryland, 1963; Assistant Professor of English.
- LEONARD, HERBERT ARTHUR (1939); B.S., Maine, 1939; M.S., Cornell University, 1950; Professor of Animal Sciences and Farm Manager.
- LEPELLEY, EDITH (1965); Baccalauréat, Lycée de Jeunes Filles de Chartres (France), 1950; Licence ès Lettres, University of Rennes (France), 1956; Assistant Professor of French, University of Maine in Portland.
- LEPLEY, PAUL MICHAEL (1967); B.S., University of Michigan, 1955; M.Ed., Pennsylvania State University, 1961; Assistant Professor of Physical Education.
- LEWIS, JAMES, (1959); B.S., Bowdoin College, 1915; Lecturer in Astronomy, University of Maine in Portland.
- LEWIS, MICHAEL HOWARD (1966); B.S., State University College, New Paltz, New York, 1963; M.A., Michigan State University, 1964; Instructor in Art.
- LEWISOHN, JAMES ELIAS (1965); A.B., Brandeis University, 1956; M.H.L., Jewish Theological Seminary, 1959; Instructor in English, University of Maine in Portland.
- †LIBBEY, WALDO MCCLURE (1944); B.S., Maine, 1943; S.M., Massachusetts Institute of Technology, 1951; Professor of Electrical Engineering.

† On leave of absence, 1967-68.

UNIVERSITY OF MAINE

- LIBBY, MERTON EUGENE (1952); B.S., Maine, 1948; M.S., 1960 Extension Agent (Penobscot County), Cooperative Extension Service.
- LIBBY, WINTHROP CHARLES (1934); B.S., Maine, 1932; M.S., 1933; Dean of Agriculture; Dean, College of Life Sciences and Agriculture, and Professor of Agronomy; Director, Cooperative Extension Service; Director, University of Maine Extension Service.
- LICHTMAN, ELLEN HEIT (1967); B.A., Brooklyn College, 1965; M.L.S., Pratt Institute, 1966; Reference Librarian-Acquisitions Librarian, Raymond H. Fogler Library.
- LINDLOF, JOHN ALAN (1962); B.A., Yale, 1947; M.Ed., Temple University, 1953; M.Ed. in Science, University of New Mexico, 1960; Associate Professor of Education.
- LITTLEFIELD, LYLE (1947-51) (1954); B.S., Maine, 1945; M.S., 1952; Assistant Professor of Ornamental Horticulture.
- LITTLEFIELD, RONALD GEORGE (1965); A.B., Colby, 1960; M.S., University of Massachusetts, 1963; Instructor in Physics.
- LIVESEY, WILLIAM (1966); B.S., Maine, 1962; Instructor in Physical Education, Head Coach of Soccer and Freshman Baseball Coach.
- LOTSE, ERIK GUNNAR (1967); Agronomy, College of Agriculture, Uppsala, Sweden, 1953; Agronomie Licentiat, 1964; Associate Professor of Soil Chemistry.
- LOVEITT, BURLEIGH PILLSBURY (1965); B.S., Fitchburg State Teachers College, 1940; M.Ed., Maine 1957; Extension Agent (Cumberland County), Cooperative Extension Service.
- LOVEJOY, MABEL KIRKPATRICK (1963); B.S., Maine, 1928; Extension Agent (Penobscot County), Cooperative Extension Service.
- LOWELL, ROBERT EDWARD (1966); B.S., Lyndon Teachers College, 1957; M.S., University of Connecticut, 1959; Assistant Professor of Education.
- LUTO, JEAN (1967); B.Mus., University of Pennsylvania, 1948; B.S. (in Library Science), Drexel Institute, 1949; Cataloger in the Raymond H. Fogler Library.
- LYMAN, JOHN ROBERT (1948); Tufts College, 1947; P.E. (Maine); Professor of Mechanical Engineering.
- MACCAMPBELL, BARBARA BARRETT (1957); B.A., Ohio Wesleyan, 1939; M.A., 1941; M.S.L.S., Western Reserve, 1950; Documents Librarian (part-time), Raymond H. Fogler Library.
- MACCAMPBELL, JAMES CURTIS (1957); B.A., Ohio Wesleyan, 1939; M.A., Ohio State University, 1946; Ph.D., 1957; M.S. Simmons College, 1962; Professor of Education, University Librarian.
- MACDONALD, CLYDE, JR.; B.A., Bates, 1958; M.A., Maine 1965; Part-time Instructor in Modern Society, Department of Sociology and Anthropology.
- MACKINNON, EWEN IAN STEWART (1967); B.S., Maine, 1961; Instructor in Physical Education and Freshman Football Coach.
- † MACLAUHLIN, ROBERT KERWIN (1959); B.A., University of Massachusetts, 1954; M.Ed., Bridgewater State College, 1958; M.S., Syracuse University, 1959; Assistant Professor of Speech; Director of Programming, Maine Educational Television Network.

† On leave of absence, 1967-68.

- 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.
- MCCALL, JOSEPH BRIAN (1958); B.S. in Ed., Dayton University, 1949; M.A., Ohio State University, 1951; Associate Professor of Physical Education, Varsity Basketball Coach and Coach of Golf.
- MCCLURE, MELVIN THEODORE (1961-62) (1965); 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; Ph.D., University of New Hampshire, 1964; Associate Professor of Plant Pathology, Agricultural Experiment Station.
- MCDANIEL, IVAN NOEL (1957); B.S., Eastern Illinois State College, 1951; M.S., 1951; Ph.D., University of Illinois, 1958; Associate Professor of Entomology, Agricultural Experiment Station.
- MCGUIRE, FRANCIS STEPHEN (1946); B.S., Maine, 1931; Director of Physical Plant.
- MCINTYRE, GARY ALLEN (1963); B.S., Oregon State College, 1960; Ph.D., 1964; Assistant Professor of Plant Pathology.
- MCKAY, EDGAR BURNHAM (1947); B.S., Colby, 1930; M.Ed., Maine, 1951; Associate Professor of Modern Society, Department of Sociology and Anthropology.
- MCKEIL, RICHARD LLOYD (1965); B.A., Maine, 1959; M.S., 1965; Instructor in Business and Economics, University of Maine in Portland.
- MCNEARY, MATTHEW (1937); B.S., Pennsylvania State, 1932; M.S., Maine, 1941; P.E. (Maine); Professor and Head of Department of General Engineering.
- MADDEN, CARROLL G. (1967); Instructor in Mechanical Engineering (Technical Institute Division).
- MADDOX, RENA MARGARET (1966); B.S., Boston University, 1959; Instructor in Nursing.
- MAINVILLE, WALDECK ERNEST, JR. (1965); B.S., Maine, 1960; A.M., Bowdoin, 1964; Sp.Ed., Bowling Green State University, 1965; Assistant Professor of Mathematics, University of Maine in Portland.
- **MAJOR, CHARLES WALTER (1959); A.B., Dartmouth, 1948; M.S., University of Tennessee, 1954; Ph.D., 1957; Associate Professor of Zoology.
- MAJOR, MARY H.; A.B., North Georgia College, 1947; M.S., University of Tennessee, 1950; Part-time Instructor in Zoology.
- MAKINEN, DOUGLAS A.; B.S., Maine, 1959; Part-time Instructor in Electrical Engineering.
- MANLOVE, GEORGE KENDALL (1950); A.B., Oberlin, 1936; M.A., 1946; Ph.D., Duke University, 1960; Associate Professor of English.
- MANZER, FRANKLIN EDWARD (1958); B.S., Maine, 1955; Ph.D., Iowa State College, 1958; Professor of Plant Pathology, Agricultural Experiment Station.
- MARSHALL, BOWEN FLOYD (1967); B.S., Maine, 1966; Instructor in Electrical Engineering.
- MARSTERS, IRVINE WALTER, JR. (1966); B.A., Maine, 1963; Career Development Specialist, Bureau of Public Administration.

* * On leave of absence, January 30, 1968 - June 30, 1968.

UNIVERSITY OF MAINE

- MARTIN, FREDERIC THURMAN (1934); Ch.E., Lehigh, 1925; Ph.D., Johns Hopkins, 1929; P.E. (Maine); Professor of Chemistry.
- MARTIN, THOMAS ANDREW (1965); B.S. in Ed., Maine, 1963; Instructor in Physical Education, University of Maine in Portland.
- MASSIE, VIRGINIA HARVEY (1962); B.S., Maine, 1954; Extension Agent (Knox-Lincoln Counties), Cooperative Extension Service.
- MAWHINNEY, EUGENE ALBERTO (1948-49) (1959); B.S., Maine, 1947; M.A., 1949; Ph.D., University of Illinois, 1955; Professor of Political Science and Head, Department of Political Science.
- MENDALL, HOWARD LEWIS (1937); B.A., Maine, 1931; M.A., 1934; Professor of Game Management; Leader, Cooperative Wildlife Research Unit.
- MERRILL, CARROLL FRANKLIN, JR. (1967); B.A., Maine, 1961; Instructor in Mathematics.
- MERRILL, EDWARD OSGOOD (1940); B.S., Maine, 1938; Associate Professor of Chemistry, Agricultural Experiment Station.
- MERRIMAN, BERTCH ALLYN (1966); B.S., Western Michigan University, 1954; M.S., Michigan State University, 1962; Instructor in Mathematics.
- MERRY, EDWIN DONALD (1965); B.A., Colby, 1929; M.A., Trinity College, 1959; Instructor in English, University of Maine in Portland.
- MESERVEY, RUTH (1945); B.A., Maine, 1929; B.S., Simmons College, 1942; Senior Cataloger, Raymond H. Fogler Library.
- MESTECKY, FRANK JOSEPH (1965); B.A., Creighton University, 1960; M.A., University of Wisconsin, 1961; Ph.D., University of Iowa, 1965; Assistant Professor of Mathematics.
- METCALF, HENRY BEMIS (1964); B.S., Maine, 1956; M.S., Northeastern, 1964; Assistant Professor of General Engineering.
- METZGER, HOMER BASTIAN (1950); B.S., Pennsylvania State College, 1939; M.S., 1948; Ph.D., 1950; Professor and Head, Department of Agricultural Business and 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.
- 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.
- MILNE, CHARLES MAITLAND (1966); B.S., University of Massachusetts, 1952; M.S., Purdue University, 1954; Ph.D., 1966; Associate Professor of Civil Engineering.
- MILNE, SANDRA FARRAR (1965); B.A., Maine, 1964; M.Ed., 1965; Instructor in Business and Economics, University of Maine in Portland.
- MIXER, WILLIAM L. (1966); B.S., Portland State College (Oregon), 1944; M.A., Arizona State University, 1966; Instructor in Mathematics.
- MONTVILLE, FRANCIS ELI (1961); B.S., University of Rhode Island, 1954; M.S., 1957; Extension Economist (Resource Development), Cooperative Extension Service.

* On leave of absence, fall semester 1967-68.

- MOODY, DOROTHY SHAW (1967); B.A., Oberlin College, 1929; Part-time Cataloger, Raymond H. Fogler Library.
- MOODY, GEORGE TUFFORD (1965); Ph.B., Wesleyan University, 1929; Ph.D., Johns Hopkins, 1932; Professor of French and Head, Department of Foreign Languages and Classics.
- MORGAN, KENNETH FILMORE; B.A., Maine, 1963; M.A., Northwestern University, 1966; Temporary part-time Instructor in History, Continuing Education Division.
- MOSHER, PAUL N. (1949); B.S., Maine, 1941; Potato Specialist, Cooperative Extension Service.
- MOSKOWITZ, GORDON DAVID (1965); B.M.E., City College of New York, 1960; M.S.E., Princeton University, 1962; M.A., 1963; Ph.D., 1964; Associate Professor of Mechanical Engineering.
- MOSS, GORDON ERVIN (1966); B.S., Brigham Young University, 1963; Instructor in Sociology.
- MUMME KENNETH IRVING (1963); B.S., Lawrence College, 1954; M.S., Maine, 1966; International Business Machine Lecturer, Department of Chemical Engineering.
- MUN, ALTON MOON (1961); B.A., University of Southern California, 1949; M.S., University of Illinois, 1951; Ph.D., University of Indiana, 1956; Associate Professor of Zoology.
- MURO, JAMES J. (1965); B.S., in Ed., Lock Haven State College (Pennsylvania), 1956; M.Ed., Rutgers University, 1961; Ed.D., University of Georgia, 1965; Assistant Professor of Education.
- MURPHY, ELIZABETH FLORENCE (1930); B.A., Maine, 1930; M.A., 1934; Professor of Horticulture, Agricultural Experiment Station.
- MURPHY, GRATTAN PATRICK (1965); B.S., Rockhurst College, 1957; M.S., St. Louis University, 1962; Assistant Professor of Mathematics.
- MURPHY, HUGH JEROME (1950); B.S., Maine, 1948; M.S., 1950; Associate Professor of Agronomy.
- MURPHY, KEVIN E. (1966); B.A., University of Wyoming; M.A., 1965; Instructor in Spanish.
- MURRAY, FREDERIC WILLIAM (1962); B.A., University of New Mexico, 1959; Assistant Professor of Spanish.
- MURRAY, JOSEPH MAGEE (1934); B.A., Maine, 1925; M.A., University of Michigan, 1927; Ph.D., 1929; Professor of Zoology.
- MYER, GEORGE HENRY (1965); B.A., University of California (Santa Barbara), 1959; Ph.D., Yale University, 1965; Assistant Professor of Geology.
- MYERS, FRANK WILLIAM (1957); B.A., Maine, 1935; M.Ed., 1947; Associate Professor of Education and Assistant Director of the Summer Session.
- NADELHALFT, JEROME JOSHUA (1967); B.A., Queens College, New York City, 1959; M.A., University of Wisconsin, 1961; Ph.D., 1965; Assistant Professor of History.
- NAJARIAN, HAIG H. (1966); B.S., University of Massachusetts, 1948; M.A., Boston University, 1949; Ph.D., University of Michigan, 1953; Associate Professor of Biology; Chairman of the Division of Science and Mathematics, University of Maine in Portland.
- NESBIT, PHILIP (1962-1965) (1967); B.M.Ed., University of Miami, 1957; M.M., New England Conservatory, 1962; Assistant Professor of Music.

UNIVERSITY OF MAINE

- NESS, NORMAN RENFREW (1942); B.S., Maine 1938; Dairy Specialist, Cooperative Extension Service.
- NEUBAUER, BENEDICT FRANCIS (1965); B.A., St. John's University, 1960; Ph.D., Iowa State University, 1965, Assistant Professor of Botany.
- NICHOLS, DAVID LEIGH (1962); B.A., Maine, 1950; M.A., 1951; Ph.D., Ohio State, 1966; Associate Professor of Education.
- NICHOLS, JOHN WILSON (1954); B.A., Western Maryland College, 1948; M.A., University of Florida, 1949; Ph.D., 1954; Professor of Psychology.
- NIGHTINGALE, RICHARD IRVINE (1958); B.S., Maine, 1958; M.S., 1960; Assistant Professor of Civil Engineering.
- NOLDE, JOHN JACOB (1950); B.A., Cornell University, 1941; Ph.D., 1950; Dean, College of Art and Sciences; Professor of History.
- NORTHAM, EDWARD STAFFORD (1964); B.S., University of Michigan, 1947; M.S., 1948; Ph.D., Michigan State University, 1953; Associate Professor of Mathematics.
- 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; Extension Agent (Aroostook County), Cooperative Extension Service.
- OLAN, FRANCIS MESSER (1966); B.A., Pembroke College, 1963; M.A. Middlebury College, 1966; Instructor in German.
- OLIVER, SHIRLEY DOTEN (1962); B.S. in Ed., Maine, 1949; M.Ed., 1953; Assistant Professor of Home Economics.
- OLMSTED, NANCY EDITH LITTLEFIELD; B.A., Maine, 1966; Part-time Instructor in Mathematics.
- OLSON, ROBERT EDWARD (1946); B.S., Cornell University, 1938; M.S., 1946; Ph.D., 1954; Professor of Entomology.
- *O'MEARA, DAVID CHARLES (1954); A.B., Bates, 1952; M.S., Maine, 1954; Associate Professor of Animal Biology, Agricultural Experiment Station.
- O'NEILL, ELMER WESLEY, JR. (1965); A.B., Princeton, 1935; M.A., 1940; Ph.D., 1952; Professor of French.
- ORR, MARSHALL HUGH (1967); B.S., University of Rhode Island, 1965; Instructor in Physics.
- OSBERG, PHILIP HENRY (1957); A.B., Dartmouth, 1947; M.A., Harvard, 1949; Ph.D., 1952; Professor of Geology, and Head, Department of Geological Sciences.
- OSGOOD, EBEN AVERILL, JR. (1963); B.S., Maine, 1951; M.F., Duke University, 1956; Ph.D., University of Minnesota, 1962; Associate Professor of Entomology.
- OUELLETTE, ALLEN JEAN (1965); B.S., Fort Kent State Teachers College, 1963; Instructor in English (CED).
- OUELLETTE, CLIFFORD N. (1966); B.S., Maine, 1964; Instructor in Mechanical Engineering.
- PACKARD, CHARLES EARL, SR.; B.A., Bates College, 1919; M.S., Yale University, 1924; Part-time Lecturer in Biology, University of Maine in Augusta.
- PADULA, ARMAND LOUIS (1966); B.S., Cornell University, 1960; M.S., 1965; Instructor in Entomology.

* * On leave of absence January 1, 1968 - June 30, 1968.

- PAIEMENT, ROBERT EDWARD (1967); B.S., Maine, 1967; Instructor in General Engineering.
- PALAIS, JAMES BERNARD (1967); B.A., Harvard, 1955; M.A., Yale, 1960; Ph.D., Harvard, 1967; Assistant Professor of History, University of Maine in Portland.
- PARSONS, KENNETH LANGMAID (1942-44) (1945); B.S., Maine, 1934; E.E., 1959; P.E. (Maine); Professor of Electrical Engineering.
- PATIN, DONALD LEO (1967); B.S., Wisconsin State University, 1958; Assistant Professor of Chemistry.
- PAYNE DONALD DAVIS (1956); B.A., Bowdoin, 1948; D.V.M., Ontario Veterinary College, 1955; M.P.H., Yale 1966; Associate Professor of Animal Pathology.
- ‡PEASE, ALLEN GARDNER (1962); A.B., Colby, 1950; M.A., Ohio State University 1952; Associate Professor of Political Science, University of Maine in Portland.
- PEASE, WILLIAM HENRY (1966); B.A., Williams College, 1947; M.A., Wisconsin, 1948; Ph.D., Rochester, 1955; Associate Professor of History.
- PECK, HENRY AUSTIN (1948); A.B., Tufts, 1942; M.A., Fletcher School of Law and Diplomacy, 1947; Ph.D., 1952; L.H.D., Tufts, 1963; Professor of Business and Economics; Vice President of Academic Affairs.
- PEIRCE, JOHN ALDEN (1965); B.S., Maine, 1962; M.A., University of Virginia, 1965; Assistant Professor of Political Science, University of Maine in Portland.
- PELLERIN, ROGER ARTHUR (1964); B.S., Maine, 1959; Agricultural Engineering Representative (CD Region I), Department of Agricultural Engineering.
- PERODEAU, LUCILLE THERESE (1966); B.A., Clark University, 1953; M.S., Simmons College, 1957; Head, Reference Division, Raymond H. Fogler Library.
- PERRY, ALVAH LIONEL (1943-45) (1946-47) (1949); B.S., Maine, 1942; M.S., 1947; Ph.D., Pennsylvania State University, 1957; Professor of Agricultural Business and Economics, and Extension Economist—Marketing.
- PERRY, JOANNE SPRINGER; B.A., Maine, 1946; M.A., 1948; Assistant Professor of Mathematics.
- PHILBRICK, GILBERT EMERY (1966); B.S. in Ed., Maine, 1955; Instructor in Physical Education, Freshman Basketball Coach and Assistant Trainer.
- PICKETT, ROBERT ARTHUR (1966); B.S. in Ed., Maine, 1959; Instructor in Physical Education, Assistant Football Coach.
- PIKE, E. JUNE (1957); B.S. in Ed., Maine, 1963; Extension Agent (Aroostook County), Cooperative Extension Service.
- PLISSEY, EDWIN S. (1960); B.S., Maine, 1956; M.S., 1958; Area Potato Specialist, Cooperative Extension Service.
- PLISSEY, MARILYN B. (1960); B.S., Maine, 1959; Extension Agent (Aroostook County), Cooperative Extension Service.
- PLOCH, LOUIS ALBERT (1954); B.S., Pennsylvania State University, 1950; M.S., 1951; Ph.D., Cornell University, 1954; Professor of Rural Sociology.
- PLOWMAN, E. GROSVENOR; B.S., Dartmouth, 1921; M.S., University of Denver, 1936; Ph.D., University of Chicago, 1937; Lecturer in Business Administration, University of Maine in Portland.

‡ On leave of absence January 30, 1967 - August 31, 1968.

UNIVERSITY OF MAINE

- 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.
- 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. (Hon.), Catholic Teachers College of Providence, Rhode Island, 1959; Associate Professor of Education, and Director of Teacher Training.
- POULTON, BRUCE ROBERT (1956); B.S., Rutgers University, 1950; M.S., 1952; Ph.D., 1956; Professor and Head, Department of Animal Sciences.
- POWER, THOMAS AMBLER (1966); B.S. in Ed., Maine, 1964; Instructor in Speech, University of Maine in Portland.
- PRATT, DARRELL BRADFORD (1967); B.S., Maine, 1942; M.S., Purdue, 1945; Ph.D., Harvard, 1951; Professor and Head, Department of Bacteriology.
- 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; Professor of Education.
- PRITCHARD, GEORGE ELTON (1966); Instructor, Military Department.
- PUFFER, CHARLES LORING (1966); B.A., Maine, 1932; Lecturer in Education, Educational Coordinator in CED.
- PULLEN, WINSTON EUGENE (1946); B.S., Maine, 1941; M.S., Cornell University, 1942; Ph.D., 1950; Professor of Agricultural Business and Economics and Associate Dean of the College of Life Sciences and Agriculture.
- PYLES, LEWIS REX (1964); B.A., University of Miami (Florida), 1959; M.A., University of Michigan, 1963; Assistant Professor of Russian and French.
- QUINN, OWEN ROBERT (1967); Captain, Artillery, United States Army; B.S., Boston College, 1959; Assistant Professor of Military Science.
- 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.
- RAKOVAN, LAWRENCE FRANCIS; B.S., Wayne State University, 1967; Instructor in Art, University of Maine in Portland.
- RAMSDELL, GORDON ESTEY (1947); B.S., Maine, 1942; M.S., 1951; Associate Professor of Biochemistry, Agricultural Experiment Station.
- RANDALL, ARTHUR GORDON (1946); B.S., Yale, 1933; M.F., 1934; Associate Professor of Forestry.
- RANDALL, RICHARD JOHN (1967); B.A., Maine, 1966; M.A., 1967; Instructor in Sociology, University of Maine in Augusta.
- RANDEL, WILLIAM PEIRCE (1965); B.S., Columbia University, 1932; A.M., University of Michigan, 1933; Ph.D., Columbia University, 1945; Professor of English.
- REED, FRANK DUDLEY (1938); B.S., New Hampshire, 1929; Extension Economist, Marketing, Cooperative Extension Service.

- REED, MARY FLORENCE (1930); B.A., Maine, 1929; B.S., Simmons College, 1930; Assistant Librarian; Head, Department of Technical Services, Raymond H. Fogler Library.
- REID, EDWARD ROBERT (1959); A.B., Yale, 1946; M.A., Middlebury College, 1950; Associate Professor of German and Associate Dean of the College of Arts and Sciences.
- REYNOLDS, CECIL JOHN (1935); B.S.C., Mount Allison, 1926; B.A., 1927; B.A. Oxford, 1929; B.Litt., 1930; A.M., Harvard 1932; Lloyd H. Elliot Professor of English; Head, Department of English.
- RHOADES, ROGER HANSON (1964); B.A., Colby, 1935; M.A., University of Michigan, 1938; Ph.D., University of Colorado, 1961; Associate Professor of Education, University of Maine in Portland.
- RHOADS, ROBERT BARLOW (1952); B.S., Maine, 1950; M.S., 1951; P.E. (Maine); Professor of Agricultural Engineering, College of Life Sciences and Agriculture; Associate Director, Technical Institute Division, College of Technology.
- RICE, FRANCIS PHILIP (1964); A.B., Stanford University, 1943; M.A., New York University, 1948; B.D., Princeton Theological Seminary, 1949; Ed.D., Columbia University, 1955; Professor of Family Life, School of Home Economics, and Family Life Specialist, Cooperative Extension Service.
- RICHARDS, CHARLES DAVIS (1952); B.A., Wheaton College, Illinois, 1943; M.A., University of Michigan, 1947; Ph.D., 1952; Professor of Botany.
- RIDGWAY, GEORGE J.; B.S., University of Washington, 1949; M.S., 1951; Ph.D., 1954; Lecturer in Zoology.
- RIDGWAY, RITA KELL (1966); B.S., James Millikin University, 1936; Extension Agent (Androscoggin-Sagadahoc Counties), Cooperative Extension Service.
- †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.
- RIVERO, ALICE R. (1967); B.A., Hunter College, 1960; M.A., 1965; Instructor in Sociology, University of Maine in Portland.
- RIVIERE, WILLIAM ALEXANDER, JR. (1966); B.S., Maine, 1965; Instructor in Mechanical Engineering.
- ROBBINS, WALLACE CLIFTON (1965); B.S., Maine, 1954; M.S., University of New Brunswick, 1956; Instructor in Forestry.
- ROBERTS, DODD EDWARD (1964); B.A., Maine, 1951; M.A., 1955; Ed.D., University of Missouri, 1958; Associate Professor of Education.
- ROBERTS, FRANKLIN LEWIS (1964); B.S., Maine, 1955; M.S., 1957; Ph.D., North Carolina State College, 1964; Assistant Professor of Zoology.
- ROBERTS, JAMES WESTON (1967); B.A., San Diego State College, 1954; Assistant Professor of Political Science, University of Maine in Portland.
- ROBERTS, LEWIS POLLARD (1935); B.S., Maine, 1931; Sugar Beet Specialist, Cooperative Extension Service.
- ROBERTSON, JEFFREY CHARLES (1967); B.S., Maine, 1967; Instructor in Mechanical Engineering.
- ROBINSON, JAMES ARTHUR (1956); B.S., Maine, 1950; Area Potato Specialist, Cooperative Extension Service.

† On leave of absence, 1967-68.

UNIVERSITY OF MAINE

- ROBINSON, WILLAM E. (1960); B.S., Vermont, 1952; M.S., Purdue University, 1955; Associate Professor of Agricultural Business and Economics.
- ROCKMORE, DAVID MEURICE (1966); B.S., Pennsylvania State University, 1956; D.Phil., Oxford University, 1963; Assistant Professor of Physics.
- RODERICK, THOMAS HUSTON; A.B., University of Michigan, 1952; B.S., 1953; Ph.D., University of California, 1959; Lecturer in Zoology.
- ROGERS, CARL ADEN (1944); B.S., Vermont, 1935; Extension Agent (Hancock County), Cooperative Extension Service.
- ROGERS, PAUL CARNEY (1965); B.N.S., College of the Holy Cross, 1945; M.A., Boston University, 1948; Associate Professor of Mathematics, University of Maine in Portland.
- ROGGENBAUER, JOSEF (1961); Diplomkaufmann, University of Vienna, Austria, 1950; M.A., Middlebury, 1965; Doctorate, University of Innsbruck, Austria, 1953; Associate Professor of German.
- ROMANYSHYN, JOHN MIKE (1946-1950) (1953); B.A., University of Oklahoma, 1942; M.A., University of Chicago, 1952; Margaret Payson Professor of Social Welfare, University of Maine in Portland.
- ROSCOE, MARJORIE MARY (1966); B.S., in P.H.N., Simmons College, 1950; M.P.H., University of Michigan, 1959; Assistant Professor of Nursing.
- ROSS, RUTH V. (1960); B.S., State Teachers College, Framingham, Massachusetts, 1928; Extension Agent (Aroostook County), Cooperative Extension Service.
- ROURKE, ROBERT VINCENT (1964); B.S., Maine, 1959; M.S., 1964; Instructor in Plants and Soils Agricultural Experiment Station.
- ROWAN, MICHAEL EDWARD JOSEPH (1965); B.A., National University of Ireland, 1941; Higher Diploma in Education, 1942; M.S., Yale, 1959; Assistant Professor of Sociology.
- ROWE, RICHARD JAY (1959); B.S., Cornell University, 1952; B.S., Iowa State University, 1957; M.S., 1959; P.E. (Maine); Associate Professor and Acting Head, Department of Agricultural Engineering.
- RUSS, CHARLES ROGER (1965); B.S., Marquette University, 1959; M.S., 1961; Ph.D., University of Pennsylvania, 1965; Assistant Professor of Chemistry.
- RUSSELL, OLGA WEBSTER (1966); B.A., Connecticut College, 1934; A.M., University of California (Berkeley), 1939; A.M., Radcliffe, 1944; Ph.D., 1957; Professor of French.
- RYAN, CHARLES WILLIAM (1966); B.S., Slippery Rock State College, 1959; M.A., Colgate University, 1961; Ph.D., University of Toledo, 1966; Assistant Professor of Education.
- RYCKMAN, RICHARD MICHAEL (1967); A.A., City College of San Francisco, 1960; B.A., State University of New York at Buffalo, 1963; Assistant Professor of Psychology.
- SALDANHA, ESTELITA LONGUINHOS (1966); B.S., University of Nebraska, 1946; M.A., 1947; Ph.D., Cornell University, 1950; Professor of Psychology, University of Maine in Portland.
- SALEEBEY, MICHAEL DENNIS (1967); B.A., University of California, Santa Barbara, 1958; Master of Social Welfare, University of California, Los Angeles, 1960; Assistant Professor of Social Welfare, Department of Sociology and Anthropology.

PERSONNEL

- SANBORN, JANE OBERHOLTZER (1961); A.B., Wilson College, 1942; Ed.M., University of California, 1961; Ed.D., University of California at Los Angeles, 1961; Director of Testing and Counseling, and Associate Professor of Psychology, University of Maine in Portland.
- SANDERS, JOSEPH FRANCIS; B.S., Boston University, 1947; M.A., 1948; Ph.D., 1953; Lecturer in Psychology, V.A. Center, Togus.
- SANDS, PAUL E. (1965); A.B., University of Michigan, 1951; A.M., 1952; Ph.D., Michigan State University, 1964; Assistant Professor of Business and Economics.
- **SANFORD, ALPHEUS (1958); B.A., Maine, 1947; M.Ed., Boston University, 1954; Ed.D., 1959; Professor of Education.
- SASS, BERNARD (1946); B.S., City College of New York, 1934; M.A., Teachers College, Columbia, 1936; Associate Professor of Zoology.
- SAWIN, PAUL B.; B.S., Cornell University, 1924; M.S., Kansas State University, 1925; M.S., Harvard, 1930; Sc.D., 1931; Lecturer in Animal Sciences (Jackson Laboratory).
- SAWTELLE, PETER GARY (1966); B.A., Maine, 1965; Instructor in Mathematics.
- SCHEMNITZ, SANFORD DAVID (1962); B.S., University of Michigan, 1952; M.S., University of Florida, 1953; Ph.D., Oklahoma State University, 1958; Associate Professor of Wildlife Management, School of Forestry.
- SCHLAGER, GUNTHER; A.B., University of Denver, 1956; M.A., University of Kansas, 1959; Ph.D., 1962; Lecturer in Zoology (Jackson Laboratory).
- SCHNEIDER, WALTER LESLIE (1964); B.M.E., Pratt Institute, 1948; M.M.E., Yale University, 1950; Dr. Eng. Sc., New York University, 1958; Associate Professor of Mechanical Engineering.
- SCHOENBERGER, WALTER SMITH (1956); A.B., University of Pittsburgh, 1950; M.A., 1953; M.A., The Fletcher School of Law and Diplomacy, 1954; Ph.D., Tufts, 1963; Professor of Political Science.
- SCHOMAKER, CHARLES EDWARD (1963); B.S., Pennsylvania State University, 1950; M.F., 1954; Ph.D., Michigan State University, 1961; Associate Professor of Forestry.
- SCHOMAKER, PEGGY K. (1966); B.S., Pennsylvania State University, 1949; M.S., 1957; Ph.D., Michigan State University, 1961; Assistant Professor of Home Economics.
- SCHULTZ, EDWARD MELVIN (1967); B.S., University of Maine, 1966; Reference Librarian—Archivist, Raymond H. Fogler Library.
- SCHUMACKER, JOHN FLOYD (1966); A.B., Bowdoin College, 1965; M.A., Maine, 1967; Instructor in English.
- SCHWANAUER, FRANCIS (1962); Ph.D., Stuttgart and Tübingen (Germany), 1959; Associate Professor of German, University of Maine in Portland.
- **SCONTRAS, CHARLES ANDREW (1961); B.S., New Hampshire, 1952; M.Ed., Maine, 1957; Instructor in Modern Society, Department of Sociology and Anthropology.
- SEAGER, ROBERT II (1967); B.A., Rutgers, 1948; M.A., Columbia, 1949; Ph.D., Ohio State University, 1956; Professor and Head, Department of History.

* * On leave of absence, spring semester, 1967-68.

UNIVERSITY OF MAINE

- SEZAK, SAMUEL (1939); B.A., Maine, 1931; M.Ed., 1953; Professor of Physical Education.
- SEZAK, WILLIAM (1946-1948) (1949); B.S. in Ed., Boston University, 1938; M.Ed., Maine, 1946; Ed.D., Columbia, 1956; Professor of Sociology.
- SHEIVE, LUCY FARRINGTON (1956); B.S., Maine, 1923; Consumer Marketing Agent, Cooperative Extension Service.
- †SHEPPARD, EDMUND MACMILLAN (1962); B.S., University of Miami, 1956; S.M., Massachusetts Institute of Technology, 1958; Ph.D., Purdue, 1962; Associate Professor of Electrical Engineering.
- 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 Professor of Education.
- SHIELDS, PAUL EDWARD (1963); A.B., Youngstown University, 1938; B.S., 1942; M.S., University of Pittsburgh, 1944; E.E., Pennsylvania State University, 1951; P.E. (Maine, Ohio, Pennsylvania); Professor of Electrical Engineering.
- SHIGO, ALEX LLOYD; B.S., Waynesburg College, 1956; M.S., West Virginia University, 1958; Ph.D., 1959; Lecturer in Botany.
- SHOTTAER, JAMES EDWARD (1964); B.S., State University of New York, 1954; M.S., State University of New York and Syracuse University, 1956; Ph.D., Michigan State University, 1964; Associate Professor of Wood Technology, School of Forestry.
- SIDES, SAMUEL EDWIN (1956); B.S., Maine, 1951; P.E. (Maine); Associate Professor of Agricultural Engineering, Agricultural Experiment Station, Presque Isle, Maine Potato Handling Research Center.
- SIEDLIK, TADEUSZ ANTONI (1957); B.A., Jan Dlugosz College, Lwow, Poland, 1936; LL.B., Glasgow University, 1944; LL.M., Harvard, 1957; Professor of Business and Economics.
- SIMARD, GERALD LIONEL (1967); B.S., Bates, 1933; Ph.D., Massachusetts Institute of Technology, 1937; Associate Professor of Chemical Engineering.
- SIMPSON, GEDDES WILSON (1931); A.B., Bucknell, 1929; M.A., Cornell University 1931; Ph.D., 1935; Professor and Head, Department of Entomology.
- SMALL, WILLIAM (1966); A.B., Bowdoin, 1961; Instructor in German.
- SMITH, ALAN GUY (1967); B.Sc., Mount Allison University (New Brunswick), 1949; M.Sc., University of New Brunswick, 1951; Ph.D., Maine, 1966; Associate Professor of Chemistry, University of Maine in Portland.
- SMITH, DAVID CLAYTON (1965); B.S. in Ed., Farmington State Teachers College, 1955; M.Ed., Maine, 1956; M.A., 1958; Ph.D., Cornell University, 1965; Assistant Professor of History.
- SMITH, JANET ALICE (1963); B.A., Maine, 1956; M.S., 1959; Ph.D., University of Wisconsin, 1963; Associate Professor of Biochemistry.
- SMITH, JESSIE EARNEST; B.S. & B.A., St. John's College, 1928; M.A., University of Virginia, 1934; Lecturer in Speech, University of Maine in Augusta.
- ‡SMITH, NORMAN (1962); B.Sc., Leeds (England), 1952; M.Sc., Durham (England), 1954; M.S., Maine; 1959; Professor and Head, Department of Agricultural Engineering.

† On leave of absence, 1967-68.

‡ On leave of absence, October 1, 1967 - May 31, 1968.

PERSONNEL

- SNOW, DEAN RICHARD (1966); B.A., University of Minnesota, 1962; Ph.D., University of Oregon, 1966; Assistant Professor of Anthropology.
- *SOTTERY, THEODORE WALTER (1956); B.N.S., Dartmouth, 1946; M.S., Maine, 1956; Ph.D., 1966; Associate Professor of Chemistry, University of Maine in Portland.
- SOULE, HAYDEN MAYO, JR. (1960); B.S., Maine, 1960; Assistant Professor of Agricultural Engineering.
- SOULE, WILLIAM HILTON (1965); A.B., Bowdoin, 1936; M.Ed., Bates, 1941; Assistant Professor of Education, University of Maine in Portland.
- SOULE, WILLIAM LAMSON, JR. (1966); A.B., Harvard College, 1953; M.E.A., The George Washington University, 1963; Assistant Professor of Mathematics.
- SPANOGLE, JOHN ANDREW, JR. (1964); B.S.E., Princeton University, 1957; J.D., University of Chicago, 1960; Professor of Law, School of Law, Portland.
- SPEICHER, BENJAMIN ROBERT (1937); A.B., Denison, 1929; M.S., Pittsburgh, 1931; Ph.D., 1933; Professor of Zoology.
- **SPRAGUE, RICHARD STANTON (1956); B.A., Maine, 1949; M.A., Yale, 1951; Ph.D., Boston University, 1961; Associate Professor of English.
- SPROUL, OTIS JENNINGS (1955); B.S., Maine, 1952; M.S., 1957; Sc.D., Washington University, 1961; P.E., Maine; Professor of Civil Engineering.
- STANLEY, ROBERT DANA (1967); B.A., University of Maine, 1958; M.A., 1963; Director of Student Memorial Union and Arthur A. Hauck Auditorium.
- STEARNS, WILLIAM FRANKLIN (1960); B.S. in Ed., Maine, 1958; M.A., 1960; Assistant Professor of Mathematics.
- STEELE, WILLIAM PAUL (1967); B.S. in Ed., Maine, 1964; Instructor in Speech, University of Maine in Portland.
- STEINMAN, RICHARD (1966); B.A., University of Missouri, 1949; M.S., Columbia University, 1952; Assistant Professor of Social Welfare, University of Maine in Portland.
- STEVENS, FRANCIS ROBERT (1957); B.S., Maine, 1951; Area Poultry Specialist, Cooperative Extension Service.
- STEVENS, LEROY CARLTON; B.S., Cornell University, 1942; Ph.D., University of Rochester, 1952; Lecturer in Zoology.
- STEVENS, MARGARET F. (1951); B.S., Simmons, 1934; Youth Education Specialist, 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.
- STILES, WARREN CRYDER (1962); B.S., Rutgers, 1954; M.S., 1955; Ph.D., Pennsylvania State University, 1958; Associate Professor of Pomology; Extension Fruit Specialist, Cooperative Extension Service.
- STONE, WILLIAM FRANK (1966); B.A., Maine, 1956; M.A., University of Florida, 1961; Ph.D., 1963; Assistant Professor of Psychology.
- STORCH, KAY SAEGER; B.S., Otterbein College, 1960; M.S., University of Illinois, 1962; Ph.D., 1966; Temporary Instructor in Zoology.

* On leave of absence, fall semester, 1967-68.

* * On leave of absence, spring semester, 1967-68.

UNIVERSITY OF MAINE

- STORCH, RICHARD HARRY (1965); B.A., Carleton College, 1959; M.S., University of Illinois, 1961; Ph.D., 1966; Assistant Professor of Entomology.
- STRUCHTEMEYER, ROLAND AUGUST (1946); B.S., University of Missouri, 1939; M.A., 1941; Ph.D., Ohio State University, 1951; Professor of Soils and Head, Department of Plants and Soils.
- STURGEON, RICHARD HOWARD (1962); B.S., Maine, 1960; Assistant Professor of Education, Coach of Basketball and Baseball, University of Maine in Portland.
- STYRNA, EDMUND (1956); B.S., New Hampshire, 1948; Associate Professor of Physical Education, Head Coach of Track and Cross Country.
- SUCEC, JAMES (1964); B.S., University of Connecticut, 1962; M.S., 1963; Assistant Professor of Mechanical Engineering.
- SULLIVAN, FRANCIS JOSEPH (1948); S.B., Harvard, 1936; M.S., Kansas State College, 1941; P.E. (Maine); Professor and Head, Department of Mechanical Engineering.
- SULLIVAN, JAMES VINCENT (1959); B.S. in Ed., Maine, 1951; M.Ed., University of Delaware, 1954; Director of Physical Education and Athletics and Associate Professor of Physical Education, University of Maine in Portland.
- SULLIVAN, MARY; RN, B.S., M.A., Director, Division of Public Health Nursing, State of Maine Department of Health and Welfare, Augusta; Cooperating Member of the Faculty of the School of Nursing.
- SUPPLE, ROBERT VINCENT (1948); Ed.B., State University of New York, 1943; A.M., New York University, 1945; Ph.D., 1951; Professor of Education.
- SWEETSER, THOMAS CURTIS (1964); B.S., Maine, 1950; Extension Agent (Aroostook County), Cooperative Extension Service.
- SWEIGART, JOHN WINFIELD, JR. (1967); A.B., Lafayette College, 1950; Ph.D., University of Pennsylvania, 1959; Associate Professor of Philosophy, University of Maine in Portland.
- 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; Extension Agent (York County), Cooperative Extension Service.
- TALBOT, FRANKLIN (1963); B.A., Maine, 1946; M.S., Columbia University, 1949; Cataloger, Library, University of Maine in Portland.
- TALLEY, SAMUEL HOUSTON (1966); B.A., Syracuse University, 1953; M.B.A., 1958; M.A., University of Michigan, 1962; Ph.D., Syracuse University, 1966; Assistant Professor of Business and Economics.
- TATEM, DAVID (1965); B.A., Randolph-Macon College, 1942; M.A., Columbia University, 1946; Assistant Professor of Classics.
- TAYLOR, FRANK MELROY (1940); B.S., Lafayette College, 1928; C.E., 1937; M.S., Maine, 1951; P.E. (Maine); Associate Professor of Civil Engineering.
- TENNANT, DONALD ARTHUR (1967); B.A., Kansas State University, 1962; M.A., 1963; Assistant Professor of Sociology.
- TERRELL, CARROLL FRANKLIN (1948); B.A., Bowdoin, 1940; M.A., Maine, 1950; Ph.D., New York University, 1956; Professor of English.
- THOMPSON, EDWARD VALENTINE (1966); A.B., Cornell University, 1956; Ph.D., Polytechnic Institute of Brooklyn, 1962; Associate Professor of Chemical Engineering.

PERSONNEL

- THOMPSON, WALTER ALFRED (1956); B.S., Maine, 1951; Extension Agent (Hancock County), Cooperative Extension Service.
- THOMSON, ROBERT BRUCE (1947-1950) (1953); A.B., Harvard, 1932; LL.B., 1936; Associate Professor of Political Science.
- THORNBURY, MARGARET ELIZABETH (1961); B.S., Oneonta State Teachers College, 1954; M.S., Ohio State University, 1957; Ph.D., 1961; Associate Professor of Food and Nutrition and Director, School of Home Economics.
- TIMMERMAN, FRANCES ANN (1967); B.A., Gustavus Adolphus College, 1964; M.A., Arizona State University, 1966; Instructor in English.
- TODD, FRANK HAROLD (1946); B.S., Bowdoin, 1935; M.A., Maine, 1936; Associate Professor of Physics.
- 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; Associate Professor of Mathematics.
- TRAFFORD, DAVID WHITE (1947); B.A., Maine, 1939; M.A., Indiana University, 1940; Ph.D., 1947; Professor of History.
- TREDWELL, ROBERT FERTIG (1967); A.B., Oberlin College, 1955; Ph.D., Yale, 1960; Associate Professor and Head, Department of Philosophy.
- TREFETHEN, JOSEPH MUZZY (1938); A.B., Colby, 1931; M.S., University of Illinois, 1932; Ph.D., Wisconsin, 1935; Professor of Geology, University of Maine in Portland.
- TREVETT, MOODY FRANCIS (1946); B.S., Massachusetts State, 1929; M.S., 1940; Professor of Agronomy.
- TRIPP, MARLAND EUGENE (1951-1956) (1957); B.S., Maine, 1950; Extension Agent (Knox-Lincoln Counties), Cooperative Extension Service.
- TRUBOV, HERMON (1962); B.F.A., Ohio University, 1947; M.A., Columbia University, 1948; Ph.D., Syracuse University, 1956; Associate Professor of Education.
- TRYON, PHYLLIS ARLEEN (1965); B.S., Boston University, 1958; M.S.N., Yale, 1962; Assistant Professor of Nursing.
- TSURUTANI, TAKETSUGU (1967); B.A., Lawrence College, 1958; M.A., University of Wisconsin, 1964; Ph.D., 1966; Assistant Professor of Political Science.
- TURNER, WALTER WEEKS (1947); B.S., Massachusetts Institute of Technology, 1947; M.S., 1947; P.E. (Maine); Professor of Electrical Engineering.
- VADAS, ROBERT LOUIS (1967); B.S., Utah State University, 1962; Assistant Professor of Botany.
- VALLEAU, WILLIAM GRAY (1962); B.S., University of Kentucky, 1955; M.S., Rutgers University, 1962; Ph.D., 1963; Associate Professor of Zoology.
- VANAMBURG, GEORGE EDWARD (1961); B.S., Portland University, 1956; Director of Student Center, University of Maine in Portland.
- VAN DE VELDE, JEHAN PETER (1961); B.A., University of North Carolina, 1949; M.A., 1951; Assistant Professor of French and German, University of Maine in Portland.
- VANGERMEERSCH, RICHARD GUSTAVE JEROME (1967); B.S.A., Bryant College, 1959; M.S., University of Rhode Island, 1964; Assistant Professor of Accounting.
- VARNEY, RICHARD HARRISON (1963); B.S., Maine, 1938; Extension Agent (Washington County), Cooperative Extension Service.

UNIVERSITY OF MAINE

- VERNON, GLENN MORLEY (1963); B.S., Brigham Young University, 1947; M.S., 1950; Ph.D., Washington State University, 1953; Professor of Sociology and Head, Department of Sociology and Anthropology.
- VISSMAN, WARREN, JR. (1966); B.E., Johns Hopkins, 1952; M.S.E., 1958; Eng.D., 1961; Professor of Civil Engineering; Director of the Water Resources Center.
- VIGER, NORMAN JOHN (1966); B.S., Maine, 1966; Instructor in General Engineering.
- VIRTUE, CHARLES FRANKLIN (1946); B.A., University of Cincinnati, 1925; Ph.D., Yale, 1933; Professor of Philosophy.
- VON WAHLDE, BARBARA ANN KETTERMAN (1966); B.S. in Ed., Indiana University, 1961; M.A., 1966; Cataloger, Raymond H. Fogler Library.
- VON WAHLDE, PETER HAROLD CAMPION (1966); B.A., Indiana University, 1957; M.A., 1958; Ph.D., 1966; Assistant Professor of History.
- VOSE, PRESCOTT HALE (1950); B.S., Bowdoin, 1929; M.B.A., Harvard, 1931; Controller.
- VROOMAN, THEODORE HERBERT (1965); B.A., St. Lawrence University, 1942; M.Ed., 1947; Assistant Professor of Education.
- WADE, EDWARD ALEXANDER (1962); A.B., San Diego State College, 1949; M.A., University of Oregon, 1952; Ph.D., University of Wisconsin, 1955; Associate Professor of Psychology.
- ‡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, Department of Civil Engineering.
- WADSWORTH, RICHARD C.; 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.
- WAGNER, JAMES BURNHAM (1964); B.S., Alfred University, 1953; M.A., University of Utah, 1964; Instructor in Mathematics.
- WAKELIN, EDMUND F. (1963); B.A., Dartmouth, 1939; District Recreational Specialist, Cooperative Extension Service.
- WALKUP, MARY JO COLEMAN (1967); B.S., University of Houston, 1955; M.S., Springfield College, 1960; Ph.D., University of Iowa, 1966; Assistant Professor of Physical Education, Women's Division.
- WALLACE, IAN (1967); B.A., St. Peter's College, Oxford, 1965; Instructor in German.
- WALLACE, ROBERT LOUIS (1966); B.S., Maine, 1954; M.Ed., 1961; Instructor in Physical Education.
- WALMAN, THOMAS HAROLD (1963); Sergeant First Class, United States Army; Instructor in Military Science.
- WARNER, MARDIS R. (1950-55) (1956); B.S., Ohio State, 1949; B.A.E., Ohio State, 1949; Agricultural Engineer, Cooperative Extension Service.
- WATERS, HARRY JOSEPH (1963); B.B.A., Hofstra College, 1954; M.B.A., New York University, 1955; Ph.D., 1964; Associate Professor of Business and Economics, University of Maine in Portland.
- WATTS, JAMES THOMPSON (1966); B.S., Pennsylvania State University, 1965; M.S., 1966; Assistant Professor of Design, School of Home Economics.

‡ On leave of absence July 1, 1967-June 30, 1968.

PERSONNEL

- WAVE, HEBBERT EDWIN (1967); B.S., Maine, 1952; M.S., Rutgers, 1960; Ph.D., 1961; Associate Professor of Plant and Soil Sciences.
- WAYMOUTH, CHARITY; B.Sc., University of London, 1936; Ph.D., University of Aberdeen, 1944; Lecturer in Bacteriology (Jackson Laboratory).
- WEATHERBEE, RITA ROSEIN; B.S., Simmons College, 1952; M.A., Maine, 1954; Part-time Instructor in Zoology.
- WEBSTER, KARL SMITH (1965); B.S., Vermont, 1949; M.S., Pennsylvania State University, 1958; Associate Professor of Mechanical Engineering.
- 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.
- WERBOFF, JACK; B.A., Brooklyn College, 1949; M.A., Columbia University, 1950; Ph.D., Washington University, 1957; Lecturer in Psychology (Jackson Laboratory).
- WESTERBERG, ARNOLD GEORGE (1964); B.A. in Ed., Pennsylvania State College, 1933; Ed.M., Bates, 1943; Assistant Director of Continuing Education (Headquarters at Auburn).
- WESTERMAN, HAROLD SCOTT (1949); B.A., University of Michigan, 1946; Professor of Physical Education; Director of Physical Education and Athletics.
- WESTFALL, CLAUDE ZEBEDEE (1954); B.S.F., West Virginia University, 1952; M.S., Maine, 1954; Associate Professor of General Engineering.
- WHELDEN, HARRY CROSSMAN, JR. (1955); B.S., University of Connecticut, 1948; Poultry Specialist, Cooperative Extension Service.
- WHITE, MAURICE ORANGE (1967); B.A., Wayne State University, 1957; M.Ed., 1961; Assistant Professor of Education.
- WHITE, PHILIP RODNEY; A.B., University of Montana, 1922; Ph.D., Johns Hopkins, 1928; Lecturer in Botany.
- WHITEHILL, ALVIN RICHARD (1961); A.B., Dartmouth, 1937; Ph.D., Cornell University, 1942; Professor of Bacteriology.
- WHITING, WILLIAM LAWRENCE (1947); B.A., Maine, 1937; M.Ed., Bates, 1948; M.A., Northwestern University, 1954; Associate Professor of Speech and Associate Dean; Acting Chairman, Division of Humanities, University of Maine in Portland.
- WHITNEY, ALLISON INGALLS (1962); B.S., Maine, 1962; M.S., 1964; Assistant Professor of Electrical Engineering.
- WHITNEY, HARRY F. (1955); B.S., Maine, 1954; M.S., Cornell University, 1955; Extension Agent (Waldo County), Cooperative Extension Service.
- WHITNEY, JUDITH STEARNS; B.S., Maine, 1964; M.S., 1966; Part-time Instructor in Chemistry.
- WILDES, GLENN K. (1958); B.S., University of Rhode Island, 1954; M.S., 1957; Area Dairy Specialist, Cooperative Extension Service.
- WILLIAMS, ROBERT B. (1964); B.S.A.E., University of Maine, 1957; Associate Professor of Agricultural Engineering, Agricultural Experiment Station.
- WILSON, EDITH GRACE (1931); B.A., Southern California, 1923; M.A., 1928; Assistant to the President for Institutional Research; Clerk, Board of Trustees.
- WILSON, SARA CURTIS (1946); B.S., Farmington State Normal, 1938; Extension Agent (Washington County), Cooperative Extension Service.

UNIVERSITY OF MAINE

- WING, KENNETH EVERETT (1966); B.S., Cornell University, 1958; M.Ed., 1960; Ph.D., 1966; Assistant Professor of Agricultural Business and Economics.
- WITTER, JOHN FRANKLIN (1932); B.S., Maryland, 1928; D.V.M., Michigan, 1932; Professor and Head, Department of Animal Pathology.
- WLODKOWSKI, ZINAIDA SAPANKEVYCH (1967); B.A., Windham College, 1964; M.A., New York University, 1965; Instructor in Languages, University of Maine in Augusta.
- WOLFHAGAN, HELEN JANE (1964); B.S., Willamette University, 1942; Ph.D., University of California (Berkeley), 1949; Instructor in Chemistry.
- WOLFHAGEN, JAMES LANGDON (1952); A.B., Linfield College, 1946; Ph.D., University of California, 1951; Professor and Head, Department of Chemistry.
- WOOD, DIANNE (1967); B.Ed., Keene State College, 1964; M.Ed., Boston University, 1966; Instructor in Speech.
- WOODBURY, HAROLD MACE (1937); B.S., Maine, 1937; M.A., 1948; Professor of Physical Education; Head of Men's Division, Department of Physical Education and Athletics.
- WOODWARD, WALDA ALBION (1962); B.S., Maine, 1958; Extension Agent (Knox-Lincoln Counties), Cooperative Extension Service.
- 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; Professor of Mathematics.
- WORK, GERALD GEORGE (1967); A.B., Albright College, 1960; M.Ed., Ohio University, 1962; Assistant Professor of Education.
- WORRICK, ROBERT CLIFTON (1946); B.S., Maine, 1943; Director of Student Aid.
- WRATTEN, CRAIG CHARLES (1966); B.S., Bethany College, 1960; M.S., University of Wisconsin, 1962; Ph.D., 1965; Assistant Professor of Biochemistry.
- WROTH, LAWRENCE KINVIN (1964); B.A., Yale University, 1954; LL.B., Harvard, 1960; Professor of Law, School of Law, Portland.
- WYLIE, DOUGLAS WILSON (1951); B.Sc., University of New Brunswick, 1947; M.Sc., Dalhousie, 1949; Ph.D., University of Connecticut, 1962; Associate Professor of Physics.
- WYMAN, OSCAR LEWIS II (1965); B.S., Maine, 1949; M.S., University of Massachusetts, 1963; State Program Coordinator, Cooperative Extension Service.
- YOUNG, DAVID BRUCE (1960); B.S., Duke University, 1955; M.S., 1959; Associate Professor of Electrical Engineering.
- YOUNG, EDWIN (1965); B.S. in Ed., Maine, 1940; M.A., 1942; Ph.D., University of Wisconsin, 1950; LL.D., Maine, 1963; President; Professor of Economics.
- YOUNG, HAROLD EDLE (1948); B.S., Maine, 1937; M.F., Duke, 1946; Ph.D., 1948; Professor of Forestry.
- YOUNG, SUSAN EVELYN (1965); B.S., Maine, 1963; Certified by American Dietetic Association, 1964; Instructor in Institutional Management, School of Home Economics.

PERSONNEL

- †YU, SHIH-CHENG (1959); B.A., Fu Jen University (Peiping, China), 1945; M.A., University of Iowa, 1949; Ph.D., State University of Iowa, 1952; Professor of Business and Economics.
- ZABEL, LOWELL WALLACE (1967); B.A., Lawrence University, 1935; Associate Professor of Pulp and Paper Technology.
- †ZIEGENBEIN, DON R. (1964); B.S., Babson Institute, 1961; M.B.A., 1962; Assistant 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.
- ZIMMERMAN, KENNETH CHARLES (1967); B.A., University of Minnesota, 1957; M.A., 1963; Ph.D., 1967; Assistant Professor of Political Science.
- ZINK, MARY STILLMAN (1960); B.A., Cornell University, 1938; M.A., Yale University, 1955; Ph.D., Cornell University, 1960; Dean of Women; Professor of Education.

† On leave of absence, 1967-68.

Summary of Student Enrollment

1966-67

	PORTLAND CAMPUS			ORONO CAMPUS			GRAND
	MEN	WOMEN	TOTAL	Men	Women	Total	Total
Graduate	—	—	—	426	88	514	514
Post Baccalaureate							
Certificates	—	—	—	1	—	1	1
Fifth Year	—	—	—	14	—	14	14
Seniors	67	42	109	626	371	997	1106
Juniors	89	54	143	720	467	1187	1330
Sophomores	170	113	283	976	681	1657	1940
Freshmen	186	114	300	995	725	1720	2020
Specials	47	43	90	96	81	177	267
Three-year Nurses	—	—	—	—	36	36	36
School of Law:							
First Year	44	1	45	—	—	—	45
Second Year	27	1	28	—	—	—	28
Third Year	15	—	15	—	—	—	15
Two-year Courses:							
First Year	72	13	85	166	29	195	280
Second Year	63	10	73	135	7	142	215
Unclassified Degree							
Candidates	8	15	23	3	10	13	36
Audition	1	—	1	3	6	9	10
	789	406	1195	4161	2501	6662	7857
Summer Session	—	—	—	2302	2075	4377	4377*
Grand Total	789	406	1195	5737	4179	9916	11111
(Omitting duplicates in Summer Session)							

*includes classes held in Portland and other locations

CLASSIFICATION BY COLLEGES

Graduates	—	—	—	426	90	516	516
Arts and Sciences	255	244	499	1225	1408	2633	3132
Business Administra-							
tion	276	27	303	305	23	328	631
Education	107	127	234	456	721	1177	1411
School of Law	86	2	88	—	—	—	88
Life Sciences &							
Agriculture	24	5	29	762	248	1010	1039
Technology	41	1	42	987	11	998	1040
	789	406	1195	4161	2501	6662	7857

STUDENT ENROLLMENT

CANDIDATES FOR DEGREES

Graduates	—	—	—	426	88	514	514
Arts and Sciences	232	209	441	1188	1329	2517	2958
Business Administration	263	26	289	295	19	314	603
Education	102	120	222	438	692	1130	1352
School of Law	86	2	88	—	—	—	88
Life Sciences and Agriculture	21	5	26	745	239	984	1010
Technology	37	1	38	970	11	981	1019
	<hr/> 741	<hr/> 363	<hr/> 1104	<hr/> 4062	<hr/> 2378	<hr/> 6440	<hr/> 7544

SUMMARY OF STUDENT ENROLLMENT

1966-67

CLASSIFICATION BY RESIDENCE

	REGULAR SESSION		SUMMER	
	PORTLAND	ORONO	SESSION	TOTAL
Maine, by counties:				
Androscoggin	60	313	160	533
Aroostook	7	477	171	655
Cumberland	864	648	636	2148
Franklin	2	87	30	119
Hancock	3	205	125	333
Kennebec	9	489	153	651
Knox	6	187	63	256
Lincoln	7	82	52	141
Oxford	15	230	73	318
Penobscot	9	1469	654	2132
Piscataquis	6	148	60	214
Sagadahoc	33	94	58	185
Somerset	2	201	97	300
Waldo	1	149	79	229
Washington	2	118	74	194
York	130	365	166	661
	<hr/> 1156	<hr/> 5262	<hr/> 2651	<hr/> 9069
Maine	1156	5262	2651	9069
Massachusetts	5	570	66	641
New York	2	217	98	317
New Jersey	4	163	43	210
Connecticut	8	111	36	155
New Hampshire	4	49	36	89
Pennsylvania	—	41	27	68

UNIVERSITY OF MAINE

	REGULAR SESSION		SUMMER	TOTAL
	PORTLAND	ORONO	SESSION	
Vermont	9	35	20	64
Illinois	—	9	42	51
Rhode Island	1	29	9	39
Virginia	—	21	18	39
Ohio	—	14	22	36
California	1	5	17	23
Maryland	—	12	7	19
Michigan	—	5	13	18
Delaware	1	9	3	13
District of Columbia	—	6	6	12
Wisconsin	—	3	8	11
Florida	—	6	4	10
Iowa	—	—	9	9
North Carolina	—	3	6	9
Washington	—	2	6	8
Minnesota	—	3	4	7
Texas	—	4	3	7
Louisiana	—	2	4	6
Georgia	—	3	2	5
Missouri	—	3	2	5
Tennessee	—	—	5	5
West Virginia	—	3	2	5
Arizona	—	—	4	4
Indiana	—	3	1	4
Kansas	—	2	2	4
Colorado	—	1	2	3
Oregon	—	1	2	3
South Carolina	—	1	2	3
Utah	—	—	3	3
Alabama	—	2	—	2
Arkansas	—	2	—	2
North Dakota	—	—	2	2
Oklahoma	—	2	—	2
Alaska	—	1	—	1
Montana	—	—	1	1
Nebraska	—	—	1	1
New Mexico	—	—	1	1
Nevada	—	1	—	1
South Dakota	—	1	—	1
Canada	—	17	52	69
India	—	4	2	6
Korea	3	1	—	4
Iran	—	2	1	3
Japan	—	—	3	3
China	—	2	—	2
Colombia	—	2	—	2

STUDENT ENROLLMENT

Costa Rica	—	2	—	2
France	—	1	1	2
Greece	—	2	—	2
Haiti	—	2	—	2
Nigeria	—	2	—	2
Pakistan	—	2	—	2
Zambia	—	2	—	2
Aden	—	1	—	1
Algeria	—	1	—	1
Ecuador	—	1	—	1
El Salvador	—	1	—	1
Ethiopia	—	1	—	1
Finland	—	—	1	1
Honduras	—	—	1	1
Iraq	—	1	—	1
Kenya	—	—	1	1
Netherlands	—	1	—	1
Panama	1	—	—	1
Puerto Rico	—	—	1	1
Rhodesia	—	1	—	1
Somalia	—	1	—	1
Syria	—	—	1	1
Taiwan	—	1	—	1
Trinidad	—	1	—	1
Turkey	—	1	—	1
Uganda	—	1	—	1
Venezuela	—	1	—	1
	<hr/>	<hr/>	<hr/>	<hr/>
	1195	6662	3254	11111



*Paul Niven interviewed at Maine's
ETV Network studio, Orono*

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